

QUALITY LIGHT STEEL FRAMING CONNECTIONS AND MEMBERS

# LIGHT STEEL FRAMING CONNECTIONS

INTERIOR • EXTERIOR • VERTICAL DEFLECTION • DRIFT



STEELNETWORK.COM  
1.888.474.4876

# Light Steel Framing Connections

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# General Product Information

## Introduction


The Steel Network, Inc.

www.steelnetwork.com

1-888-474-4876



The Steel Network provides solutions for all standard light steel framing configurations. Substantial effort has been made by the industry to standardize construction practices to ensure the positive connections of light steel framing components. Toward this end, TSN products have undergone extensive field and laboratory testing to achieve complete solutions for both designers and installers. Product test reports may be ordered by contacting TSN engineering at (888) 474-4876.

- Attachment of connections to the primary structure should be engineered by a design professional. Listed allowable loads are based on tests with full attachment to primary structure through all guide holes where applicable.
- Prying action on the attachment to the structure should be considered where eccentricity exists between the fastener and the load.
- Test reports are available through The Steel Network, Inc. Contact TSN at (888) 474-4876 for more information.
- The Steel Network, Inc. offers all products and services through local authorized distributors.
- Products are manufactured from recycled steel. 
- Install connectors prior to loading.
- The installation contractor is responsible for installing products in accordance with the instructions listed in this catalog and included with the shipped product, in addition to any relevant specifications and building codes.
- Custom products are available upon request. Prior approval must be obtained and the order shall be submitted with a signed engineered drawing.
- Allowable loads and material data listed in this catalog supersede all information in all earlier publications.
- Self-drilling screws should be installed perpendicular to the work surface with a screw gun limited to no more than 2,500 rpm.
- The screw gun must also feature a torque limiting nose piece to avoid over-driving the screw. Over-driving can damage the fastener by stripping the threads or shearing the fastener head and may cause failure even when not visually detected.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Loads are determined using "Allowable Stress Design" (ASD) method. When LRFD (Load and Resistance Factor Design) is utilized, contact TSN for appropriate resistance values.
- Products are tested according to the guidelines listed in the AISI Specification for the Design of Cold Formed Steel Structures, Section F, and ICC Criteria AC261, where applicable.
- Allowable loads are based on the lesser of: (a) Average test ultimate load divided by the appropriate factor of safety, (b) Load producing deflection value of 0.125" for vertical deflection products and 0.1875" or drift products, or (c) Fastener/screw allowable load between the clip & stud.
- Allowable loads are the result of static testing by either independent testing facilities or in-house testing and calculations.
- Allowable loads are the maximum forces resisted in one direction only. When multiple loads effect a connection: Designer of record is responsible for checking the interaction of multiple loads acting on a connection.
- Screw connection allowable loads are based on AISI-S100 design specification, Sec. E4, and are limited by these allowable loads: 849 lbs for #12 Shear, 664 lbs for #10 Shear, 427 lbs for #8 Shear, 428 lbs for #12 Pullout, 369 lbs for #10 Pullout, 328 lbs for #8 Pullout.
- Where Screw Torsion is considered, 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 Software

SteelSmart® System



*The industry's #1 tool for the design of Connections, Members, Fasteners & Details*

### Component Design Modules:

- Curtain Wall
- Load Bearing Wall
- X-Brace Shear Wall
- Floor Framing
- Roof Framing
- Roof Trusses
- Moment Resisting Short Wall

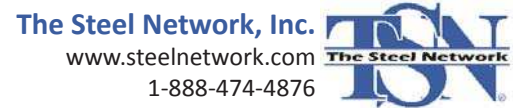
Order online at  
[www.steelSMARTsystem.com](http://www.steelSMARTsystem.com)



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# Building Load Paths

## Introduction

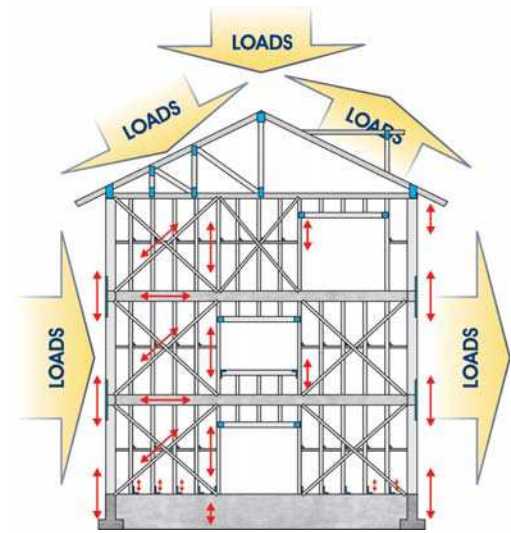


### Background

There are two types of light steel framing connections, fixed and movement-allowing. Fixed connections of framing members are found in many types of assemblies, including axial-load-bearing walls, curtain walls, trusses, roofs, and floors. As light steel framing (LSF) assemblies are only as strong as their weakest component, The Steel Network has developed products to provide designers and installers with tested, certified, and traceable materials for light steel framing assemblies.

Tracing a consistent load and movement paths from the roof to the foundation is much simpler through use of The Steel Network's connectors. TSN products are engineered to provide the most efficient load transfer path for the designer while adding economies of value for the contractor.

When considering liability concerns, connections should not be the weakest part of the assembly. Use of generic material raises questions about performance. Is the steel material traceable? Is the material sufficiently galvanized? Has the material been structurally load tested? These questions should not go unanswered in today's construction practice. The Steel Network provides mill certified and tested steel, galvanized with coating meeting or exceeding industry standards, and all standard connectors are structurally load tested. TSN products have undergone extensive field and laboratory testing to achieve complete solutions for both designers and installers, enabling them to trace the most efficient load and movement paths through the structure. When it comes to connections and members, TSN is setting the industry standard.

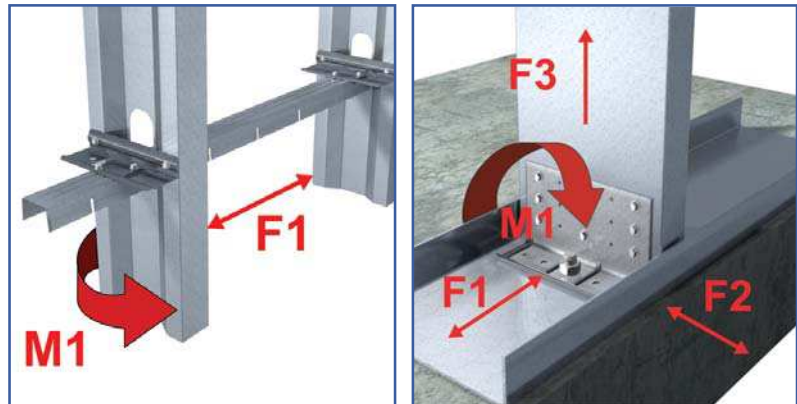


### Load Directions

Connection loads have been determined through structural testing based on guidelines set forth by the AISI Specification. A diagram of load directions for each clip is located with the respective product load tables. Load direction nomenclature is consistent throughout this catalog. The diagrams at right illustrate examples of load directions used in this catalog.

- F1** = Lateral (In the plane of the wall), lbs
- F2** = Horizontal Load (Out of the plane of the wall), lbs
- F3** = Vertical Load (or Uplift), lbs
- M1** = Moment-Carrying (or Rotational), in-lbs

In addition, connectors are available to resist axial tension and compression in a flat plane.



### Industry Improvements

The Steel Network's series of connectors utilizes tested, mechanical configurations to resist many different types of load (vertical, horizontal, tension, moment-carrying, axial tension and compression in a flat plane). Each is available in a wide range of sizes and applications to meet all standard construction needs. Additionally, custom clips may be designed and produced for specific applications.

The Steel Network delivers a comprehensive improvement to the industry by:

- Providing simple, labor-saving solutions for all steel framing attachments to primary frames.
- Placing pre-drilled guide holes for quick and accurate fastener placement.
- Producing connections tested under AISI guidelines.
- Manufacturing from ASTM A1003 grade 50 steel with hot-dipped galvanized G90 coating guaranteeing longterm durability and performance.
- Eliminating use of untested, untraceable, steel for connections.

### Stiffened Plate Elements

Most TSN connection products are manufactured with stiffeners, as bending forces are present when loads are transferred from the framing member to the structure. Stiffeners increase the capacity of flat elements to resist bending, thus maximizing material efficiency.



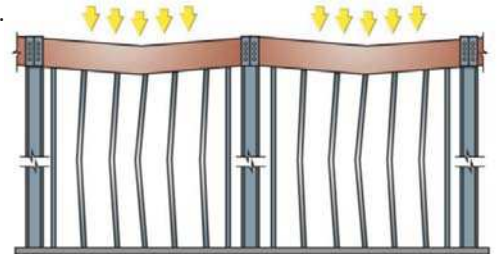
# Movement-Allowing Connectors

## Introduction

### Primary Structural Deflection

All structures deflect vertically. To prevent non-axial-load-bearing studs from carrying the weight of the structure and to protect finishes, vertical deflection connections should be incorporated at the earliest possible moment of project design. The load-carrying capacity of a steel stud in bending is reduced significantly when adding an axial force propagated by the bending of a primary beam or slab. VertiClip® was developed to prevent the crushing effect on non-axial-load-bearing wall studs. Non-axial-load-bearing wall studs include exterior curtain wall and interior wall assemblies. When project conditions dictate, lateral drift and vertical deflection may be accommodated through utilization of TSN’s DriftClip® and DriftTrak® lines of connectors.

Finished walls frequently experience cracking, buckling, or crushing due to improper isolation of building movement. The movement of the primary building structure is largely accounted for in horizontal member live loading. In addition to live loads, wind, seismic forces, moisture content in materials, and temperature cycles all contribute to movement. The incorporation of vertical deflection connections during the working drawing phase will eliminate the liability of failures and added costs associated with wall system installation.



### Specifying Deflection Distances

Deflection distances are determined from movement of the primary frame, roof, and floor slab. Designers of non-axial-load-bearing framing typically allow for a minimum of ½” (13mm) of vertical deflection. When specifying vertical deflection distances, consider the following example -- the deflection distance may be derived using a column spacing of 20 feet on center and a maximum deflection of L/480, thereby resulting in a vertical deflection value equal to .5”. Deflection distances may range from 0.125” in very heavy rigid structures to 6” in lightweight open frames.

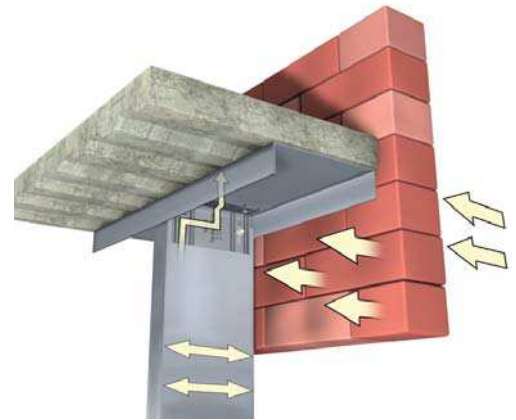
## Step Bushing Technology

### Innovation

#### Shear Transfer

Non-axial-load-bearing walls are not designed to carry the structure, but horizontal loads from wind and seismic forces transfer from the exterior finishes through wall framing to the primary structure. VertiClip and DriftClip effectively transfer the shear load from the stud to the primary member by connecting to the stud web.

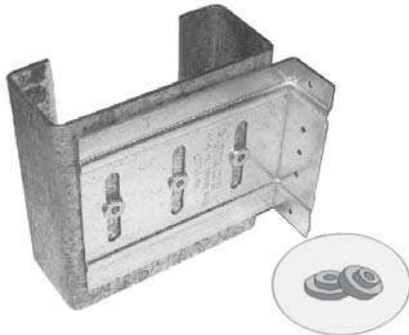
The image on the right illustrates the horizontal load path. The load transitions into shear at the VertiClip to stud web attachment. VertiClip prevents the track flange from bending and stiffens the stud web.



### Step Bushing Technology

Step Bushing Technology provides a solid and simple solution. Elongated slots in the connector allow for movement of the primary structure. A step bushing is pre-installed at the center of each slot. A VertiClip or DriftClip attaches mechanically to the stud web through the step bushing with self-drilling screws provided with each clip.

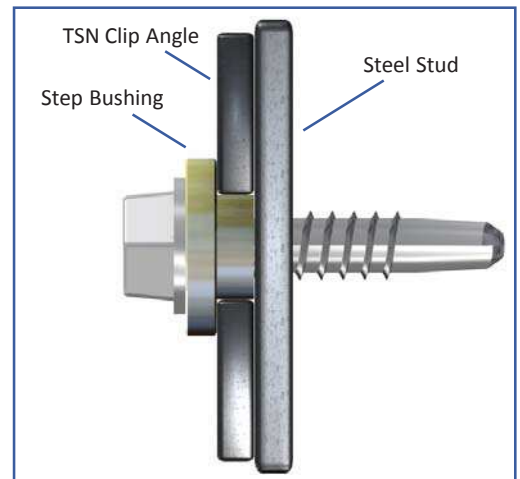
The Step Bushing allows horizontal loads to transfer from the stud web into the structure through a positive, mechanical attachment, while simultaneously allowing friction-free vertical movement. TSN’s solutions replace friction-held configurations and flange gripping devices, further reducing liability concerns.



VertiClip SLB showing Step Bushings, which are pre-installed at the center of each slot and placed in position at the factory for quality assurance and ease of installation.



Allows for the shear load to be transferred at the stud web to the primary structure.



Step Bushing is seated inside slotted hole of the VertiClip. Step Bushing is slightly thicker than the steel material thus simultaneously providing a positive mechanical attachment to the stud web while allowing for slip movement.

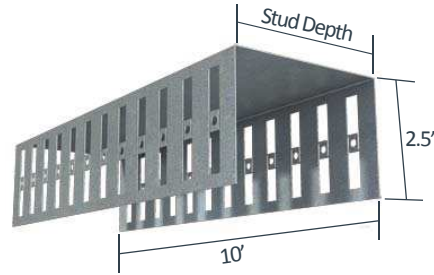
# VertiTrack® VT

Interior Head of Wall



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



US Patents # 8,181,419 & 8,683,770

### VertiTrak VT Allowable Loads & Limiting Heights

Section	Wall Stud Thickness	Uniform Lateral Load (psf) and Stud Spacing (in)									Allowable Lateral Load (lbs)
		5 psf			10 psf			15 psf			
		12" o.c.	16" o.c.	24" o.c.	12" o.c.	16" o.c.	24" o.c.	12" o.c.	16" o.c.	24" o.c.	
XXXVT250-33 (50 ksi)	18 mil-25 ga to 33 mil-20 ga (or EQ Studs)	46' 5"	34' 10"	23' 2"	23' 2"	17' 5"	11' 7"	15' 6"	11' 7"	N/A	116

### Table Notes:

- Allowable lateral load is based on lab tests with studs @ 12" from end of VertiTrack VT.
- Wall heights are calculated from allowable lateral load at top of the wall.
- Wall stud size should be determined independently. Wall heights based on stud strength and stiffness should be checked.
- Attach VertiTrack VT pieces together at splice locations with a piece of a stud.

### Material Analysis

VertiTrak® VT Section Properties																
Section	Design Thickness (in)	Yield Strength (ksi)	Gross Properties								Torsional Properties					
			Area (in <sup>2</sup> )	Weight (lbs/ft)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	R <sub>x</sub> (in)	I <sub>y</sub> (in <sup>4</sup> )	S <sub>y</sub> (in <sup>3</sup> )	R <sub>y</sub> (in)	Jx1000 (in <sup>4</sup> )	C <sub>w</sub> (in <sup>6</sup> )	X <sub>o</sub> (in)	R <sub>o</sub> (in)	β	m (in)
250VT250-33	0.0346	50	0.259	0.883	0.339	0.256	1.144	0.178	0.107	0.827	0.103	0.212	-1.892	2.360	0.358	1.056
362VT250-33			0.298	1.015	0.740	0.392	1.575	0.200	0.113	0.820	0.119	0.482	-1.719	2.472	0.516	0.992
400VT250-33			0.311	1.059	0.914	0.441	1.714	0.207	0.115	0.815	0.124	0.602	-1.67	2.528	0.564	0.973
600VT250-33			0.380	1.295	2.236	0.728	2.424	0.233	0.121	0.783	0.152	1.520	-1.451	2.932	0.755	0.880

VertiTrak® VT Section Properties																				
Section	Design Thickness (in)	Yield Strength (ksi)	Effective Properties: Full Leg									Effective Properties: Net (Slotted) Leg								
			I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	M <sub>x</sub> (k-in)	I <sub>y</sub> <sup>1</sup> (in <sup>4</sup> )	S <sub>y</sub> <sup>1</sup> (in <sup>3</sup> )	M <sub>y</sub> <sup>1</sup> (k-in)	I <sub>y</sub> <sup>2</sup> (in <sup>4</sup> )	S <sub>y</sub> <sup>2</sup> (in <sup>3</sup> )	M <sub>y</sub> <sup>2</sup> (k-in)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	M <sub>x</sub> (k-in)	I <sub>y</sub> <sup>1</sup> (in <sup>4</sup> )	S <sub>y</sub> <sup>1</sup> (in <sup>3</sup> )	M <sub>y</sub> <sup>1</sup> (k-in)	I <sub>y</sub> <sup>2</sup> (in <sup>4</sup> )	S <sub>y</sub> <sup>2</sup> (in <sup>3</sup> )	M <sub>y</sub> <sup>2</sup> (k-in)
250VT250-33	0.0346	50	0.236	0.172	5.160	0.170	0.101	3.024	0.010	0.009	0.065	0.118	0.089	2.915	0.082	0.038	1.144	0.082	0.038	1.144
362VT250-33			0.528	0.272	8.131	0.177	0.102	3.067	0.010	0.009	0.067	0.287	0.152	4.973	0.085	0.038	1.152	0.085	0.038	1.150
400VT250-33			0.658	0.308	9.218	0.178	0.103	3.075	0.010	0.009	0.068	0.366	0.177	5.764	0.086	0.039	1.153	0.086	0.038	1.151
600VT250-33			1.669	0.448	13.421	0.183	0.104	3.104	0.011	0.01	0.071	1.024	0.286	8.560	0.089	0.039	1.159	0.088	0.039	1.153

### Notes:

- Section properties and capacities are calculated in accordance with AISI-S100-07 Specification.
- Tabulated gross properties are based on the full, unreduced cross section of the track away from slots.
- Effective section properties incorporate the strength increase from cold work of forming as applicable per AISI-S100-07, Sec. A7.2.
- Net effective section properties are calculated at a cross section through the slot.
- For deflection calculations, use the effective moment of inertia (I<sub>x</sub>). This effective moment of inertia is calculated at a stress 0.6 F<sub>y</sub> (service load level).
- Properties (I<sub>y</sub>, S<sub>y</sub> and M<sub>y</sub>)<sup>1</sup> are based on the web element in compression while (I<sub>y</sub>, S<sub>y</sub> and M<sub>y</sub>)<sup>2</sup> are based on the web element in tension.

### Nomenclature

VertiTrack VT is manufactured in 10 ft. lengths. It is designated by inside track dimension, followed by type (VT), then leg height (250) and thickness (33 mil).

**Example:** 6" track

**Designate:** VertiTrack® 600VT250-33



UL®-Classified Head of Wall Assemblies

HW-D-0043, HW-D-0044, HW-D-0054, HW-D-0088, HW-D-0099, HW-D-0154, HW-D-0184, HW-D-0194, HW-D-0218, HW-D-0252, HW-D-0259, HW-D-0264, HW-D-0324, HW-D-0363, HW-D-0377, HW-D-0388, HW-D-0456, HW-D-0538, HW-D-0539, HW-D-0540, HW-D-0548, HW-D-0606

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

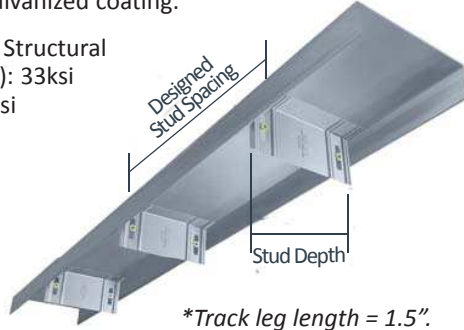
# VertiTrack® VTD

Interior Head of Wall

### Material Composition

**Clip Material:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

**Track Material:** ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



\*Track leg length = 1.5".



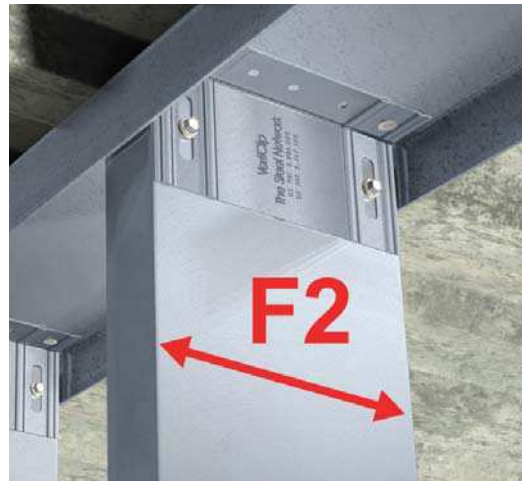
US Patents #5,467,566 & #5,906,080

The attachment of VertiTrack 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.

### VertiTrack VTD Allowable (Unfactored) Loads<sup>1</sup>

VertiTrack® VTD, Recommended Allowable Load (lbs): F2 (VertiClip® SLD Loads)					
Stud		VTD250	VTD362/400	VTD600	VTD800
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #8 screws	w/2 #8 screws	w/2 #8 screws	w/2 #8 screws
18 (25)	33	132	132	132	132
27 (22)	33	159	243	243	243
33 (20)	33	159	328	328	328
33 (20)	50	159	359	405	474
43 (18)	33	159	359	405	489
43 (18)	50	159	359	405	664
54 (16)	33	159	359	405	664
54 (16)	50	159	359	405	664
<b>Maximum Allowable Clip Load</b>		<b>159</b>	<b>359</b>	<b>405</b>	<b>682</b>

### Load Direction



### Notes:

- VertiTrack VTD loads are the same as VertiClip SLD.
- VertiTrack VTD is assembled with VertiClip SLD pre-attached at 16" o.c. and 24" o.c.
- Total vertical deflection of up to 1½" (¾" up and ¾" down). Deflection requirements greater than ¾" (up and down) are available. Custom spacing is also available.
- Fasten within ¾" from the angle heel (centerline of the 1½" leg) to minimize eccentric load transfer.
- Fasten through each VertiClip SLD to structure.
- VertiTrack VTD series is designed to support horizontal loads, and should not be used in axial-load-bearing walls.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #8 screws are provided with each step bushing for attachment to the stud web.
- Strengthening ribs are present in 3 5/8" and 6" sizes.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.



**Nomenclature**

VertiTrack VTD is manufactured in 12 ft. lengths. VertiTrack is designated by type (VTD), followed by stud depth in inches multiplied by 100 and stud spacing.

**Example:** 6" deep stud, 16" on center  
**Designate:** VertiTrack® VTD600-16



UL®-Classified Head of Wall Assemblies

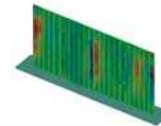
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VertiClip SLD600  
 ICC-ESR-2049  
[www.icc-es.org](http://www.icc-es.org)



Meets criteria for New York MEA 326-06-M



VertiClip SLD Series  
 Blast and Seismic Design data  
[www.steelnetwork.com](http://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>

# VertiTrack® VTX

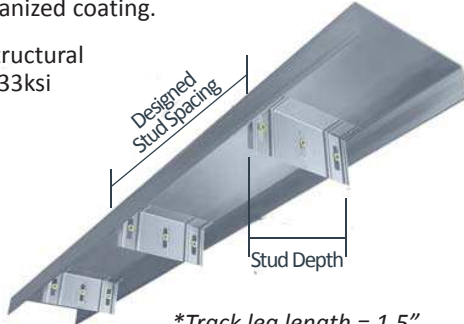
Exterior Head of Wall



### Material Composition

**Clip Material:** 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.

**Track Material:** ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 43mil minimum thickness (18 gauge, 0.0451" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



\*Track leg length = 1.5".



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

The attachment of VertiTrack 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.

### VertiTrack VTX Allowable (Unfactored) Loads<sup>1</sup>

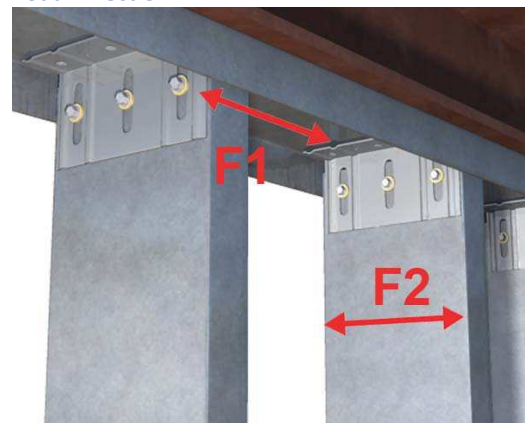
VertiTrack® VTX, Recommended Allowable Load (lbs): F1 & F2 (VertiClip® SL Loads)												
Stud		F1 Load Direction				F2 Load Direction						
Thickness Mils (ga)	Yield Strength (ksi)	VTX362	VTX400	VTX600		VTX800	VTX362	VTX400	VTX600		VTX800	
		w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws
33 (20)	33	190	190	190	285	190	377	377	377	565	377	565
33 (20)	50	248	199	275	367	275	544	544	544	817	544	817
43 (18)	33	248	199	248	367	248	561	561	561	841	561	841
43 (18)	50	248	199	359	367	359	790	810	810	1,215	810	1,215
54 (16)	33	248	199	312	367	312	789	789	789	1,183	789	1,183
54 (16)	50	248	199	367	367	362	790	1,136	1,139	1,680	1,139	1,709
68 (14)	50	248	199	367	367	362	790	1,136	1,610	1,680	1,610	1,870
97 (12)	50	248	199	367	367	362	790	1,136	1,680	1,680	1,698	1,870
<b>Max Allowable Clip Load</b>		<b>248</b>	<b>199</b>	<b>367</b>		<b>362</b>	<b>790</b>	<b>1,136</b>	<b>1,680</b>		<b>1,870</b>	

### Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- VertiTrack VTX is assembled with VertiClip SL pre-attached at 16" o.c. and 24" o.c.
- Loads are the same as VertiClip® SL.
- Fasten within 3/4" from the angle heel (centerline of the 1/2" leg) to minimize eccentric load transfer.
- VertiTrack VTX series is designed to support horizontal loads and should not be used in axial-load-bearing wall construction.
- Total vertical deflection of up to 1 1/2" (3/4" up and 3/4" down). Deflection requirements greater than 3/4" (up and down) are available. Custom spacing is also available.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing for attachment to the stud web.
- Strengthening ribs and guide holes are present in 3 5/8" and 6" sizes.

<sup>1</sup> For LRF Design Strengths refer to ICC-ESR-2049.

### Load Direction



**Nomenclature**

VertiTrack VTX is manufactured in 12 ft. lengths. VertiTrack is designated by type (VTX), followed by stud depth in inches multiplied by 100 and stud spacing.

**Example:** 6" deep stud, 16" on center

**Designate:** VertiTrack® VTX600-16

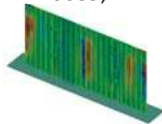


UL®-Classified Head of Wall Assemblies

HW-D-0003, HW-D-0024, HW-D-0025, HW-D-0036, HW-D-0042, HW-D-0043, HW-D-0044, HW-D-0045, HW-D-0046, HW-D-0047, HW-D-0048, HW-D-0049, HW-D-0054, HW-D-0062, HW-D-0063, HW-D-0066, HW-D-0067, HW-D-0068, HW-D-0069, HW-D-0071, HW-D-0072, HW-D-0073, HW-D-0076, HW-D-0077, HW-D-0082, HW-D-0083, HW-D-0084, HW-D-0085, HW-D-0087, HW-D-0089, HW-D-0091, HW-D-0102, HW-D-0106, HW-D-0152, HW-D-0154, HW-D-0160, HW-D-0162, HW-D-0167, HW-D-0184, HW-D-0185, HW-D-0186, HW-D-0190, HW-D-0193, HW-D-0209, HW-D-0218, HW-D-0246, HW-D-0256, HW-D-0259, HW-D-0263, HW-D-0271, HW-D-0272, HW-D-0275, HW-D-0277, HW-D-0278, HW-D-0280, HW-D-0293, HW-D-0299, HW-D-0310, HW-D-0313, HW-D-0321, HW-D-0322, HW-D-0324, HW-D-0341, HW-D-0342, HW-D-0353, HW-D-0356, HW-D-0357, HW-D-0358, HW-D-0363, HW-D-0365, HW-D-0368, HW-D-0370, HW-D-0371, HW-D-0401, HW-D-0404, HW-D-0420, HW-D-0421, HW-D-0453, HW-D-0455, HW-D-0460, HW-D-0461, HW-D-0462, HW-D-0463, HW-D-0466, HW-D-0468, HW-D-0470, HW-D-0475, HW-D-0477, HW-D-0483, HW-D-0491, HW-D-0526, HW-D-0527, HW-D-0532, HW-D-0545, HW-D-0639, HW-D-0642, HW-D-0644, HW-D-0645, HW-D-0646, HW-D-0687, HW-D-0689, HW-D-0695, HW-D-0696



VertiClip SL362, SL600 & SL800  
ICC-ESR-2049  
[www.icc-es.org](http://www.icc-es.org)



VertiClip SL Series  
Blast and Seismic Design data  
[www.steelnetwork.com](http://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>

# VertiClip® SLD

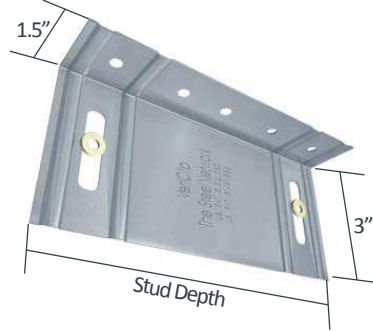
Interior Head of Wall



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) 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 SLD Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SLD, Recommended Allowable Load (lbs): F2						
Stud		SLD150	SLD250	SLD362/400	SLD600	SLD800
Thickness Mils (ga)	Yield Strength (ksi)	w/1 #8 screw	w/2 #8 screws	w/2 #8 screws	w/2 #8 screws	w/2 #8 screws
18 (25)	33	51	132	132	132	132
27 (22)	33	51	159	243	243	243
33 (20)	33	51	159	328	328	328
33 (20)	50	51	159	359	405	474
43 (18)	33	51	159	359	405	489
43 (18)	50	51	159	359	405	664
54 (16)	33	51	159	359	405	664
54 (16)	50	51	159	359	405	664
<b>Maximum Allowable Clip Load</b>		<b>51</b>	<b>159</b>	<b>359</b>	<b>405</b>	<b>682</b>

### Load Direction



### Notes:

- Fasten within 3/4" from the angle heel (centerline of the 1 1/2" leg) to minimize eccentric load transfer.
- Guide holes for attachment to structure are 0.141" for SLD362/400 and SLD600, and are not standard for other clip sizes.
- Total vertical deflection of up to 1 1/2" (3/4" up and 3/4" down). Deflection requirements greater than 3/4" (up and down) are available.
- VertiClip SLD 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.
- #8 screws are provided with each VertiClip SLD step bushing.
- Strengthening ribs are present in 3 5/8" and 6" sizes.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Nomenclature

VertiClip SLD is designated by type (SLD), followed by stud depth in inches multiplied by 100.

**Example:** 6" stud  
**Designate:** VertiClip® SLD600

### Shaft Wall

VertiClip SLD may be used in shaft wall assemblies to provide a positive attachment at the top of wall. Sizes include VertiClip SLD150, SLD250, and SLD362 for 2.5", 4", and 6" shaft wall stud depths.



UL2079 & UL®-Classified  
WR Grace shaft wall  
assembly HW-D-0401.



**When to Use VertiClip SLD and VertiClip SL**

When to Use VertiClip® SLD and VertiClip® SL																			
Wind Pressure		20 psf				25 psf				30 psf				40 psf					
Deflection Limit		L/360		L/600		L/360		L/600		L/360		L/600		L/360		L/600			
Stud Spacing		16" o.c.	24" o.c.	16" o.c.	24" o.c.	16" o.c.	24" o.c.	16" o.c.	24" o.c.	16" o.c.	24" o.c.	16" o.c.	24" o.c.	12" o.c.	16" o.c.	12" o.c.	16" o.c.		
362/400 Stud Depth	Wall Height (ft)	9'	SLD	SLD	SLD	SL	SLD	SLD	SLD	SL	SLD	SLD	SL	SL*	SLD	SLD	SL	SL	
		10'	SLD	SLD	SL	SL	SLD	SL	SL	SL*	SLD	SL	SL	SL*	SLD	SL	SL	SL*	
		12'	SL	SL*	SL*	SL*	SL	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*
		15'	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*
600 Stud Depth	Wall Height (ft)	9'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	
		10'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	
		12'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SL	SLD	SLD	SLD	SL
		15'	SLD	SLD	SL	SL	SLD	SL	SL	SL	SLD	SL	SL	SL*	SLD	SL	SL	SL*	
		18'	SL	SL	SL	SL*	SL	SL	SL*	SL*	SL	SL*	SL*	SL*	SL	SL*	SL*	SL*	SL*
21'	SL	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*		
800 Stud Depth	Wall Height (ft)	9'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	
		10'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	
		12'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	
		15'	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SL	SLD	SL	SLD	SLD	SLD	SL	
		18'	SLD	SLD	SLD	SL	SLD	SL	SL	SL	SLD	SL	SL	SL	SLD	SL	SL	SL	
21'	SLD	SL	SL	SL*	SL	SL	SL	SL*	SL	SL	SL*	SL*	SL	SL	SL	SL*	SL*		
24'	SL	SL	SL*	SL*	SL	SL*	SL*	SL*	SL*	SL	SL*	SL*	SL*	SL	SL*	SL*	SL*		

**Table Notes:**

- SLD considered for use on 43 mil or thinner sections
- A load factor of 0.7 is used for deflection determination
- SL\* means a single standard stud will not work. A wider flange wall stud (2" or 2.5" flange) is needed
- All connections can be made with use of 2 screws



UL2079 & UL®-Classified  
WR Grace shaft wall  
assembly HW-D-0401.



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



VertiClip SLD600  
ICC-ESR-2049  
www.icc-es.org



Meets criteria for New  
York MEA 326-06-M

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

# VertiClip® SL

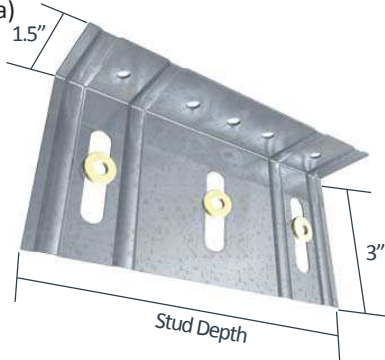
Exterior Head of Wall



### 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 SL Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SL, Recommended Allowable Load (lbs): F1										
Stud		SL362	SL400	SL600		SL800	SL1000		SL1200	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws
33 (20)	33	190	190	190	285	190	190	285	190	285
33 (20)	50	248	199	275	367	275	275	413	275	381
43 (18)	33	248	199	248	367	248	248	372	248	372
43 (18)	50	248	199	359	367	359	359	414	359	381
54 (16)	33	248	199	312	367	312	312	414	312	381
54 (16)	50	248	199	367	367	362	414	414	381	381
68 (14)	50	248	199	367	367	362	414	414	381	381
97 (12)	50	248	199	367	367	362	414	414	381	381
<b>Maximum Allowable Clip Load</b>		<b>248</b>	<b>199</b>	<b>367</b>		<b>362</b>	<b>414</b>		<b>381</b>	

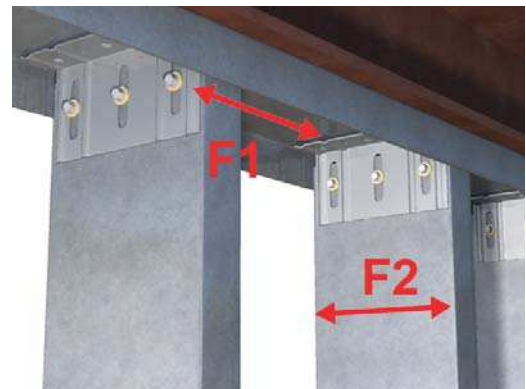
VertiClip® SL, Recommended Allowable Load (lbs): F2											
Stud		SL362	SL400	SL600		SL800		SL1000		SL1200	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws
33 (20)	33	377	377	377	565	377	565	377	565	377	565
33 (20)	50	544	544	544	817	544	817	544	817	544	817
43 (18)	33	561	561	561	841	561	841	561	841	561	841
43 (18)	50	790	810	810	1,215	810	1,215	810	1,215	810	1,215
54 (16)	33	789	789	789	1,183	789	1,183	789	1,183	789	1,183
54 (16)	50	790	1,136	1,139	1,680	1,139	1,709	1,139	1,577	1,139	1,709
68 (14)	50	790	1,136	1,610	1,680	1,610	1,870	1,577	1,577	1,610	1,791
97 (12)	50	790	1,136	1,680	1,680	1,698	1,870	1,577	1,577	1,698	1,791
<b>Maximum Allowable Clip Load</b>		<b>790</b>	<b>1,136</b>	<b>1,680</b>		<b>1,870</b>	<b>1,870</b>	<b>1,577</b>		<b>1,791</b>	

### Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within 3/4" from the angle heel (centerline of the 1 1/2" leg) to minimize eccentric load transfer.
- Guide holes for attachment to structure are 0.141" for SL362 & SL600 Guideholes are not standard in other clip sizes.
- VertiClip SL series is designed to support horizontal loads and should not be used in axial-load-bearing wall construction.
- Total vertical deflection of up to 1 1/2" (3/4" up and 3/4" down). Deflection requirements greater than 3/4" (up and down) are available.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing.
- Strengthening ribs and guide holes are present in 3 5/8" and 6" sizes.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Load Direction



### Nomenclature

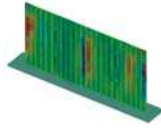
VertiClip SL is designated by type (SL), followed by stud depth in inches multiplied by 100.

**Example:** 6" stud

**Designate:** VertiClip® SL600



VertiClip SL362, SL600 & SL800  
ICC-ESR-2049  
[www.icc-es.org](http://www.icc-es.org)



VertiClip SL Series  
Blast and Seismic Design data  
[www.steelnetwork.com](http://www.steelnetwork.com)

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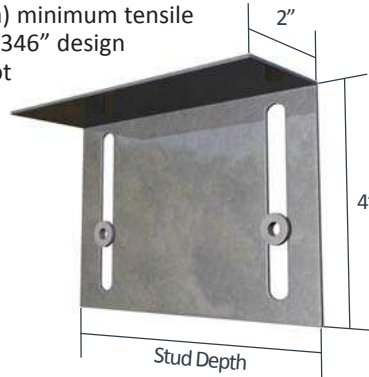
# VertiClip® SLD w/ 3" slots

Interior Head of Wall

## Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

The attachment of VertiClip to the primary structure may be made with a PAF or weld and is dependent upon the base material (steel or concrete) and the design configuration.



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

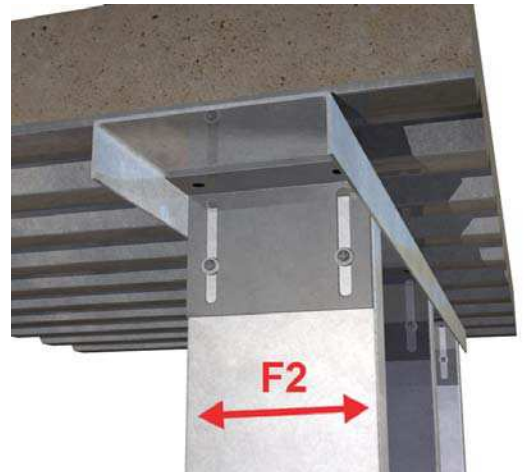
## VertiClip SLD w/ 3" Deflection Allowable (Unfactored) Loads'

VertiClip® SLD w/ 3" Deflection, Recommended Allowable Load (lbs): F2				
Stud		SLD362, s3lg,b2d	SLD600, s3lg,b2d	SLD800, s3lg,b2d
Thickness Mils (ga)	Yield Strength (ksi)	w/ 2 #8 Screws	w/ 2 #8 Screws	w/ 3 #8 Screws
18 (25)	33	132	132	132
27 (22)	33	185	242	243
30 (20 - Drywall)	33	185	242	251
33 (20 - Structural)	33	185	242	251
33 (20)	50	185	242	251
43 (18)	33	185	242	251
43 (18)	50	185	242	251
54 (16)	33	185	242	251
54 (16)	50	185	242	251
Maximum Allowable Clip Load		185	242	251

## Notes:

- Meets criteria for IBC 2009, 2012. Factor of Safety calculated according to ICC-ES AC261 and section F1 of AISI S100-07
- Fasten within ¼" from the angle heel to minimize eccentric load transfer.
- VertiClip SLD series is designed to support horizontal loads and should not be used in axial-load-bearing wall construction.
- Total vertical deflection of up to 3" (1 ½" up and 1 ½" down).
- The standard bushing placement is 2" from the top of the slot and allows the structure to settle ½" prior to typical service.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #8 screws are provided with each pre-installed step bushing.
- Tests performed with bushings centered in the 3" slots.

## Load Direction



## Nomenclature

VertiClip SLD with 3" deflection is designated by type (SLD), followed by stud depth in inches multiplied by 100, slot length (s "length in inches" lg), and bushing placement (b "distance from top slot in inches" d).

**Example:** 6" deep stud, 3" slot, bushings 2" down from top of slot

**Designate:** VertiClip® SLD600,s3lg,b2d



# VertiClip® SL w/ 3" slots

Exterior Head of Wall

The Steel Network, Inc.

www.steelnetwork.com

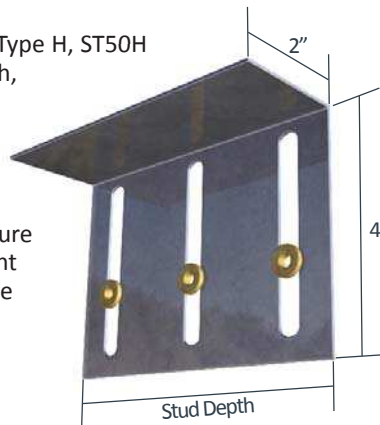
1-888-474-4876



## 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 a PAF 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 SL w/ 3" Deflection Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SL w/ 3" Deflection, Recommended Allowable Load (lbs): F2							
Stud		SL362, s3lg,b2d		SL600, s3lg,b2d		SL800, s3lg,b2d	
Thickness Mils (ga)	Yield Strength (ksi)	w/ 2 #12 Screws	w/ 2 #12 Screws	w/ 3 #12 Screws	w/ 2 #12 Screws	w/ 3 #12 Screws	
18 (25)	33	377	377	565	377	565	
27 (22)	33	544	544	817	544	817	
30 (20 - Drywall)	33	561	561	841	561	841	
33 (20 - Structural)	33	617	810	1,215	810	1,215	
33 (20)	50	617	789	1,183	789	1,183	
43 (18)	33	617	1,139	1,571	1,139	1,709	
43 (18)	50	617	1,571	1,571	1,610	1,915	
54 (16)	33	617	1,571	1,571	1,698	1,915	
54 (16)	50	617	1,571	1,571	1,698	1,915	
<b>Maximum Allowable Clip Load</b>		<b>617</b>	<b>1,571</b>		<b>1,915</b>		

## Notes:

- Meets criteria for IBC 2009, 2012. Factor of Safety calculated according to ICC-ES AC208 and section F1 of AISI S100-07
- Fasten within 3/8" from the angle heel to minimize eccentric load transfer.
- VertiClip SL series is designed to support horizontal loads and should not be used in axial-load-bearing wall construction.
- Total vertical deflection of up to 3" (1 1/2" up and 1 1/2" down).
- The standard bushing placement is 2" from the top of the slot and allows the structure to settle 1/2" prior to typical service.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each pre-installed step bushing.
- Tests performed with bushings centered in the 3" slots.

## Load Direction



## Nomenclature

VertiClip SL with 3" deflection is designated by type (SL), followed by stud depth in inches multiplied by 100, slot length (s "length in inches" lg), and bushing placement (b "distance from top slot in inches" d).

**Example:** 6" deep stud, 3" slot, bushings 2" down from top of slot

**Designate:** VertiClip® SL600,s3lg,b2d

# VertiClip® SLS

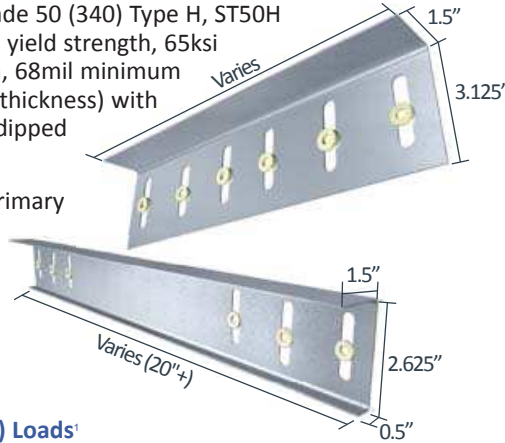
Bypass Structure



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340 MPa) minimum yield strength, 65ksi (450 MPa) 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 SLS Allowable (Unfactored) Loads<sup>1</sup>

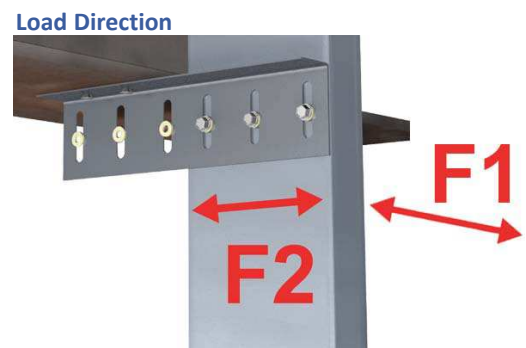
VertiClip® SLS, Recommended Allowable Load (lbs): F1							
Stud		SLS362/400-9, -12	SLS600-12	SLS600-15, -18, -20	SLS600-24	SLS800-12	SLS800-15, 18, -20
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 or 3 #12 screws	w/2 or 3 #12 screws	w/2 or 3 #12 screws	w/2 or 3 #12 screws	w/2 or 3 #12 screws
33 (20)	33	95	95	95	95	95	95
33 (20)	50	124	138	130	100	138	125
43 (18)	33	124	124	124	100	124	124
43 (18)	50	124	164	130	100	141	125
54 (16)	33	124	156	130	100	141	125
54 (16)	50	124	164	130	100	141	125
68 (14)	50	124	164	130	100	141	125
97 (12)	50	124	164	130	100	141	125
<b>Max Allowable Clip Load</b>		<b>124</b>	<b>164</b>	<b>130</b>	<b>100</b>	<b>141</b>	<b>125</b>

VertiClip® SLS, Recommended Allowable Load (lbs): F2										
Stud		SLS362/400-9, -12	SLS600-12		SLS600-15, -18, -20		SLS600-24		SLS800-12, -15, 18, -20	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws
33 (20)	33	377	377	565	377	565	377	565	377	565
33 (20)	50	544	544	817	544	817	544	817	544	817
43 (18)	33	561	561	841	561	841	561	841	561	841
43 (18)	50	810	810	1,215	810	1,215	810	1,215	810	1,215
54 (16)	33	789	789	1,183	789	1,183	789	1,183	789	1,183
54 (16)	50	1,139	1,139	1,709	1,139	1,709	1,139	1,709	1,139	1,709
68 (14)	50	1,245	1,610	2,070	1,610	2,122	1,610	1,896	1,610	1,816
97 (12)	50	1,245	1,698	2,070	1,698	2,122	1,698	1,896	1,698	1,816
<b>Max Allowable Clip Load</b>		<b>1,245</b>	<b>2,070</b>		<b>2,122</b>		<b>1,896</b>		<b>1,816</b>	

### Notes:

- VertiClip SLS 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.
- Return lip added for clips longer than 20".
- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within 3/4" from the angle heel (centerline of the 1 1/2" leg) to minimize eccentric load transfer.
- Minimum 3" of SLS required for attachment to structure to steel and 5.5" min. with concrete.
- Total vertical deflection of up to 1 1/2" (3/4" up and 3/4" down). Deflection requirements greater than 3/4" up and down are available.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.



**Nomenclature**

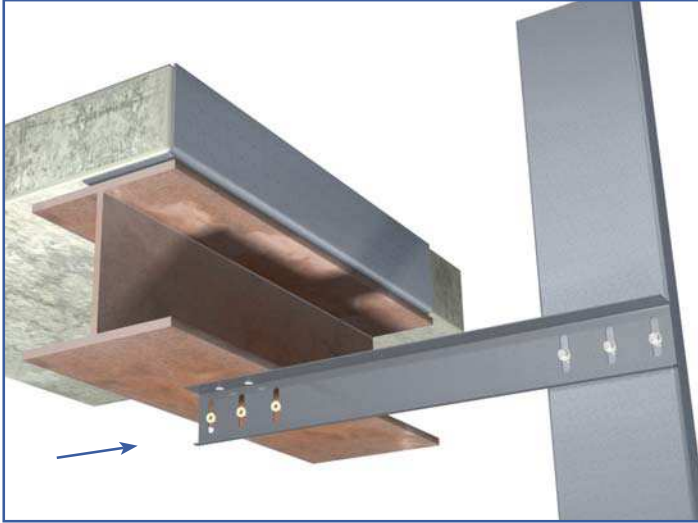
VertiClip SLS is designated by stud depth and clip length required. Clip length includes a minimum of 3" for steel (5.5" for concrete) of clip material for attachment to structure added to stud depth, plus the distance of the stud from the structure.

**Example:** 6" stud, 6" tolerance, 3" to structure

**Designate:** VertiClip® SLS600-15

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

**Example Details**



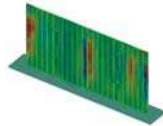
Return lip added for clips longer than 20" (up to 36")



VertiClip SLS at jamb (studs facing each other).



VertiClip SLS600-12  
ICC-ESR-2049  
www.icc-es.org



VertiClip SLS 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>

# VertiClip® SLB

Bypass Slab

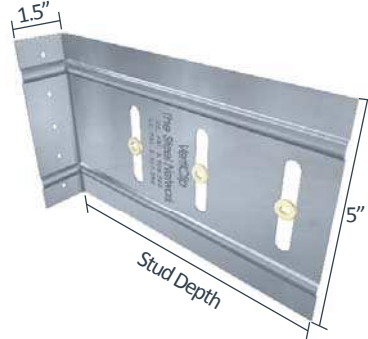
The Steel Network, Inc.  
www.steelnetwork.com  
1-888-474-4876



### 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) Loads<sup>1</sup>

VertiClip® SLB, Recommended Allowable Load (lbs): F1 & F2												
Stud		F1 Load Direction			F2 Load Direction							
		SLB362/400	SLB600	SLB800	SLB362/400		SLB600		SLB800		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	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	95	95	95	376	564	377	565	376	564	376	564
33 (20)	50	138	138	118	544	817	544	817	544	817	544	817
43 (18)	33	124	124	118	560	840	561	841	560	840	560	840
43 (18)	50	179	179	118	810	1,215	810	1,215	810	1,215	810	933
54 (16)	33	156	156	118	788	1,182	789	1,183	788	1,182	788	933
54 (16)	50	225	225	118	1,140	1,600	1,139	1,567	1,140	1,600	933	933
68 (14)	50	227	227	118	1,600	1,600	1,567	1,567	1,600	1,600	933	933
97 (12)	50	227	227	118	1,600	1,600	1,567	1,567	1,600	1,600	933	933
<b>Max Allowable Clip Load</b>		<b>227</b>	<b>227</b>	<b>118</b>	<b>1,600</b>		<b>1,567</b>		<b>1,600</b>		<b>933</b>	

### Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
  - Fasten within 3/4" from the angle heel (centerline of the 1 1/2" 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 1 1/2" 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.
- <sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### 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

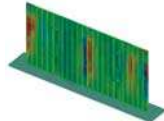


Standard offset of stud from the heel of the clip should not exceed 1.0". Step Bushings and Screws may be installed in the middle and outer slots of SLB600 or 800 to accommodate greater building tolerances. Note that this may affect the F1 and F2 allowable load capacity and may require a row of bridging 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-2049  
www.icc-es.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>

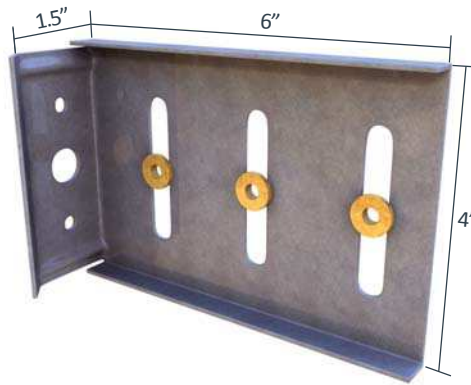
# VertiClip® SLB-HD

Bypass Slab for Seismic Conditions

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 (340 MPa) minimum yield strength, 65ksi minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/653M G90 (Z275) hot dipped galvanized coating.



US Patent # 5,906,080

### VertiClip SLB-HD Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SLB-HD, Recommended Allowable Load (lbs): F1 & F2

Stud		F1 Allowable (ASD) Loads	F2 Allowable (ASD) Loads with Two ¼" Concrete Fasteners		F2 Allowable (ASD) Loads with One ½" Concrete Anchor	
Thickness Mils (ga)	Yield Strength (ksi)	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	376	564	376	564
43 (18)	33	124	560	840	560	840
54 (16)	33	156	788	1,182	788	1,003
54 (16)	50	225	1,140	1,187	1,003	1,003
68 (14)	50	234	1,187	1,187	1,003	1,003
97 (12)	50	234	1,187	1,187	1,003	1,003
<b>Maximum Allowable Clip Load</b>		<b>234</b>	<b>1,187</b>		<b>1,003</b>	

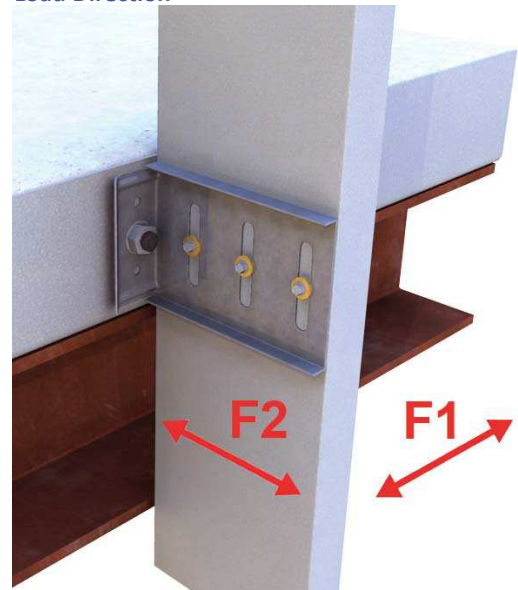
### Notes:

- Fasten within ¾" from the angle heel (centerline of the 1 ½" leg) to minimize eccentric load transfer.
- Guide holes for structure connection are 0.375" diameter for (2) ¼" concrete screws, and 0.625" diameter for (1) ½" concrete anchor.
- VertiClip SLB-HD allows up to 2" of vertical deflection (1" up and 1" down).
- VertiClip SLB600-HD 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.
- (3) bushings are provided with each clip. Based on the application and evaluation by the design professional, two may be sufficient. If only the outer two slots are used to accommodate greater building tolerances, allowable loads may be reduced.
- Loads listed reflect force in a single direction. When multiple loads act on the connection, it is the responsibility of the designer to check the interaction of the forces.
- The recommended allowable load is for the clip and attachment to the stud only. The design professional must design attachment to the primary structure.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

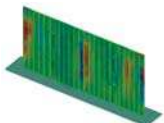
\* First and third bushings installed

### Load Direction



### Nomenclature

VertiClip SLB-HD is designed to be used with 6" studs and is designated VertiClip® SLB600-HD



VertiClip SLB-HD 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>

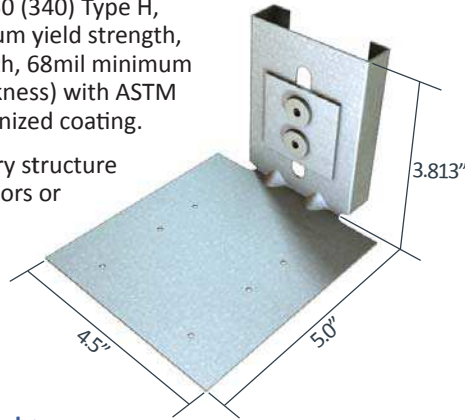
# VertiClip® SLF

Bypass Top of Slab

### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340 MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/653M 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 Patent # 8,511,032

### VertiClip SLF Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SLF, Recommended Allowable Load (lbs): F2		
Stud		w/2 #12 screws
Thickness Mils (ga)	Yield Strength (ksi)	
43 (18)	33	281
43 (18)	50	326
54 (16)	50	465
68 (14) and up	50	632
Maximum Allowable Clip Load		632

### Notes:

- Stud web crippling should be checked. Use 3½" bearing length and "Interior Reaction – one Flange", Condition 2, for the web crippling calculations except at end of stud use "End Reaction – one Flange", Condition 1.
  - Align rows of wall bridging so that one row of bridging falls within 12" from VertiClip SLF **OR** use one flat strap bracing on outer flange of studs to resist torsional effects.
  - Allowable loads have not been increased for wind, seismic, or other factors.
  - #12 screws are provided with each Step Bushing.
  - VertiClip SLF allows up to 1½" of vertical deflection (¾" up and ¾" down)
- <sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Load Direction



### Nomenclature

VertiClip SLF is available in one size for all stud depths with 1 5/8" flanges and is designated *VertiClip® SLF162*

### Example Details



VertiClip SLF used with TSN's BridgeBar® & BridgeClip® installed within 12" from the clip.



VertiClip SLF used with one flat strap bracing on the outer flange of studs to resist torsional effects.

# VertiClip® SLT

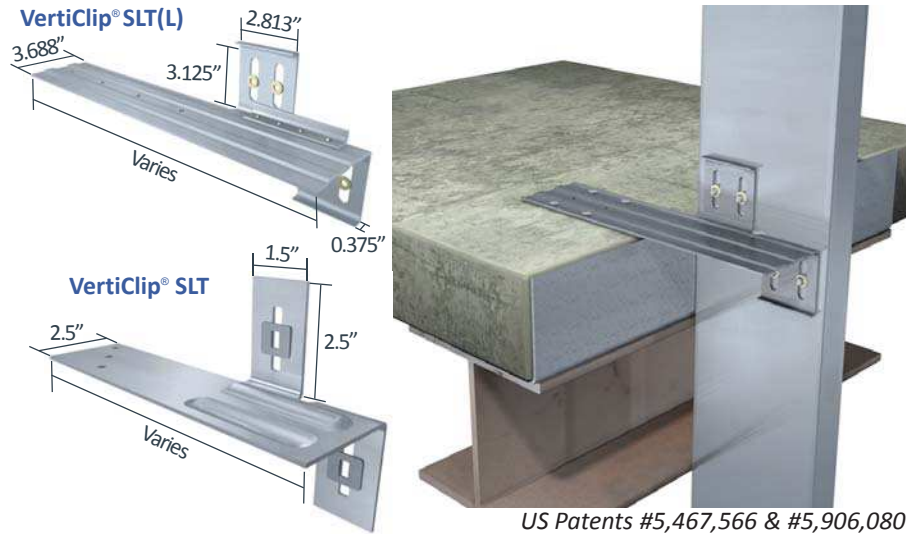
Structure/Slab Bypass



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of VertiClip to the primary structure may be made with PAF, 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 SLT Allowable (Unfactored) Loads<sup>1</sup>

VertiClip® SLT, Recommended Allowable Load (lbs): F1 & F2											
Stud		F1 Load Direction				F2 Load Direction					
		SLT9.5	SLT(L)12, SLT(L)15 & SLT(L)18			SLT-9.5	SLT(L)12		SLT(L)15		SLT(L)18
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/4 #12 screws	w/2 #12 screws	w/2 #12 screws	w/4 #12 screws	w/2 #12 screws	w/4 #12 screws	w/2 #12 screws	w/4 #12 screws
33 (20)	33	190	190	380	376	376	754	376	744	376	700
33 (20)	50	275	275	452	510	544	903	544	744	544	700
43 (18)	33	248	248	452	510	560	903	560	744	560	700
43 (18)	50	341	359	452	510	810	903	744	744	700	700
54 (16)	33	312	312	452	510	789	903	744	744	700	700
54 (16)	50	341	450	452	510	903	903	744	744	700	700
68 (14)	50	341	452	452	510	903	903	744	744	700	700
97 (12)	50	341	452	452	510	903	903	744	744	700	700
<b>Max Allowable Clip Load</b>		<b>341</b>	<b>452</b>		<b>510</b>	<b>903</b>		<b>744</b>		<b>700</b>	

### Notes:

- VertiClip SLT series is designed to support horizontal loads and must 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.
- VertiClip SLT allows up to 2" of vertical deflection (1" up and 1" down).
- VertiClip SLT(L) allows up to 1.875" of vertical deflection (0.938" up and 0.938" down)

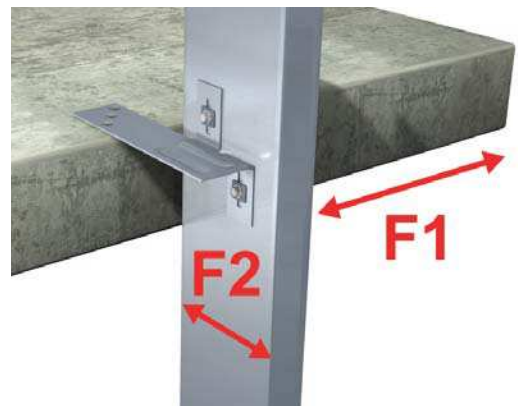
<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Nomenclature

VertiClip SLT is available in a length of 9 ½". VertiClip SLT(L) is available in lengths of 12", 15", and 18". Determine length by adding stud + offset + 3" for steel (5.5" for concrete) and selecting the next largest size.

**Example:** 6" stud, 4" offset + 3"  
**Designate:** VertiClip® SLT(L)15

### Load Direction





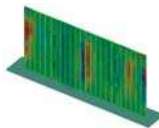
### Example Details



VertiClip SLT attached to the underside of wide flange beam.



VertiClip SLT 9.5 & SLT(L)-18  
ICC-ESR-2049  
[www.icc-es.org](http://www.icc-es.org)



VertiClip SLT Series  
Blast and Seismic Design data  
[www.steelnetwork.com](http://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>*

# MasterClip™ VLB

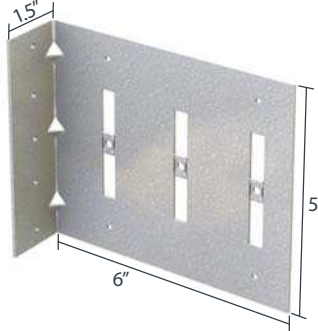
Bypass Slab



## 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 MasterClip™ to the primary structure may be made with a PAF, screw/bolt anchors or weld and is dependent upon the base material (steel or concrete) and the design configuration.



US Patents #8,181,419, #8,683,770 & Pending

## MasterClip VLB Allowable Loads

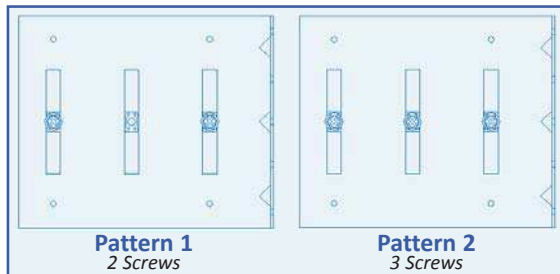
MasterClip™ VLB, Recommended Allowable Load (lbs), For VERTICAL DEFLECTION: F1 & F2				
Stud Thickness Mils (ga)	Yield Strength (ksi)	F1 Load Direction	F2 Load Direction	
		w/2-3 #12 Screws Patterns 1 & 2	w/2 #12 Screws Pattern 1	w/3 #12 Screws Pattern 2
33 (20)	33	95	377	565
33 (20)	50	138	544	817
43 (18)	33	124	561	841
43 (18)	50	179	810	1,215
54 (16)	33	156	789	1,183
54 (16)	50	225	1,139	1,567
68 (14)	50	227	1,567	1,567
97 (12)	50	227	1,567	1,567
Maximum Allowable Clip Load		227	1,567	



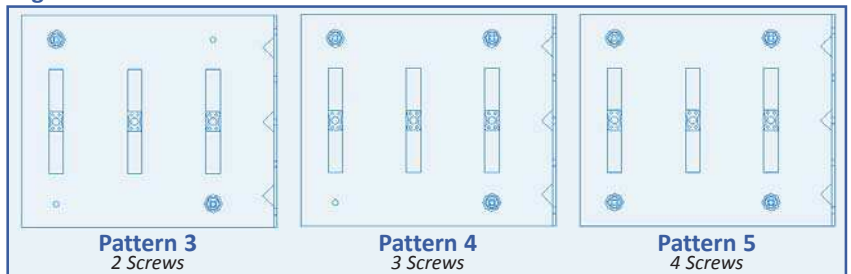
MasterClip™ VLB, Recommended Allowable Load (lbs), For RIGID CONNECTION: F1, F2 & F3								
Stud Thickness Mils (ga)	Yield Strength (ksi)	F1 Load Direction	F2 Load Direction			F3 Load Direction		
		w/3-4 #12 Screws Patterns 4 & 5	w/2 #12 Screws Pattern 3	w/3 #12 Screws Pattern 4	w/4 #12 Screws Pattern 5	w/2 #12 Screws Pattern 3	w/3 #12 Screws Pattern 4	w/4 #12 Screws Pattern 5
33 (20)	33	191	376	565	752	251	377	503
33 (20)	50	275	544	817	1,089	362	544	727
43 (18)	33	248	560	841	1,120	373	561	749
43 (18)	50	359	810	1,215	1,620	539	810	1,082
54 (16)	33	312	788	1,183	1,576	524	789	1,053
54 (16)	50	450	1,138	1,709	1,954	757	1,139	1,521
68 (14)	50	536	1,610	1,954	1,954	1,071	1,610	1,792
97 (12)	50	536	1,698	1,954	1,954	1,129	1,698	1,792
Maximum Allowable Clip Load		536	1,954			1,792		

**\*\*Important notes for MasterClip VLB Allowable Load tables continued on next page.**

### Vertical Deflection Screw Patterns



### Rigid Connection Screw Patterns



**Notes:**

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within  $\frac{3}{4}$ " from the angle heel (centerline of the  $1\frac{1}{2}$ " 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  $1\frac{1}{2}$ " leg measure 0.141" in diameter.
- Total vertical deflection of up to 2" (1" up and 1" down).
- Allowable loads have not been increased for wind, seismic, or other factors.
- MasterClip VLB resists horizontal and vertical loads when used as a rigid connector.
- 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 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.
- (3) #12 screws are provided with each connector to be used for either vertical deflection connector or rigid connector step bushing. Load requirements don't always justify use of all screws provided.
- 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.

**Nomenclature**

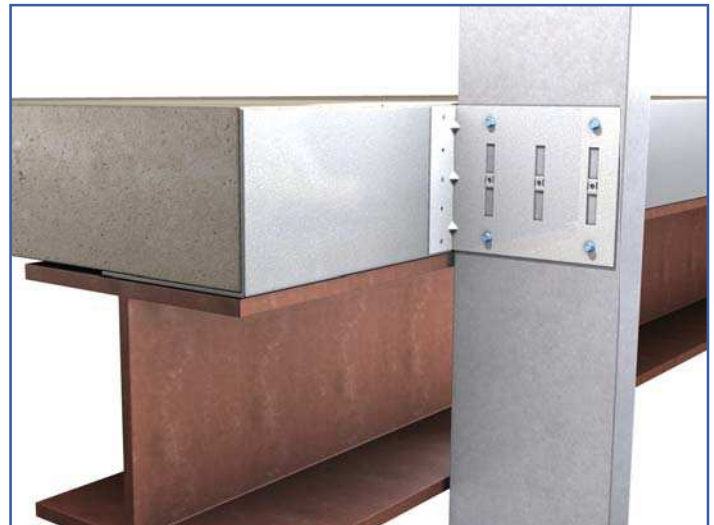
MasterClip VLB is currently available in one size for use with 6" stud depths and is designated *MasterClip™ VLB600*.

**Example:** 6" stud.

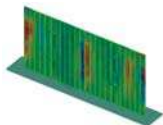
**Designate:** *MasterClip™ VLB600*

**Example Details**

MasterClip™ VLB used for Vertical Deflection



MasterClip™ VLB used as Rigid Connection



MasterClip VLB Series  
Blast and Seismic Design data  
[www.steelnetwork.com](http://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>

# DriftClip® DSLB

Bypass Slab

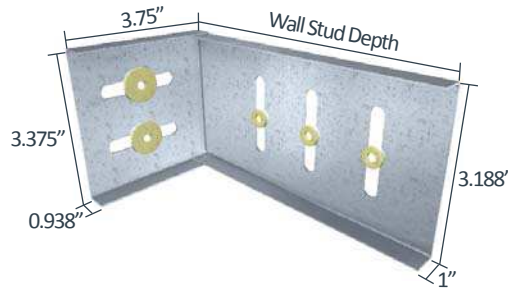
The Steel Network, Inc.  
www.steelnetwork.com  
1-888-474-4876



## Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of DriftClip DSLB to the primary structure may be made with PAFs, screws, or bolt anchors depending on the base material (steel or concrete) and the design configuration. The step bushings used for attachment to structure are designed for use with ¼" maximum diameter fasteners. Designing this connection is the responsibility of the Structural Engineer of Record, and a minimum of two fasteners must be used.



US Patents #6,612,087 & #7,104,024

## DriftClip DSLB Allowable (Unfactored) Loads<sup>1</sup>

DriftClip® DSLB362, 600 & 800 Recommended Allowable Load (lbs): F2					
Stud		Fastener Pattern 1		Fastener Pattern 2	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws*	w/2 #12 Screws	w/3 #12 Screws*
33 (20)	33	377	565	377	565
33 (20)	50	544	817	544	572
43 (18)	33	561	841	561	572
43 (18)	50	810	917	572	572
54 (16)	33	917	917	572	572
54 (16)	50	917	917	572	572
68 (14)	50	917	917	572	572
97 (12)	50	917	917	572	572
<b>Max Allowable Clip Load</b>		<b>917</b>		<b>572</b>	

## Allowable Screw Pullout

Section Thickness	Pullout 1/4" - 20 Screws* (lbs)
0.0566"	206
0.0713"	260
0.1017"	500
1/8"	765
3/16"	1,045
1/4"	1,215
5/16"	1,275

\* Limited by the allowable F2 loads shown in the table on the left.

## Notes:

- Design loads are for attachment of DriftClip DSLB to stud only.
- Attachment to structure engineered by others. As a design reference for the structure attachment, follow ICC-ESR-3332 for allowable loads for screw fasteners of ¼" - 20 size with various plate thickness.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing for attachment to stud. Load requirements don't always justify use of a third screw.
- DriftClip DSLB allows up to 2" of vertical deflection (1" up and 1" down), and 2" lateral drift (1" left and 1" right in plane). Deflection requirements greater than 2" lateral drift are available.
- One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

\* Three screws are not applicable to DriftClip DSLB362.

## Nomenclature

DriftClip DSLB is classified by multiplying stud depth by 100.

**Example:** 6" stud depth

**Designate:** DriftClip® DSLB600

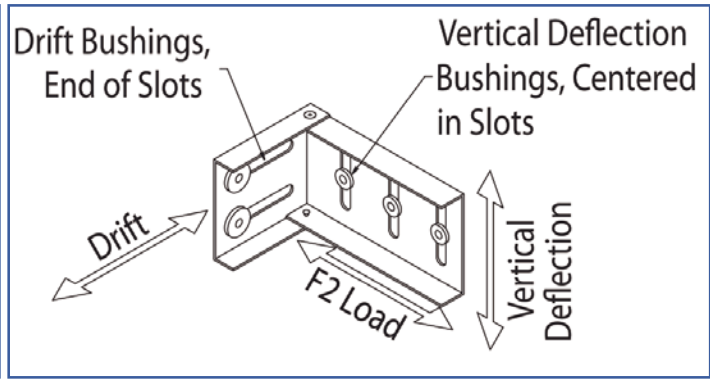
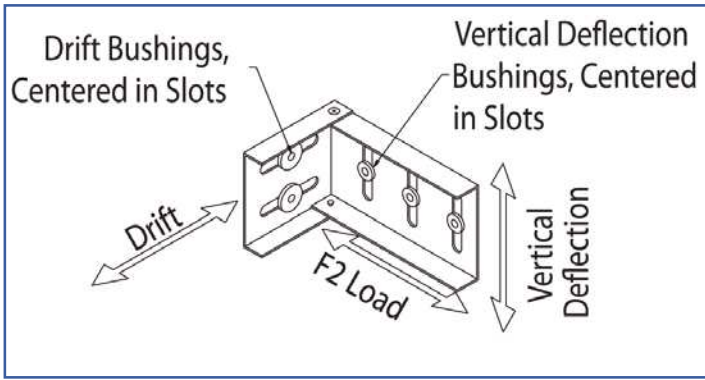
\* If more than 2" lateral drift is required, contact TSN engineering.

\*\* One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.

## Load Direction



**Fastener Patterns**

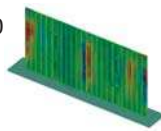


**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection or in-plane drift.

**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with or without full vertical live load deflection and full in-plane drift.



DriftClip DSLB362/400, DSLB600 & DSLB800  
ICC-ESR-2049  
www.icc-es.org



DriftClip DSLB 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>

# DriftClip® DSLS

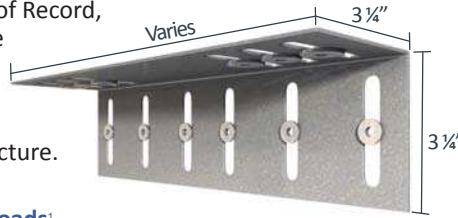
Bypass Structure



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of DriftClip DSLS to the primary structure may be made with PAFs, screws, or bolt anchors depending on the base material (steel or concrete) and the design configuration. The step bushings used for attachment to structure are designed for use with ¼" maximum diameter fasteners. Designing this connection is the responsibility of the Structural Engineer of Record, and a minimum of two fasteners must be used. A minimum of 3.5" of DSLS is required for attachment to steel structure and a minimum of 6" is required for attachment to concrete structure.



US Patents #6,612,087 & #7,104,024

### DriftClip DSLS Allowable (Unfactored) Loads'

DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 1									
Stud		DSLS362/400-9	DSLS362/400-12	DSLS600-10		DSLS600-12		DSLS600-15	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/2 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	377	377	565	377	565	377	565
33 (20)	50	544	544	544	817	544	817	544	817
43 (18)	33	561	561	561	841	561	841	561	841
43 (18)	50	810	810	810	1,204	810	1,215	810	1,215
54 (16)	33	789	789	789	1,183	789	1,183	789	1,183
54 (16)	50	961	1,139	1,139	1,204	1,139	1,709	1,139	1,709
68 (14)	50	961	1,237	1,204	1,204	1,610	1,862	1,610	1,903
97 (12)	50	961	1,237	1,204	1,204	1,698	1,862	1,698	1,903
<b>Max Allowable Clip Load</b>		<b>961</b>	<b>1,237</b>	<b>1,204</b>		<b>1,862</b>		<b>1,903</b>	

DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 1									
Stud		DSLS600-20		DSLS800-12		DSLS800-15		DSLS800-20	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	565	377	565	377	565	377	565
33 (20)	50	544	817	544	817	544	817	544	817
43 (18)	33	561	841	561	841	561	841	561	841
43 (18)	50	810	1,215	810	1,164	810	1,215	810	1,215
54 (16)	33	789	1,183	789	1,164	789	1,183	789	1,183
54 (16)	50	1,139	1,709	1,139	1,164	1,139	1,709	1,139	1,709
68 (14)	50	1,610	2,236	1,164	1,164	1,610	1,894	1,610	1,822
97 (12)	50	1,698	2,236	1,164	1,164	1,698	1,894	1,698	1,822
<b>Max Allowable Clip Load</b>		<b>2,236</b>		<b>1,164</b>		<b>1,894</b>		<b>1,822</b>	

DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 2									
Stud		DSLS362/400-9	DSLS362/400-12	DSLS600-10		DSLS600-12		DSLS600-15	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/2 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	377	377	565	377	565	377	565
33 (20)	50	544	544	544	817	544	817	544	817
43 (18)	33	561	561	561	841	561	841	561	841
43 (18)	50	810	810	810	1,018	810	1,215	810	1,215
54 (16)	33	789	789	789	1,018	789	1,183	789	1,183
54 (16)	50	943	1,078	1,018	1,018	1,139	1,709	1,139	1,709
68 (14)	50	943	1,078	1,018	1,018	1,610	1,742	1,610	1,903
97 (12)	50	943	1,078	1,018	1,018	1,698	1,742	1,698	1,903
<b>Max Allowable Clip Load</b>		<b>943</b>	<b>1,078</b>	<b>1,018</b>		<b>1,742</b>		<b>1,903</b>	

**\*\*DriftClip DSLS Allowable Load tables and important notes continued on next page.**

DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 2									
Stud		DSLS600-20		DSLS800-12		DSLS800-15		DSLS800-20	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	565	377	565	377	565	377	565
33 (20)	50	544	817	544	817	544	817	544	817
43 (18)	33	561	841	561	841	561	841	561	841
43 (18)	50	810	1,215	810	1,158	810	1,198	810	1,215
54 (16)	33	789	1,183	789	1,158	789	1,183	789	1,183
54 (16)	50	1,139	1,663	1,139	1,158	1,139	1,198	1,139	1,246
68 (14)	50	1,610	1,663	1,158	1,158	1,198	1,198	1,246	1,246
97 (12)	50	1,663	1,663	1,158	1,158	1,198	1,198	1,246	1,246
<b>Max Allowable Clip Load</b>		<b>1,663</b>		<b>1,158</b>		<b>1,198</b>		<b>1,246</b>	

**Notes:**

- Design loads are for attachment of DriftClip DSLS to stud only. Load tables reflect horizontal loads (F2)
- Attachment to structure engineered by others. As a design reference, follow ICC-ESR-3332 for allowable loads for screw fasteners of ¼" - 20 size with various plate thickness.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing for attachment to stud. Load requirements don't always justify use of a third screw.
- One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.
- Return lip added for clips longer than 20".
- DriftClip DSLS allows up to 2" of vertical deflection (1" up and 1" down), and 2" lateral drift (1" left and 1" right in plane). Deflection requirements greater than 2" lateral drift are available.

† For LRFD Design Strengths for DSLS600-12 and DSLS600-15 refer to ICC-ESR-2049.

**Load Direction**



**Nomenclature**

DriftClip DSLS is classified by multiplying stud depth by 100, followed by length.

**Example:** 6" stud depth, 15" length

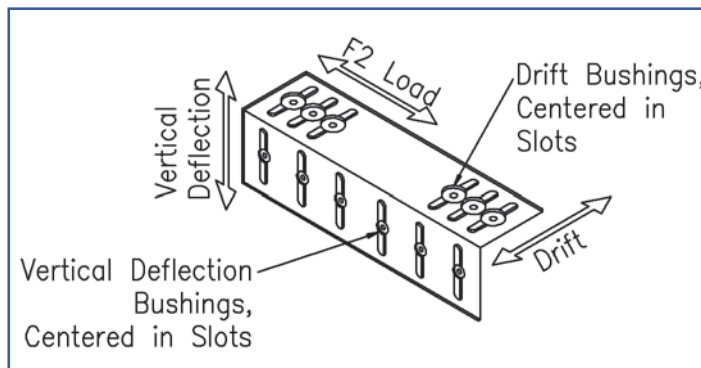
**Designate:** DriftClip® DSLS600-15

\* If more than 2" lateral drift is required, contact TSN engineering.

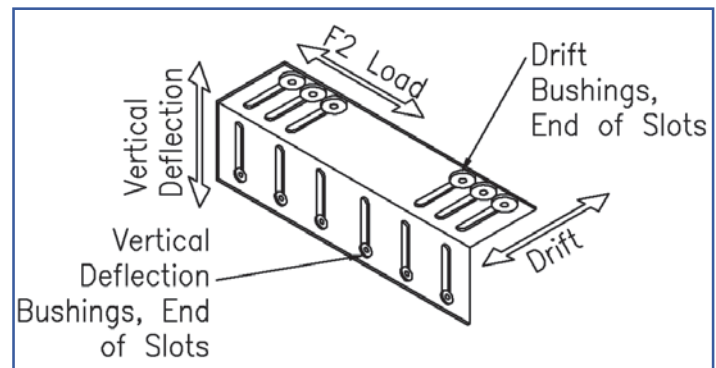
\*\* One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.

\*\*\* Three screws & step bushings are available for attachment to stud in 6" sizes and higher. Specify that 3 slots are needed when placing order.

**Fastener Patterns**

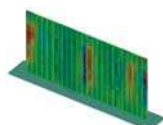


**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection or in-plane drift.



**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.

ICC  
ES  
DriftClip DSLS600-12 &  
DSLS600-15  
ICC-ESR-2049  
www.icc-es.org



DriftClip DSLS Series  
Blast and Seismic Design data  
www.steelnetwork.com

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# DriftClip® DSLD

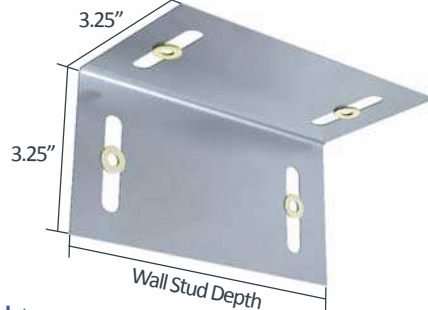
Interior Head of Wall



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

The attachment of DriftClip DSLD to the primary structure utilizes step bushings designed for #8 (0.164") screws. Designing this connection is the responsibility of the Structural Engineer of Record, and a minimum of two fasteners must be used.



US Patents #6,612,087 & #7,104,024

### DriftClip DSLD Allowable (Unfactored) Loads<sup>1</sup>

DriftClip® DSLD, Recommended Allowable Load (lbs): F2							
Stud		Fastener Pattern 1			Fastener Pattern 2		
Thickness Mils (ga)	Yield Strength (ksi)	DSLDD362 w/2 #8 Screws	DSLDD600 w/2 #8 Screws	DSLDD800 w/2 #8 Screws	DSLDD362 w/2 #8 Screws	DSLDD600 w/2 #8 Screws	DSLDD800 w/2 #8 Screws
18 (25)	33	70	132	132	27	107	132
27 (22)	33	70	178	199	27	107	183
33 (20)	33	70	178	199	27	107	183
33 (20)	50	70	178	199	27	107	183
43 (18)	33	70	178	199	27	107	183
43 (18)	50	70	178	199	27	107	183
54 (16)	33	70	178	199	27	107	183
54 (16)	50	70	178	199	27	107	183
<b>Maximum Allowable Clip Load</b>		<b>70</b>	<b>178</b>	<b>199</b>	<b>27</b>	<b>107</b>	<b>183</b>

### Notes:

- Design loads are for attachment of DriftClip DSLD to stud only. Load tables reflect horizontal loads (F2).
- Attachment to structure engineered by others.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Two (2) #8 screws are provided with each DriftClip DSLD for attachment to stud.
- DriftClip DSLD allows up to 2" of vertical deflection (1" up and 1" down), and 2" lateral drift (1" left and 1" right in plane). Deflection requirements greater than 2" lateral drift are available.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Nomenclature

DriftClip DSLD is classified by multiplying stud depth by 100.

**Example:** 6" stud depth

**Designate:** DriftClip® DSLD600

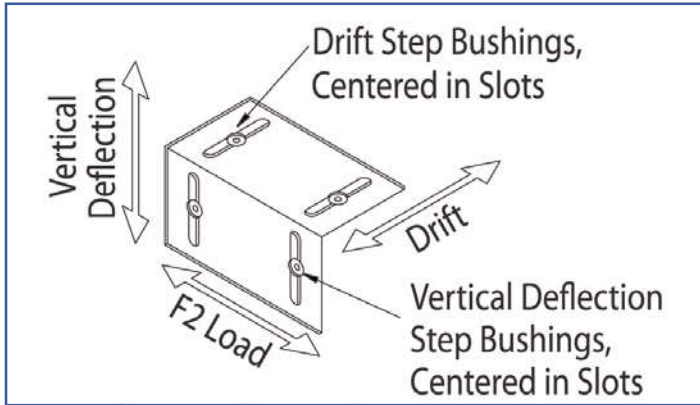
\* Three screws & step bushings are available in 6" sizes and higher. Specify that 3 slots are needed when placing order.

### Load Direction

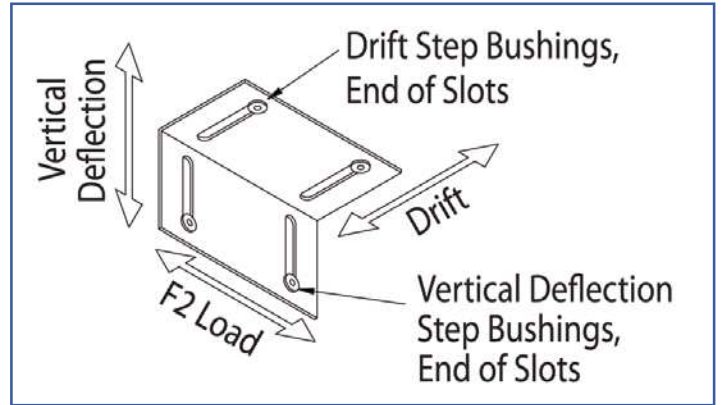




**Fastener Patterns**



**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection or in-plane drift.



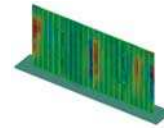
**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



UL2079 Head of Wall Assemblies



DriftClip DSLD362/400, DSLS600 & DSLD800  
ICC-ESR-2049  
www.icc-es.org



DriftClip DSLD 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>

# DriftClip® DSL

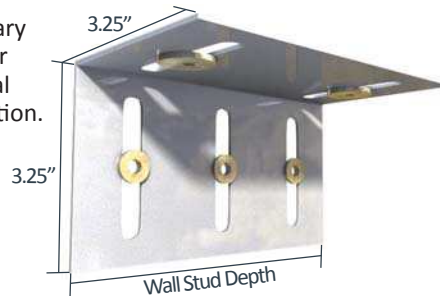
Exterior Head of Wall



### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of DriftClip DSL to the primary structure may be made with PAFs, screws, or bolt anchors depending on the base material (steel or concrete) and the design configuration. The step bushings used for attachment to structure are designed for use with ¼" maximum diameter fasteners. Designing this connection is the responsibility of the Structural Engineer of Record, and a minimum of two fasteners must be used.



US Patents #6,612,087 & #7,104,024

### DriftClip DSL Allowable (Unfactored) Loads<sup>1</sup>

DriftClip® DSL, Recommended Allowable Load (lbs): F2											
Stud		Fastener Pattern 1					Fastener Pattern 2				
Thickness Mils (ga)	Yield Strength (ksi)	DSL362 w/2 #12 Screws	DSL600 w/2 #12 Screws	DSL600 w/3 #12 Screws	DSL800 w/2 #12 Screws	DSL800 w/3 #12 Screws	DSL362 w/2 #12 Screws	DSL600 w/2 #12 Screws	DSL600 w/3 #12 Screws	DSL800 w/2 #12 Screws	DSL800 w/3 #12 Screws
33 (20)	33	357	377	565	377	565	129	377	418	377	565
33 (20)	50	357	544	776	544	817	129	418	418	544	817
43 (18)	33	357	561	776	561	841	129	418	418	560	841
43 (18)	50	357	776	776	810	1,041	129	418	418	810	1,041
54 (16)	33	357	776	776	789	1,041	129	418	418	789	1,041
54 (16)	50	357	776	776	1,041	1,041	129	418	418	1,041	1,041
68 (14)	50	357	776	776	1,041	1,041	129	418	418	1,041	1,041
97 (12)	50	357	776	776	1,041	1,041	129	418	418	1,041	1,041
<b>Max Allowable Clip Load</b>		<b>357</b>	<b>776</b>		<b>1,041</b>		<b>129</b>	<b>418</b>		<b>1,041</b>	

### Notes:

- Design loads are for attachment of DriftClip DSL to stud only. Load tables reflect horizontal loads (F2).
- Attachment to structure engineered by others.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Two (2) #12 screws are provided with each DriftClip DSL for attachment to stud.
- DriftClip DSL allows up to 2" of vertical deflection (1" up and 1" down), and 2" lateral drift (1" left and 1" right in plane). Deflection requirements greater than 2" lateral drift are available.
- One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.
- Attachment to structure engineered by others. As a design reference, follow ICC-ESR-3332 for allowable loads for screw fasteners of ¼" - 20 size with various plate thickness.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Nomenclature

DriftClip DSL is classified by multiplying stud depth by 100.

**Example:** 6" stud depth

**Designate:** DriftClip® DSL600

\* If more than 2" lateral drift is required, contact TSN engineering.

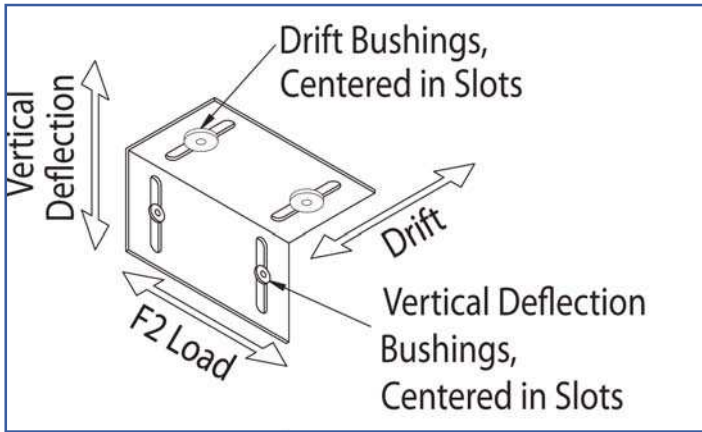
\*\* One row of bridging is recommended at a maximum distance of 12" from DriftClip to resist torsional effects.

\*\*\* Three screws & step bushings are available in 6" sizes and higher. Specify that 3 slots are needed when placing order.

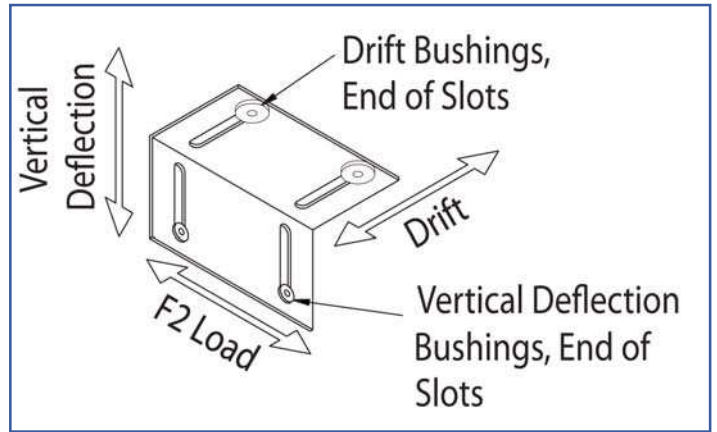
### Load Direction



**Fastener Patterns**



**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection or in-plane drift.



**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



DriftClip DSL362/400, DSL600 & DSL800  
 ICC-ESR-2049  
 www.icc-es.org



DriftClip DSL 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>

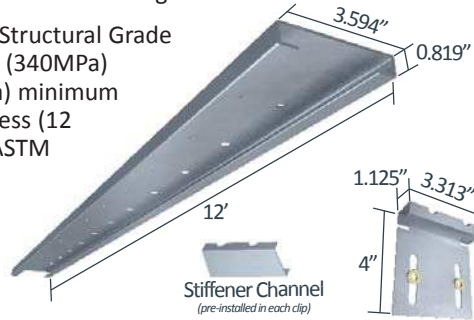
# DriftTrak® DTSL

Exterior Head of Wall

## Material Composition

**Clip Material:** 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.

**Track Material:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



US Patents #7,503,150 & #7,104,024

## DriftTrak DTSL Allowable (Unfactored) Loads<sup>1</sup>

DriftTrak® DTSL, Recommended Allowable Load (lbs): F2					
Stud		8" Fastener Spacing in Track to Structure (or welded on both sides)		16" Fastener Spacing in Track to Structure (or welded on both sides)	
		Fastener Pattern 1	Fastener Pattern 2	Fastener Pattern 1	Fastener Pattern 2
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/2 #12 Screws	w/2 #12 Screws	w/2 #12 Screws
33 (20)	33	377	377	377	377
33 (20)	50	544	482	544	449
43 (18)	33	561	482	561	449
43 (18)	50	625	482	625	449
54 (16)	33	625	482	625	449
54 (16)	50	625	482	625	449
68 (14)	50	625	482	625	449
97 (12)	50	625	482	625	449
<b>Maximum Allowable Clip Load</b>		<b>625</b>	<b>482</b>	<b>625</b>	<b>449</b>

## Notes:

- Design loads are for attachment of DriftTrak DTSL to stud only. Load tables reflect horizontal loads (F2).
- Attachment to structure engineered by others.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Two (2) #12 screws are provided with each DriftTrak DTSL for attachment to stud.
- Clips are manufactured to fit into the DriftTrak and provide up to 2" of vertical deflection (1" up and 1" down), and free lateral movement of the structure.
- Allow a minimum of 0.875" from the structure to the top of the stud to allow for the attachment of DriftTrak inside the standard track.
- One row of bridging is recommended at a maximum distance of 12" from DriftTrak to resist torsional effects.
- DriftTrak DTSL does not provide wall closure. A top track will be required for closure of the wall assembly.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

## Nomenclature

DriftTrak DTSL is available in one size for all stud depths over 3 5/8".

**Example:** 6" stud depth

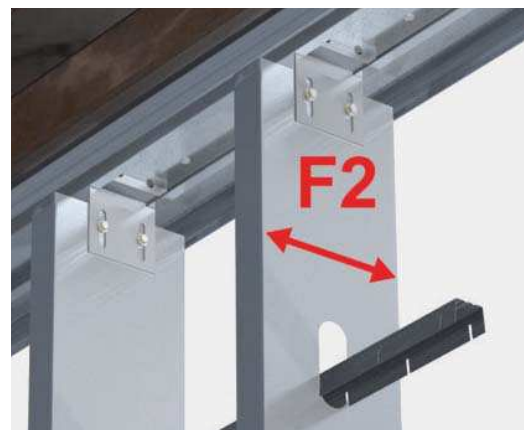
**Designate:** DriftTrak® DTSL

\* DriftTrak is available in 12' lengths, and is designated: DriftTrak®

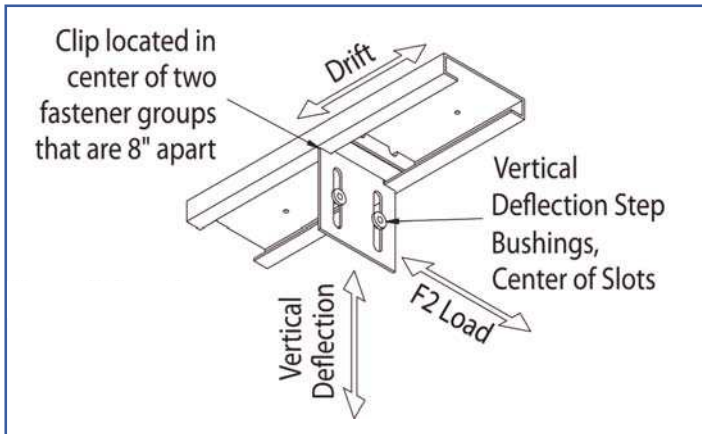
\*\* A top track is required for closure of the wall assembly.

\*\*\* Clips and track sold separately.

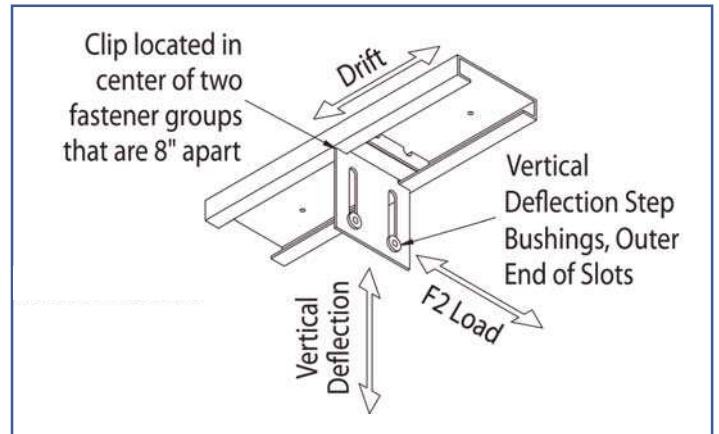
## Load Direction



**Fastener Patterns**



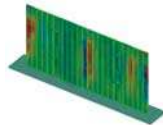
**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection and full in-plane drift.



**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



DriftTrak DTSL  
ICC-ESR-2049  
www.icc-es.org



DriftTrak DTSL 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>

# DriftTrak® DTSLB

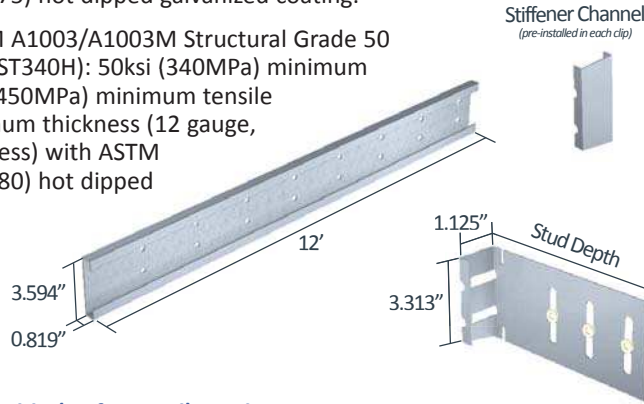
*Bypass Slab*



### Material Composition

**Clip Material:** 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.

**Track Material:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



US Patents #7,503,150 & #7,104,024

### DriftTrak DTSLB Allowable (Unfactored) Loads<sup>1</sup>

DriftTrak® DTSLB362, 600 & 800, Recommended Allowable Load (lbs): F2					
Stud		Fastener Pattern 1 & 2			
		8" Fastener Spacing in Track to Structure (or welded on each side)		16" Fastener Spacing in Track to Structure (or welded on each side)	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	565	377	565
33 (20)	50	544	808	544	753
43 (18)	33	561	808	561	753
43 (18)	50	808	808	753	753
54 (16)	33	789	808	753	753
54 (16)	50	808	808	753	753
68 (14)	50	808	808	753	753
97 (12)	50	808	808	753	753
<b>Maximum Allowable Clip Load</b>		<b>808</b>		<b>753</b>	

### Notes:

- Design loads are for attachment of DriftTrak DTSLB to stud only. Load tables reflect horizontal loads (F2).
- Attachment to structure engineered by others.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing for attachment to stud. Load requirements don't always justify use of a third screw.
- Clips are manufactured to fit into the DriftTrak and provide up to 2" of vertical deflection (1" up and 1" down), and free lateral movement of the structure.
- Allow a minimum of 0.875" from the structure to the inside flange of the bypassing stud to allow for track attachment.
- One row of bridging is recommended at a maximum distance of 12" from DriftTrak to resist torsional effects.

<sup>1</sup> For LRFD Design Strengths refer to ICC-ESR-2049.

### Nomenclature

DriftTrak DTSLB is classified by multiplying stud depth by 100.

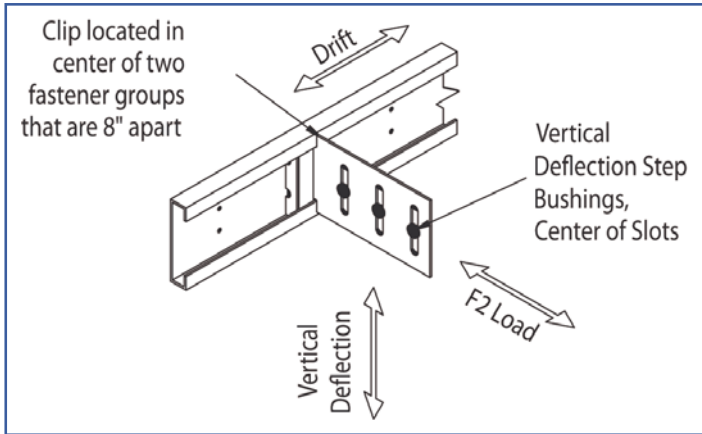
**Example:** 6" stud depth

**Designate:** DriftTrak® DTSLB600

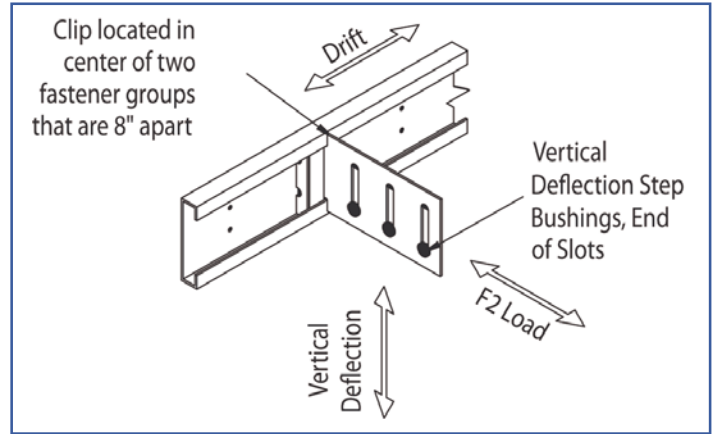
### Load Direction



**Fastener Patterns**



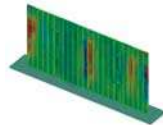
**Fastener Pattern 1** replicates a condition of out-of-plane wind or seismic force with no vertical live load deflection and full in-plane drift.



**Fastener Pattern 2** replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



DriftTrak DTSLB362/400,  
DTSLB600 & DTSLB800  
ICC-ESR-2049  
www.icc-es.org



DriftTrak DTSLB 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>

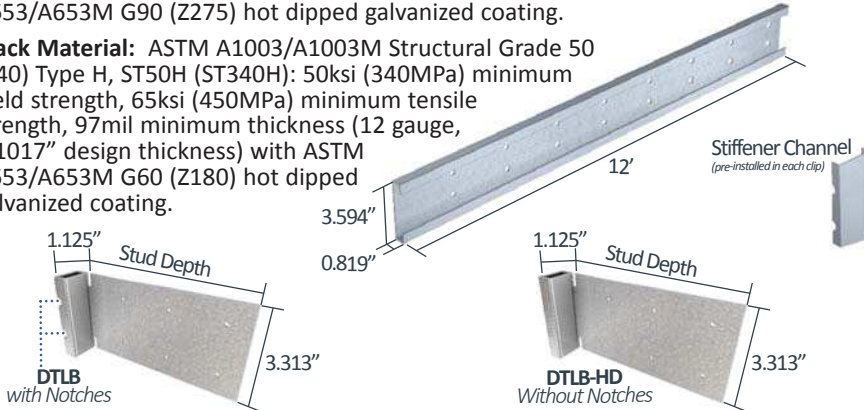
# DriftTrak® DTLB

Bypass Slab

## Material Composition

**Clip Material:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

**Track Material:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 97mil minimum thickness (12 gauge, 0.1017" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



## DriftTrak DTLB Allowable (Unfactored) Loads

DriftTrak® DTLB 600 & 800, Recommended Allowable Load (lbs): F2 & F3									
Stud		F2 Allowable Loads				F3 Allowable Loads			
		DTLB600 & DTLB800 with Notches		DTLB600-HD & DTLB800-HD without Notches*		DTLB600 & DTLB600-HD Total Offset = 0.819" + 1" gap		DTLB800 & DTLB800-HD Total Offset for 8" Studs = 0.819" + 1.0" gap Total Offset for 6" Studs = 0.819" + 2.0" gap	
Thickness Mils (ga)	Yield Strength (ksi)	w/4 #12 Screws	w/6 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/4 #12 Screws	w/6 #12 Screws
33 (20)	33	762	808	754	1,130	258	308	226	264
33 (20)	50	808	808	1,089	1,633	373	446	327	381
43 (18)	33	808	808	1,122	1,682	384	460	336	393
43 (18)	50	808	808	1,620	1,707	555	664	486	567
54 (16)	33	808	808	1,577	1,707	540	647	473	552
54 (16)	50	808	808	1,707	1,707	780	934	683	797
68 (14)	50	808	808	1,707	1,707	1,103	1,320	966	1,127
97 (12)	50	808	808	1,707	1,707	1,163	1,392	1,019	1,189
<b>Max Allowable Clip Load</b>		<b>808</b>		<b>1,707</b>		<b>1,750</b>		<b>1,272</b>	

## Notes:

- Allowable load tables incorporate eccentric loading of fasteners.
- 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 F3 allowable loads. It is assumed that all of the torsional moment is taken by the connection to the stud.
- Design loads are for attachment of DriftTrak DTLB to stud only. Load tables reflect horizontal loads (F2) and vertical loads (F3)
- Use 8" fastener spacing in track to structure (or weld on each side of track). Size of fasteners or weld is engineered by others.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Clips are manufactured to fit into the DriftTrak and provide a rigid connection to the stud, and free lateral movement of the structure.
- Allow a minimum of 0.875" from the structure to the inside flange of the bypassing stud to allow for track attachment.
- One row of bridging is recommended at a maximum distance of 12" from DriftTrak to resist torsional effects.

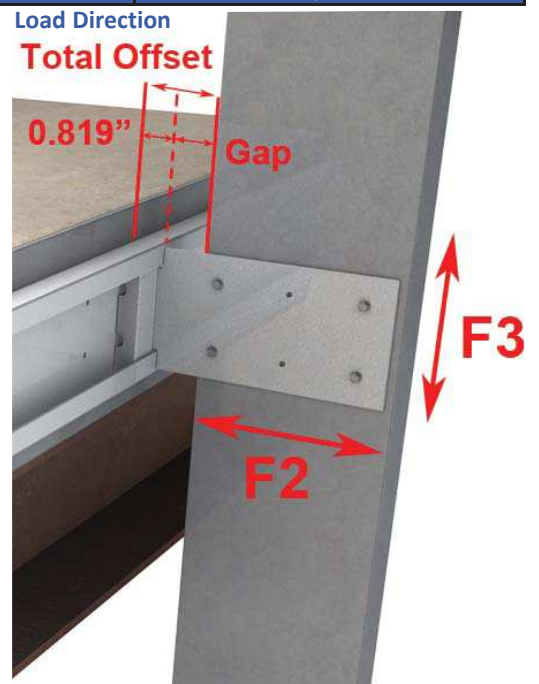
## Nomenclature

DriftTrak DTLB is classified by multiplying stud depth by 100, followed by "HD," based on F2 strength required. Refer to load tables.\*

**Example:** 6" stud depth, with an outward load (F2) of 1,000 lbs

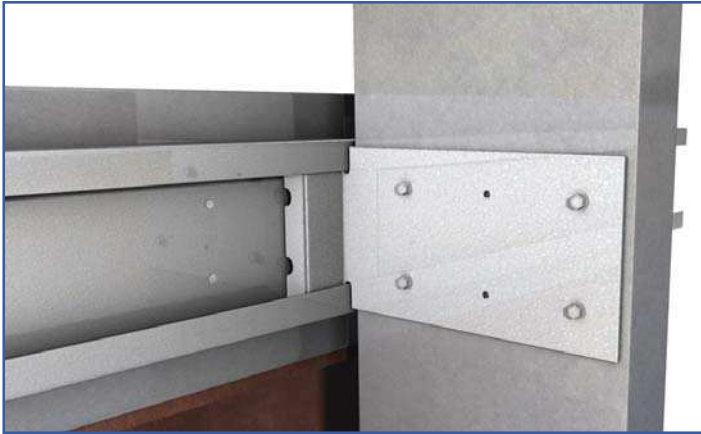
**Designate:** DriftTrak® DTLB600-HD

\* Notches are standard in DriftTrak DTLB. For greater F2 outward load capacity, use DTLB-HD clips w/o notches. Refer to Allowable Load Table.





### Fastener Patterns

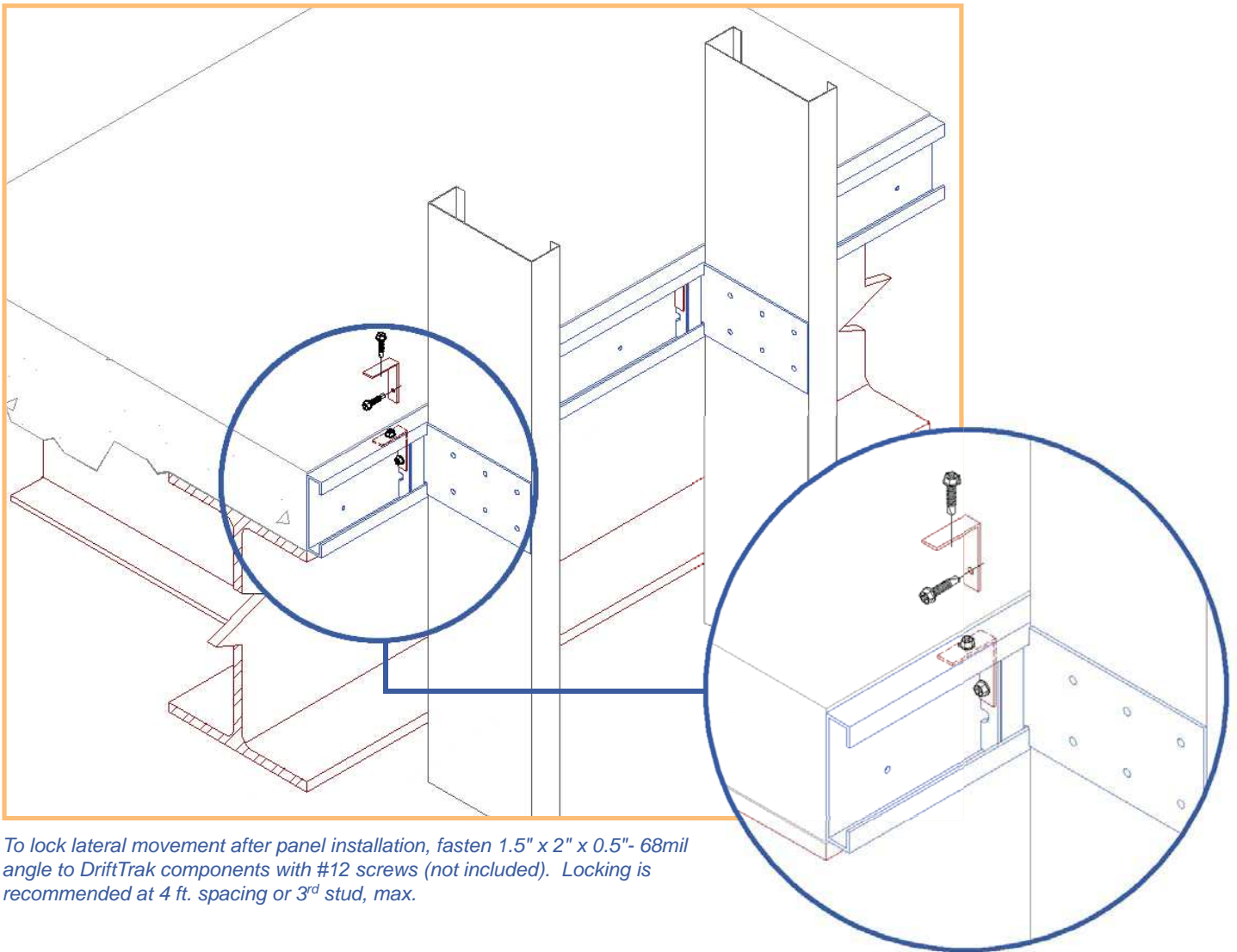


4 Hole Fastener Pattern

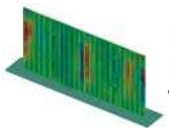


6 Hole Fastener Pattern

### Locking of Lateral Movement After Panel Installation



To lock lateral movement after panel installation, fasten 1.5" x 2" x 0.5"- 68mil angle to DriftTrak components with #12 screws (not included). Locking is recommended at 4 ft. spacing or 3<sup>rd</sup> stud, max.



DriftTrak DTLB Series  
Blast and Seismic Design data  
[www.steelnetwork.com](http://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>

# DriftCorner®

Infill or Bypass Corners



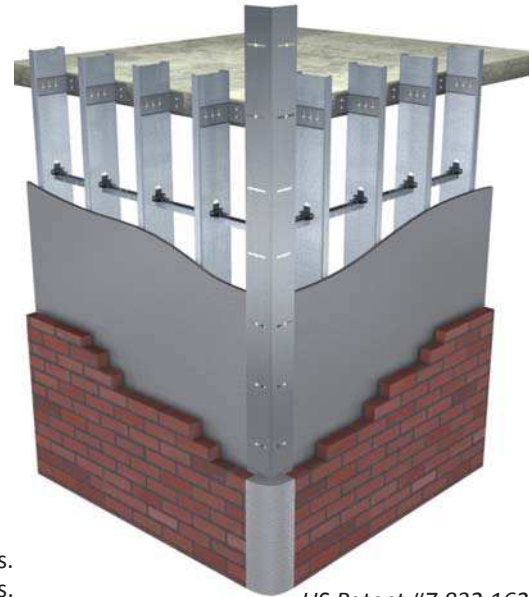
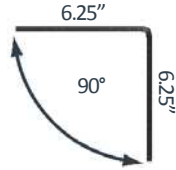
### Material Composition

ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

### Important Considerations

Attachment of DriftCorner is made with #8 screws through pre-installed step bushings. Screws are not included since screw length and type will vary with the thickness and type of sheathing used. If using gypsum board (or similar) sheathing, install 1.5"x9"x43mil (18ga) angle behind the sheathing on each side of the DriftCorner to allow for proper screw placement and penetration. If requested, TSN will provide the backing angle with DriftCorner. For ½" sheathing with 43mil backing angle, use 1" long screws. For thicker sheathing, use 1 ½" long screws.

Shown below are two detailed examples of DriftCorner application. More details are available for download at www.steelnetwork.com, including those with the backing angle and with other drift products. Contact TSN's Technical Services Team at (888) 474-4876 for design recommendations.



US Patent #7,832,162

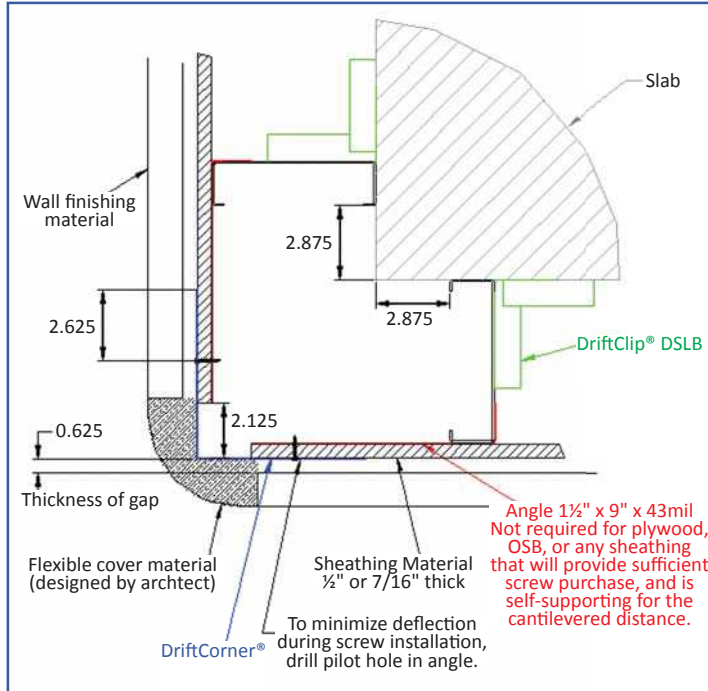
### Notes:

- DriftCorner may be utilized in either infill or bypass conditions.
- 2.625" horizontal slots are positioned vertically every 12" on each leg of a 12ft long angle.
- Each slot has a pre-installed Step-Bushing designed for use with a #8 screw. (Screws are not Included)
- Provides up to 2" of lateral drift at corners.

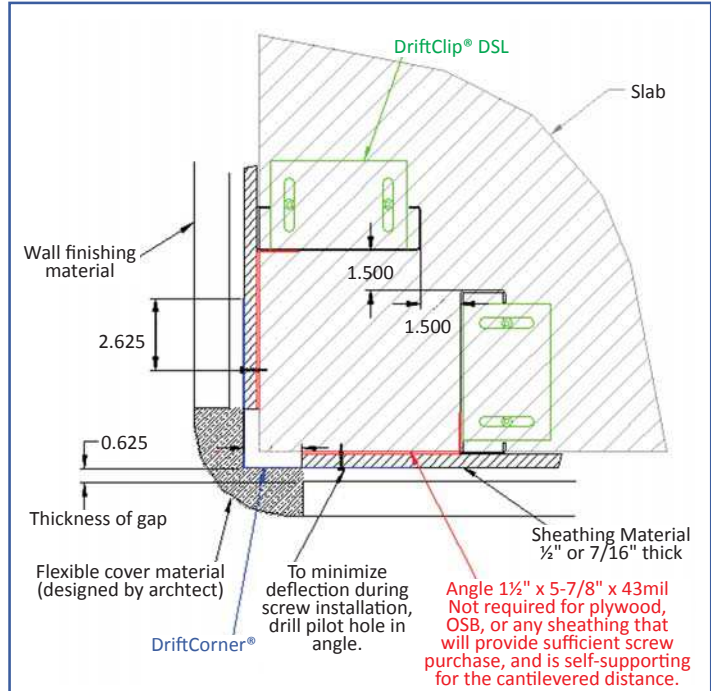
### Nomenclature

DriftCorner is made in one size and is designated *DriftCorner®*.

### DriftCorner at Slab Bypass:



### DriftCorner at Bypass Framing:



Bypass Condition using DriftClip® DSLB with Non-Supportive Sheathing Such as Gypsum

Bypass Condition using DriftClip® DSL with Non-Supportive Sheathing Such as Gypsum

# Wall Bridging

## Background

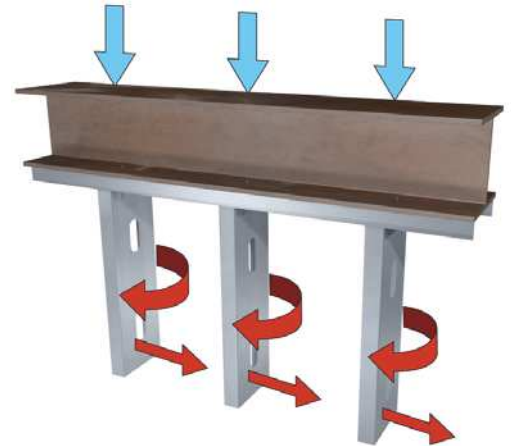
### Bridging Background

Bridging for load bearing studs is needed to resist the following forces:

- 1 - Weak axis buckling induced by axial compression load.
- 2 - Torsion induced by wind load.

As axial compression and lateral wind loads are applied, wall studs react with weak axis buckling and torsional rotation. To offset these forces, a form of bridging is incorporated into the wall system. Bridging loads accumulate over the run of the wall, requiring transfer of lateral forces in bridging at columns or to the floor slab into the structural load path to the foundation.

AISI Wall Stud Design Standard (S211-07) and AISI Specification (S100-07) provide the load and stiffness requirements for bracing members due to the effects of axial compression load and wind load as given in the table below. Contact TSN Technical Support (888) 474-4876 if further information is needed regarding wall bridging design.

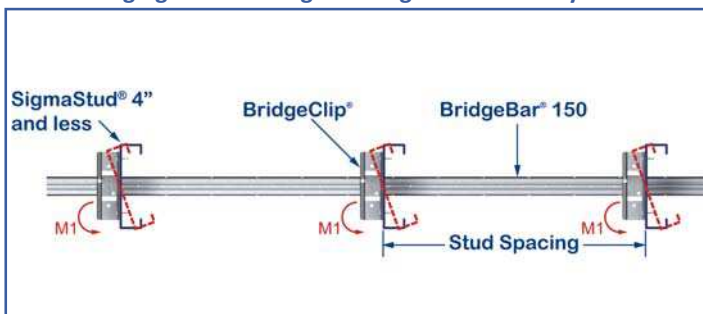


### Bridging Requirements

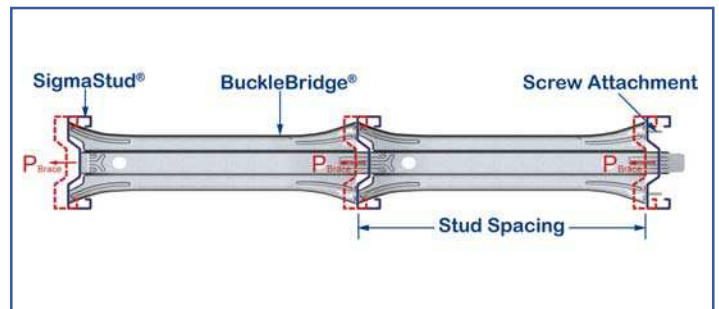
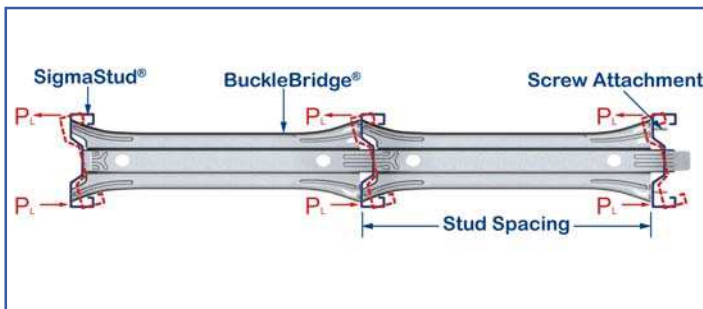
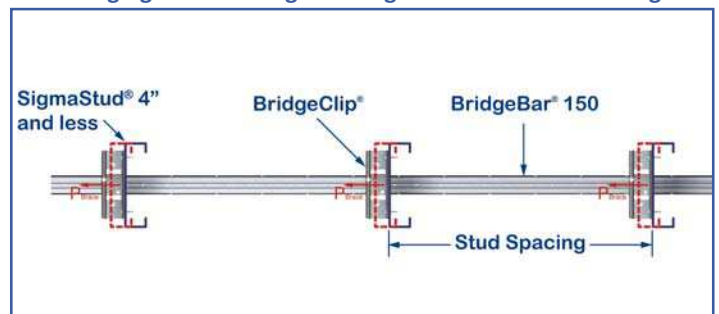
	AISI Wall Stud Design Standard (S211-07)	AISI Specification (S100-07)
<b>Stud Axial Compression</b>	<b>Load Capacity:</b> Bracing Load $P_{\text{Brace}}^* = 0.02 \times \text{Stud Design Compression Force } (P_{\text{Stud}}) \times \# \text{ of studs braced.}$	<b>Load Capacity:</b> Bracing Load $P_{\text{Brace}}^* = 0.01 \times \text{Stud Axial Strength } (P_{\text{Stud}}) \times \# \text{ of studs braced.}$
		<b>Stiffness Capacity:</b> Lateral Stiffness $\beta_{\text{Brace}} = 4 \times \text{Stud Nominal Axial Strength} / \text{Unbraced Length}$ (for one row of bridging).  Lateral Stiffness $\beta_{\text{Brace}} = 6 \times \text{Stud Nominal Axial Strength} / \text{Unbraced Length}$ (for two rows of bridging).
<b>Wind</b>	<b>Load Capacity:</b> Twist Load $P_L = 1.5 \times \text{Wind Load} \times \text{Bridging Spacing} \times \text{Stud Spacing} \times m(\text{Shear Center Distance}) / \text{Stud Depth.}$  Twist Moment $M_1 = P_L \times \text{Stud Depth.}$	

\* Bracing forces accumulate over the run of the wall until anchored.

Bridging Load Bearing Studs Against Torsion By Wind



Bridging Load Bearing Studs Against Weak Axis Buckling



# Curtain Wall Bridging Chart

Quick Reference

Channel / Clip Bridging Chart: Design Wind Pressure and Unsupported Wall Height										
Section	10psf*		20 psf				25 psf			
	10'	12'	10'	12'	14'	16'	10'	12'	14'	16'
600S162-33, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	N/A	BB/BC1	(2) BB/BC1	(2) BB/BC1	N/A
600S162-43, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1
600S162-54, 50 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1
600S162-68, 50 ksi	CRC/BC1	CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1
600S162-97, 50 ksi	CRC/BC1	CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1
800S162-33, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S162-43, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S162-54, 50 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S162-68, 50 ksi	CRC/BC800	CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800
800S162-97, 50 ksi	CRC/BC800	CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800
600S200-33, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC3	(2) BB/BC3	(3) BB/BC3	BB/BC3	(2) BB/BC3	(2) BB/BC3	N/A
600S200-43, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1	BB/BC3	(2) BB/BC3	(2) BB/BC3	(3) BB/BC3
600S200-54, 50 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC1	(2) BB/BC1	(2) BB/BC1	(3) BB/BC1	BB/BC3	(2) BB/BC3	(2) BB/BC3	(3) BB/BC3
600S200-68, 50 ksi	CRC/BC1	CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1	CRC/BC3	(2) CRC/BC3	(2) CRC/BC3	(3) CRC/BC3
600S200-97, 50 ksi	CRC/BC1	CRC/BC1	CRC/BC1	(2) CRC/BC1	(2) CRC/BC1	(3) CRC/BC1	CRC/BC3	(2) CRC/BC3	(2) CRC/BC3	(3) CRC/BC3
800S200-33, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S200-43, 33 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S200-54, 50 ksi	BB or CRC/BC1	(2) BB or (2) CRC/BC1	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800	BB/BC800	(2) BB/BC800	(2) BB/BC800	(3) BB/BC800
800S200-68, 50 ksi	CRC/BC800	CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800
800S200-97, 50 ksi	CRC/BC800	CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800	CRC/BC800	(2) CRC/BC800	(2) CRC/BC800	(3) CRC/BC800

Channel / Clip Bridging Chart: Design Wind Pressure and Unsupported Wall Height												
Section	30psf				40psf				50psf			
	10'	12'	14'	16'	10'	12'	14'	16'	10'	12'	14'	16'
600S162-33, 33 ksi	BB / BC3	(2) BB / BC3	N/A	N/A	BB / BC3	N/A	N/A	N/A	BB / BC3	N/A	N/A	N/A
600S162-43, 33 ksi	BB / BC3	(2) BB / BC3	(2) BB / BC3	N/A	BB / BC3	(2) BB / BC3	N/A	N/A	BB / BC3	(2) BB / BC3	N/A	N/A
600S162-54, 50 ksi	BB / BC3	(2) BB / BC3	(2) BB / BC3	(3) BB / BC3	BB / BC3	(2) BB / BC3	(2) BB / BC3	N/A	BB / BC3	(2) BB / BC3	N/A	N/A
600S162-68, 50 ksi	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	N/A
600S162-97, 50 ksi	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3
800S162-33, 33 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	N/A	BB / BC800	(2) BB / BC800	N/A	N/A	BB / BC800	N/A	N/A	N/A
800S162-43, 33 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	N/A	BB / BC800	(2) BB / BC800	N/A	N/A
800S162-54, 50 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	N/A
800S162-68, 50 ksi	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800
800S162-97, 50 ksi	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800
600S200-33, 33 ksi	BB / BC3	(2) BB / BC3	N/A	N/A	BB / BC600	(2) BB / BC600	N/A	N/A	BB / BC600	N/A	N/A	N/A
600S200-43, 33 ksi	BB / BC3	(2) BB / BC3	(2) BB / BC3	(3) BB / BC3	BB / BC600	(2) BB / BC600	(2) BB / BC600	N/A	BB / BC600	(2) BB / BC600	N/A	N/A
600S200-54, 50 ksi	BB / BC3	(2) BB / BC3	(2) BB / BC3	(3) BB / BC3	BB / BC600	(2) BB / BC600	(2) BB / BC600	N/A	BB / BC600	(2) BB / BC600	(2) BB / BC600	N/A
600S200-68, 50 ksi	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC600	(2) CRC / BC600	(2) CRC / BC600	(3) CRC / BC600	CRC / BC600	(2) CRC / BC600	(2) CRC / BC600	N/A
600S200-97, 50 ksi	CRC / BC3	(2) CRC / BC3	(2) CRC / BC3	(3) CRC / BC3	CRC / BC600	(2) CRC / BC600	(2) CRC / BC600	(3) CRC / BC600	CRC / BC600	(2) CRC / BC600	(2) CRC / BC600	(3) CRC / BC600
800S200-33, 33 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	N/A	N/A	BB / BC800	(2) BB / BC800	N/A	N/A
800S200-43, 33 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	N/A	BB / BC800	(2) BB / BC800	(2) BB / BC800	N/A
800S200-54, 50 ksi	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800	BB / BC800	(2) BB / BC800	(2) BB / BC800	(3) BB / BC800
800S200-68, 50 ksi	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800
800S200-97, 50 ksi	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800	CRC / BC800	(2) CRC / BC800	(2) CRC / BC800	(3) CRC / BC800

**\*\*Important table notes on next page.**

BuckleBridge® Bridging Chart: Design Wind Pressure and Bridging Spacing																				
Section	20 psf				25 psf				30 psf				40 psf				50 psf			
	10'	12'	14'	16'	10'	12'	14'	16'	10'	12'	14'	16'	10'	12'	14'	16'	10'	12'	14'	16'
600S162-33, 33 ksi	BKB	BKB	(2) BKB	N/A	BKB	BKB	(2) BKB	N/A	BKB	(2) BKB	N/A	N/A	BKB	N/A	N/A	N/A	BKB	N/A	N/A	N/A
600S162-43, 33 ksi	BKB	BKB	BKB	(2) BKB	BKB	BKB	(2) BKB	(3) BKB	BKB	BKB	(2) BKB	N/A	BKB	(2) BKB	N/A	N/A	BKB	(2) BKB	N/A	N/A
600S162-54, 50 ksi	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	(2) BKB	(2) BKB	BKB	BKB	(2) BKB	N/A	BKB	(2) BKB	N/A	N/A
600S162-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	(2) BKB	N/A
600S162-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB
800S162-33, 33 ksi	BKB	BKB	BKB	(2) BKB	BKB	BKB	(2) BKB	(3) BKB	BKB	BKB	(2) BKB	N/A	BKB	(2) BKB	N/A	N/A	BKB	N/A	N/A	N/A
800S162-43, 33 ksi	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(3) BKB	BKB	BKB	(2) BKB	N/A	BKB	(2) BKB	N/A	N/A
800S162-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	(2) BKB	N/A
800S162-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(3) BKB
800S162-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB
600S200-33, 33 ksi	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	N/A	BKB	BKB	N/A	N/A	BKB	(2) BKB	N/A	N/A	BKB	N/A	N/A	N/A
600S200-43, 33 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB	BKB	BKB	BKB	(3) BKB	BKB	BKB	(2) BKB	N/A	BKB	BKB	N/A	N/A
600S200-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A
600S200-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A
600S200-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S200-33, 33 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(3) BKB	BKB	BKB	N/A	N/A	BKB	(2) BKB	N/A	N/A
800S200-43, 33 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A
800S200-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	(2) BKB
800S200-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S200-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB

**Notes:**

- Stud spacing is fixed at 16". Bridging spacing for Channel / Clip Bridging is 5 ft. max.
- Allowable pressure limited by flexural strength of stud calculated with torsional bracing assumed at the bridging spacing and  $k_{\phi} = 0$ .
- Allowable pressure limited by stud deflection calculated with deflection limit equal to  $l/360$ . Listed wind pressures except 10 psf have been reduced by 0.70 as allowed by the IBC code.
- BB and CRC allowable pressure limited by flexural strength of bridging member calculated as:

$$M_{all} / (1.5 \times \text{Bridging Spacing} \times \text{Stud Spacing} \times m \text{ (distance from stud web to shear center)}).$$

- BuckleBridge calculated twist moment (Reference AISI S100-07) is equal to:

$$(1.5 \times \text{Wind Load} \times \text{Bridging Spacing} \times \text{Stud Spacing} \times m \text{ (distance from stud web to shear center)}).$$

- Listed wind pressures represent calculated design wind pressures (1.0W based on IBC 2009 or 0.6W based on IBC 2012).

\* For 10 psf wind pressure, it is assumed that gypsum board is installed on both sides of wall. The stud spacing here can be up to 24"

**Nomenclature:**

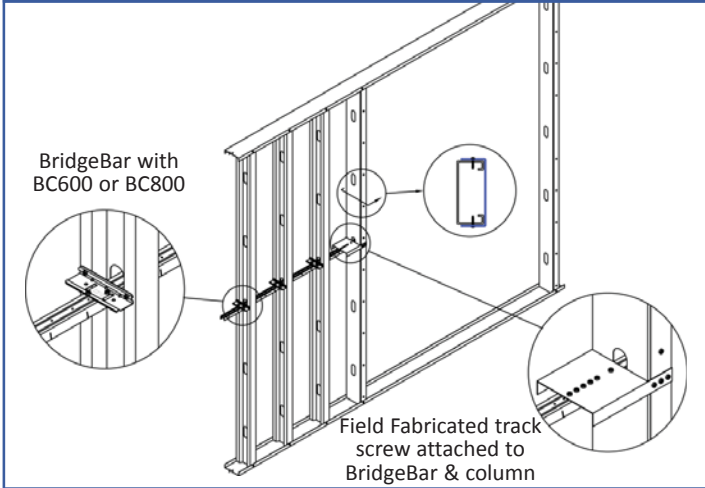
- **BB** - BridgeBar 150 without clip to stud
- **CRC** - Cold Rolled Channel
- **BB / BC1** - BridgeBar 150 and BridgeClip with (1) #10 screw fastener into BridgeBar 150 only
- **BB / BC3** - BridgeBar 150 & BridgeClip with (1) #10 screw fastener into BridgeBar 150 & (2) #10 screw fasteners into the web of the stud
- **BB / BC600** - BridgeBar 150 & BC600 with (2) #10 screw fasteners into BridgeBar 150 & (2) #10 screw fasteners into the web of the stud
- **BB / BC800** - BridgeBar 150 & BC800 with (2) #10 screw fasteners into BridgeBar 150 & (2) #10 screw fasteners into the web of the stud
- **BB** (BridgeBar 150) is an alternative for Cold-Rolled Channel (CRC), which may also be used with TSN's bridging clips.
- **BKB** - BuckleBridge Using (1) #10 screw on alternate sides of the BuckleBridge at 3rd stud (48" o.c.) Use (2) #10 screws at end of wall run.
- **N/A** indicates stud section is insufficient.
- **(2)** or **(3)** preceding product indicates number of rows of bridging. If no number is shown, then (1) bridging row only.

# Wall Bridging Anchorage

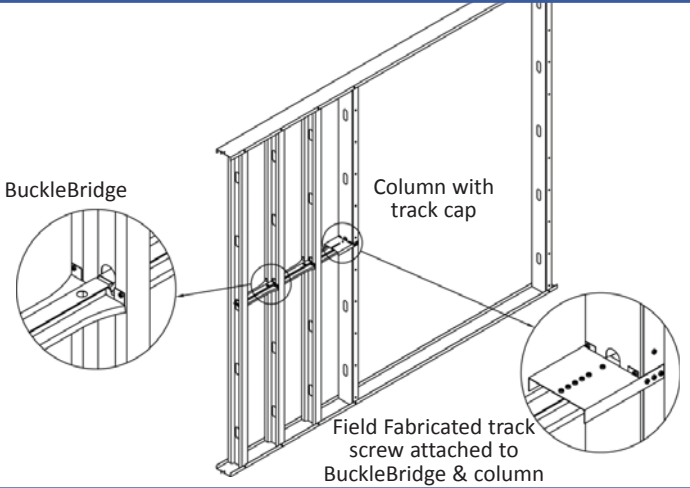
Quick Reference

## Anchorage of Lateral Bracing (Bridging) Forces

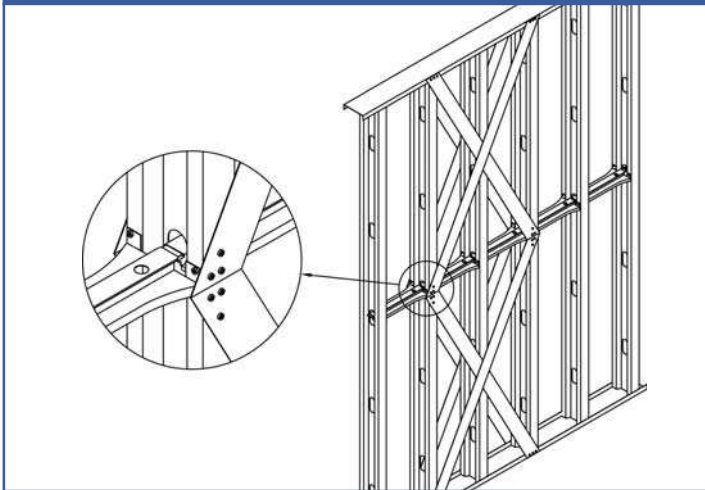
Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BridgeBar® 150 with BC600/BC800



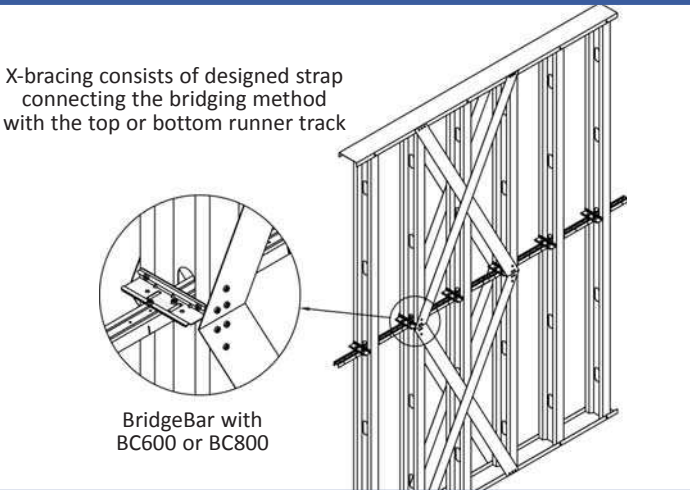
Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BuckleBridge®



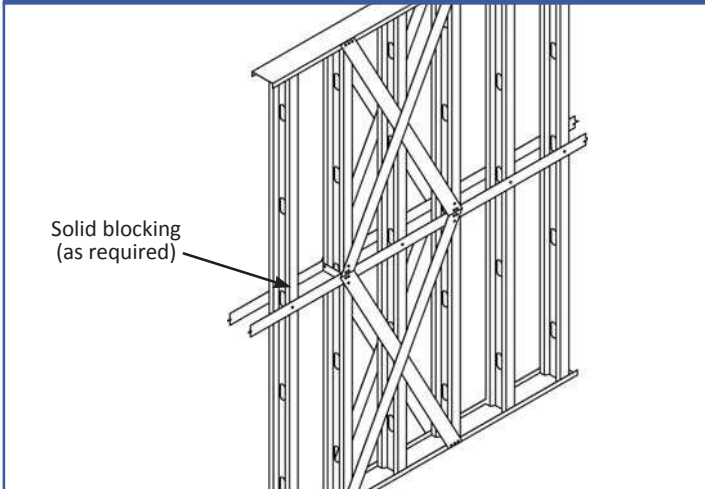
Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BuckleBridge



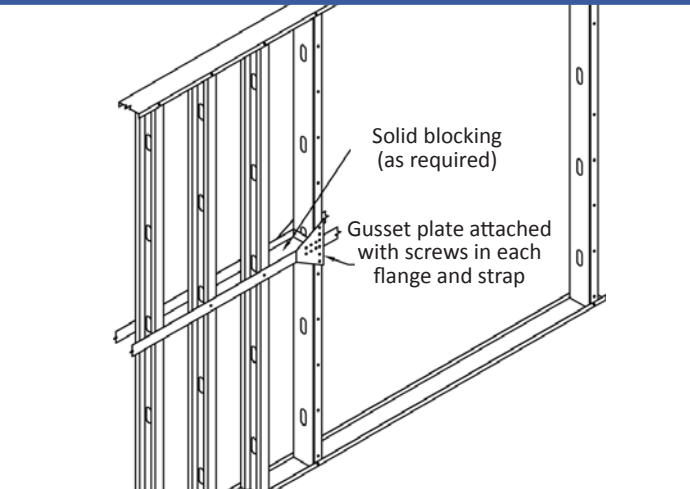
Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BridgeBar 150 with BC600/BC800



Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Flat Strap Bracing w/ Blocking



Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Flat Strap Bracing w/ Blocking



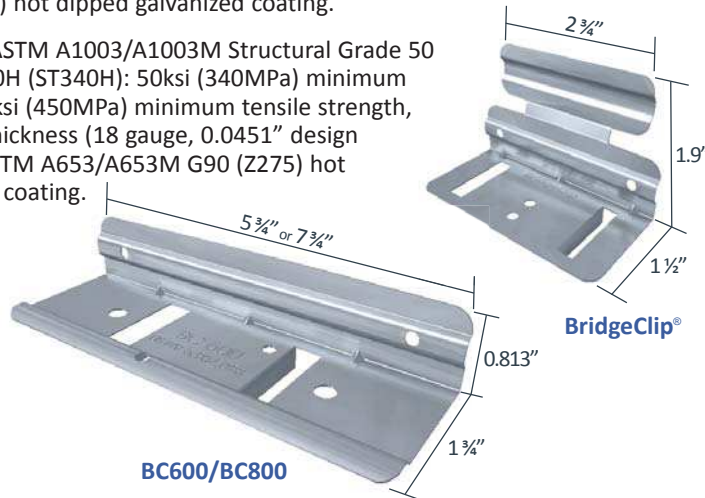
# BridgeClip®

Secures Channel to Stud

### Material Composition

**BridgeClip:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

**BC600 & BC800:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 43mil minimum thickness (18 gauge, 0.0451" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



US Patent #5,904,023

### BridgeClip Allowable Loads

Designation	F1 (lbs)	M1 (in-lbs)
BridgeClip (1) Screw	75	180
BridgeClip (3) Screws	360	340
BC600	360	720
BC800	360	720

### Notes:

- Design loads based on clip capacity only (verify screw shear and pullout at stud web).
- Allowable loads have not been increased for wind, seismic, or other factors.
- Resists both lateral and twisting loads.

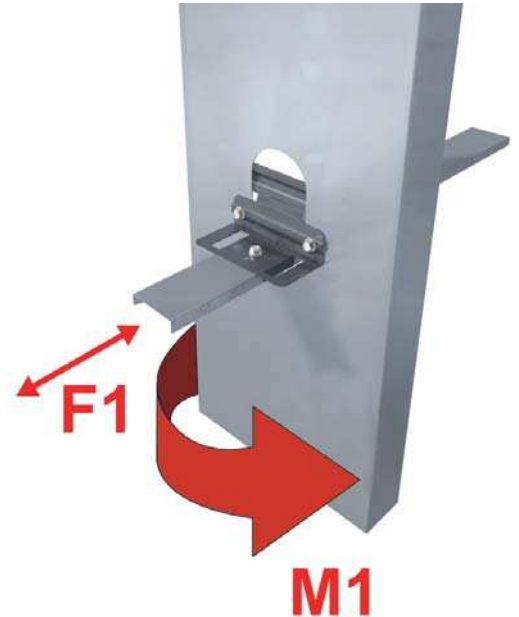
### Nomenclature

BridgeClip is available in 3 5/8", 6" and 8". Designations are BridgeClip®, BC600 & BC800.

**Example:** 6" Stud

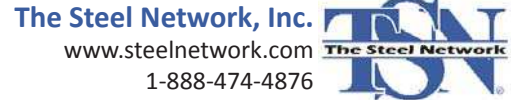
**Designate:** BC600

### Load Direction



# BridgeBar®

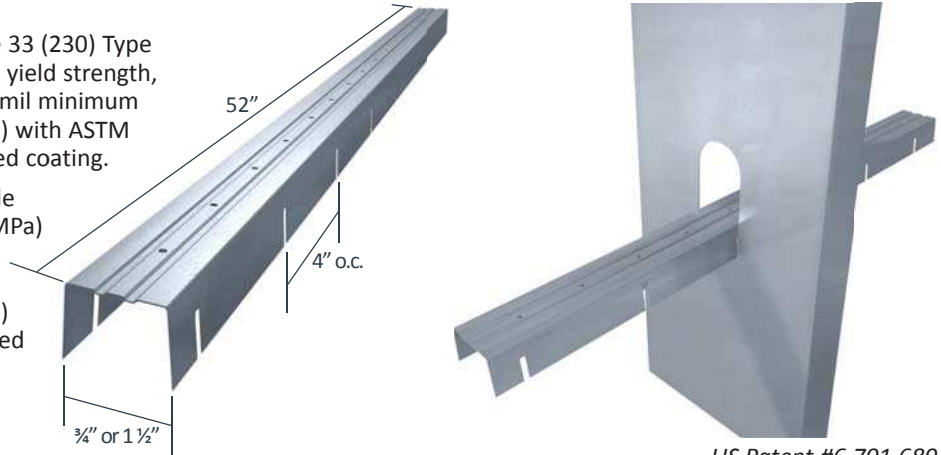
Bridging Channel



### Material Composition

**BB75:** ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 28mil minimum thickness (22 gauge, 0.0295" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

**BB150:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



US Patent #6,701,689

### Material Analysis

Section	Minimum Thickness (in)	Design Thickness (in)	Yield Strength (ksi)	Effective Section Properties <sup>(1)</sup>						Effective Section Properties and Allowable Loads <sup>(2), (3), (4)</sup>							
				Area (in <sup>2</sup> )	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	R <sub>x</sub> (in)	I <sub>y</sub> (in <sup>4</sup> )	R <sub>y</sub> (in)	S <sub>xe</sub> (in <sup>3</sup> )	M <sub>a</sub> (X-axis) (in-kips (ft-lb))	12" o.c.		16" o.c.		24" o.c.	
												A <sub>e</sub> (in <sup>2</sup> )	P <sub>a</sub> (lbs)	A <sub>e</sub> (in <sup>2</sup> )	P <sub>a</sub> (lbs)	A <sub>e</sub> (in <sup>2</sup> )	P <sub>a</sub> (lbs)
BB75	0.0280	0.0295	33	0.031	0.0021	0.006	0.261	0.0002	0.073	0.006	0.11 (9.3)	N/A	N/A	N/A	N/A	N/A	N/A
BB150	0.0329	0.0346	50	0.068	0.0174	0.023	0.506	0.0007	0.104	0.023	0.69 (57.9)	0.079	1,459	0.081	1,172	0.081	566

### Notes:

- Use BridgeClip® for a quick & easy method of securing BridgeBar to stud when required
- Resists compressive loads through the plane of the wall
- Use through 3/4" and 1 1/2" stud punchouts.

<sup>1</sup> Gross section properties are calculated based on the minimum dimensions of the cross section.

<sup>2</sup> Effective section properties and allowable loads for BridgeBar are calculated based on AISI S100-2007 Specification.

<sup>3</sup> Effective section modulus (S<sub>xe</sub>) is calculated based on the minimum dimensions of the cross section.

<sup>4</sup> Effective area (A<sub>e</sub>) and allowable axial load (P<sub>a</sub>) are calculated based on the average dimensions of the cross section.

### Securing Bar to Stud

When loads require attachment of BridgeBar to stud, consider the screw shear allowables below for connection of BridgeClip to stud and BridgeBar.

Section	Design Thickness (in)	Yield Strength (ksi)	Allowable Shear/Screw	
			#8 Screw (lbs)	#10 Screw (lbs)
BB150	0.0346	50	237	255

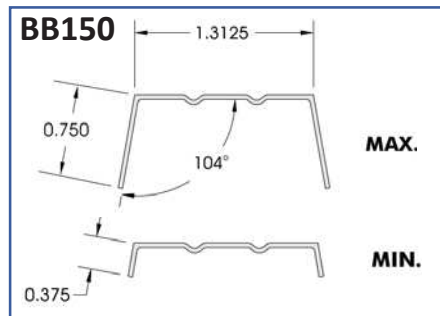
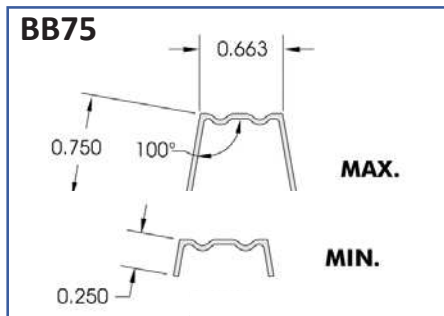
### Nomenclature

BridgeBar is available in 3/4" and 1 1/2" widths. Designations are BB75 and BB150.

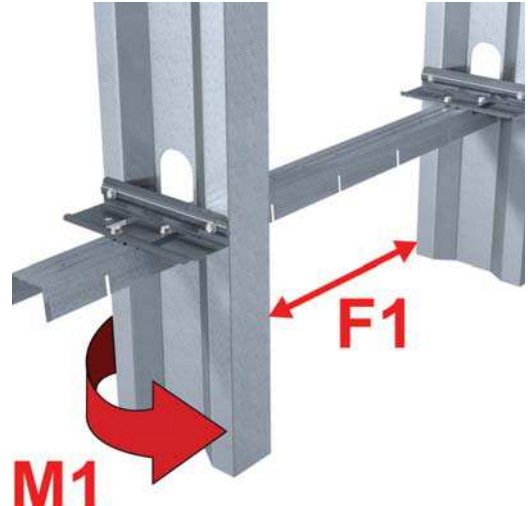
**Example:** Stud with 3/4" knockout

**Designate:** BB75

### Cross Sections



### Load Direction



### Lap Joint

BridgeBar's 52" length allows for a 4" overlap at joints. Simply fit one end over the other and line up the guide holes for quick & easy placement of screw(s). Joint locations maintain stud spacing as designed through length of the wall system.



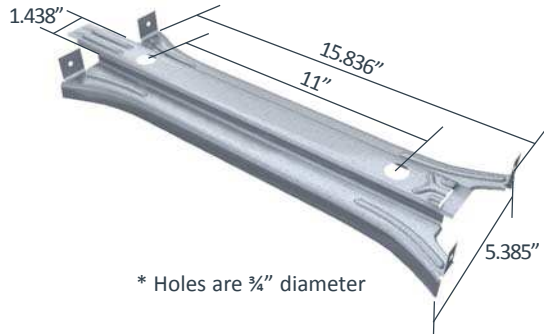


# BuckleBridge®

Bridging System

### Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

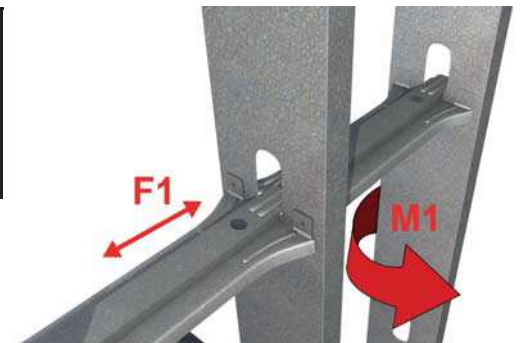


US Patents #7,596,921, #7,836,657 & #8,205,402

### BuckleBridge Allowable Loads

BuckleBridge® Allowable Loads						
Studs 16" o.c.	Axially Loaded Studs				Laterally Loaded Studs	
	Compression Brace		Tension Brace		6" Studs	8" Studs
	F1 (lbs)	Stiffness (lbs/in)	F1 (lbs)	Stiffness (lbs/in)	M1 (in-lb)	M1 (in-lb)
	2,400	31,000	440	2,560	1,290	967

### Load Direction



### Nomenclature

BuckleBridge comes in one size and is designated *BuckleBridge®*. It is used with 16" o.c. member spacing.

### Example Details



When using BuckleBridge in curtain walls with standard "cee" studs, one screw is only needed every 3rd stud.\*



BuckleBridge used in load bearing walls with TSN's SigmaStud



BuckleBridge works just as easily with back-to-back studs.

### Notes:

- Resists weak axis buckling and torsional rotation of members.
  - Spaces studs automatically at 16" o.c. Suitable for 6" & 8" walls.
  - Elongated tabs in one end of BuckleBridge lock into a slot at the other end through the stud knockout.
- \* Use (1) #10 screw on alternate sides of the BuckleBridge at 3rd stud (48" o.c.) Use (2) #10 screws at end of wall run.

# StiffClip® HE

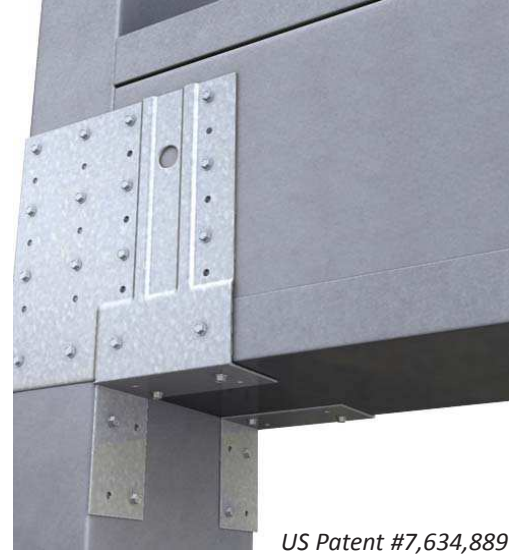
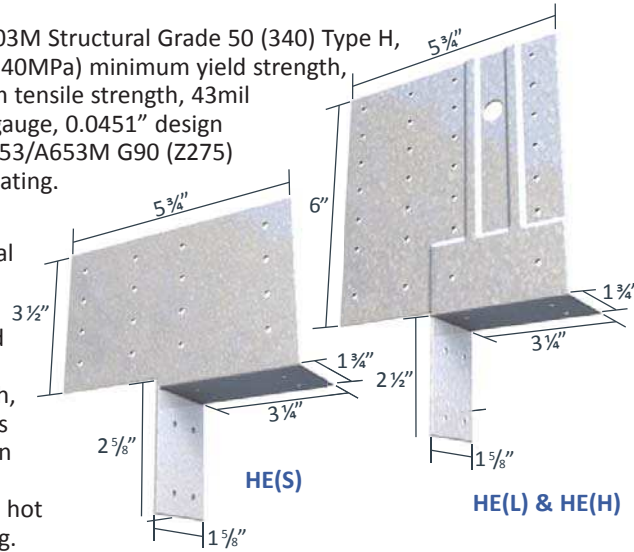
Header Connector



### Material Composition

**HE(L):** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 43mil minimum thickness (18 gauge, 0.0451" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

**HE(H) & HE(S):** 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 HE Allowable Loads: Screw Fasteners

StiffClip® HE Recommended Allowable Load for a Single Clip (lbs): F3													
Stud		HE(L)						HE(H)					
Thickness Mils (ga)	Yield Strength (ksi)	w/8 #10 screws	w/12 #10 screws	w/16 #10 screws	w/20 #10 screws	w/24 #10 screws	w/28 #10 screws	w/8 #10 screws	w/12 #10 screws	w/16 #10 screws	w/20 #10 screws	w/24 #10 screws	w/28 #10 screws
33 (20)	33	536	708	873	1,090	1,239	1,340	536	708	873	1,090	1,239	1,340
33 (20)	50	774	1,021	1,259	1,573	1,787	1,933	774	1,021	1,259	1,573	1,787	1,933
43 (18)	33	797	1,052	1,297	1,620	1,841	1,991	797	1,052	1,297	1,620	1,841	1,991
43 (18)	50	1,151	1,520	1,873	2,340	2,659	2,876	1,151	1,520	1,873	2,340	2,659	2,876
54 (16)	33	1,121	1,480	1,824	2,279	2,590	2,801	1,121	1,480	1,824	2,279	2,590	2,801
54 (16)	50	1,518	2,004	2,470	3,066	3,066	3,066	1,618	2,136	2,633	3,289	3,738	4,042
68 (14)	50	1,518	2,004	2,470	3,066	3,066	3,066	2,012	2,656	3,274	4,090	4,648	5,026
97 (12)	50	1,518	2,004	2,470	3,066	3,066	3,066	2,012	2,656	3,274	4,090	4,648	5,026
<b>Max Allowable Clip Load</b>		<b>3,066</b>						<b>5,545</b>					

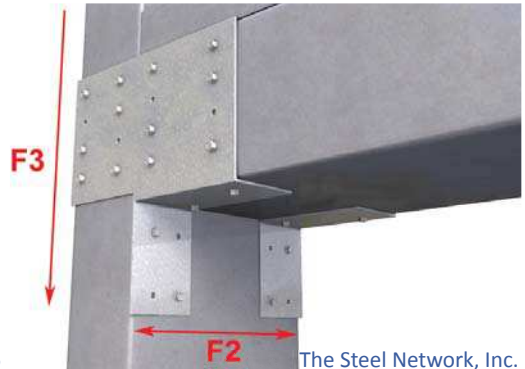
StiffClip® HE Recommended Allowable Load for a Single Clip (lbs): F3					StiffClip® HE Recommended Allowable Load for a Single Clip (lbs): F2					
Stud		HE(S)			HE(L)			HE(H) & HE(S)		
Thickness Mils (ga)	Yield Strength (ksi)	w/8 #10 screws	w/12 #10 screws	w/16 #10 screws	w/4 #10 screws	w/6 #10 screws	w/8 #10 screws	w/4 #10 screws	w/6 #10 screws	w/8 #10 screws
33 (20)	33	382	501	611	199	299	399	199	299	399
33 (20)	50	551	722	880	287	431	575	287	431	575
43 (18)	33	568	744	907	296	444	592	296	444	592
43 (18)	50	821	1,075	1,311	428	627	627	428	641	855
54 (16)	33	799	1,047	1,276	417	625	627	417	625	833
54 (16)	50	1,153	1,511	1,842	564	627	627	601	902	1,088
68 (14)	50	1,434	1,879	2,291	564	627	627	747	1,088	1,088
97 (12)	50	1,434	1,879	2,291	564	627	627	747	1,088	1,088
<b>Max Allowable Clip Load</b>		<b>2,968</b>			<b>627</b>			<b>1,088</b>		

### Notes:

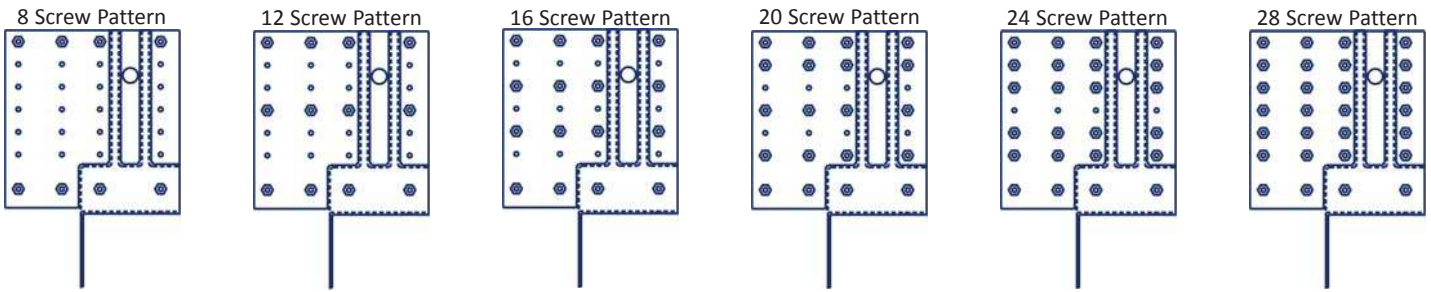
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection on one side and half is taken by the connection on the other side of the clip.
- Attachment to stud is made with screws symmetrically placed. All guide holes may not require fasteners. Fastener amount determined by designer.
- Allowable loads have not been increased for wind, seismic, or other factors.
- The minimum combination of steel thickness and yield strength must be used when determining the maximum design load.
- Design loads listed consider both loads on the clip and the #10 screws as they are fastened to the steel beam and column or jamb and header members.

\* Refer to screw patterns on the following page.

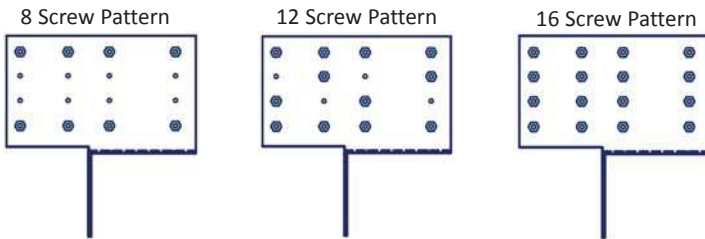
### Load Direction



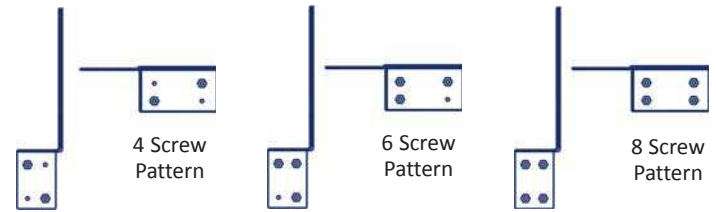
**Screw Patterns for HE(L) & HE(H) F3 Load Tables**



**Screw Patterns for HE(S) F3 Load Tables**



**Screw Patterns for F2 Load Tables**



**Allowable Loads: Welded Connection**

StiffClip® HE Recommended Allowable Load for a Single Clip (lbs): F3		
Stud		HE(H)
Thickness Mils (ga)	Yield Strength (ksi)	Weld used to Header and Post Combined
54 (16) and thicker	50	4,177

**Notes:**

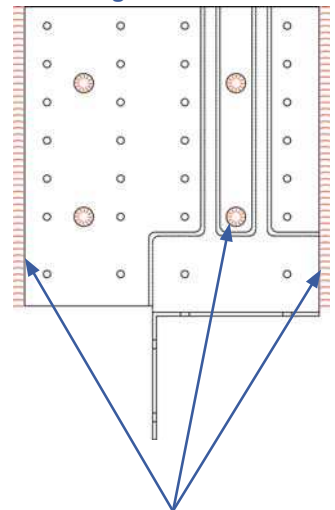
- Welded values do not apply to 43mil (18ga) StiffClip HE.
- HE(H) with welds around the perimeter of four 0.375" diameter holes and along each side of the clip. Weld size not to exceed double the material thickness of the header or jamb, or 1/8"; and care should be taken to not burn through the material.

**Nomenclature**

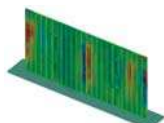
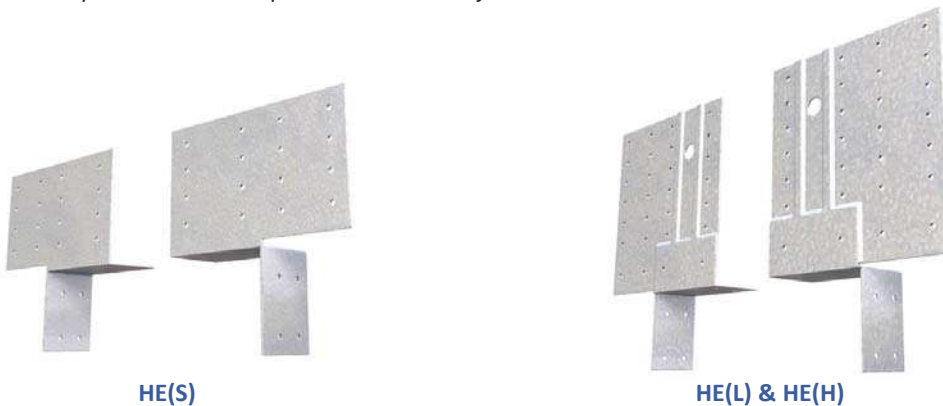
StiffClip HE is available in two thicknesses. The StiffClip HE(L) is 43mil (18ga), and the StiffClip HE(H) & HE(S) are both 68mil (14ga).

\* Clips are packaged as pairs. Four StiffClip HE clips are used at each opening: two left-hand and two right-hand clips attach the complete header to the jamb.

**Weld Diagram**



1/8" weld around four 0.375" diameter holes, with 1/8" welds along each side.



StiffClip HE 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® LB

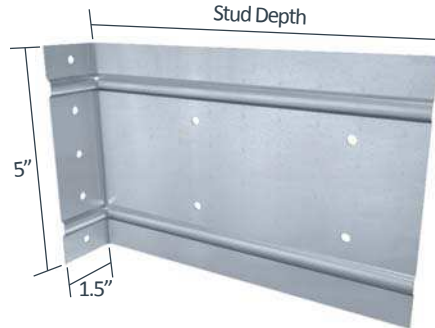
Spandrel Wall Bypass



### 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 & F2												
Stud		F1 Allowable Loads				F2 Allowable Loads						
		LB362	LB600	LB800 (Standard 2" Offset)	LB1000 & LB1200 (Standard 2" Offset)	LB362 & LB600			LB800 (Standard 2" Offset)		LB1000 & LB1200 (Standard 2" Offset)	
Thickness Mils (ga)	Yield Strength (ksi)	w/3 #12 Screws	w/3-4 #12 Screws	w/3 #12 Screws	w/3 #12 Screws	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	Patterns 2 & 3	Pattern 4	Pattern 12	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 12	Pattern 13
33 (20)	33	190	191	190	190	376	565	752	565	752	565	752
33 (20)	50	275	275	275	275	544	817	1,089	817	1,089	816	1,062
43 (18)	33	248	248	248	248	560	841	1,120	841	1,120	840	1,062
43 (18)	50	359	359	322	359	810	1,215	1,620	1,215	1,620	1,062	1,062
54 (16)	33	312	312	322	312	788	1,183	1,576	1,183	1,576	1,062	1,062
54 (16)	50	450	450	322	450	1,138	1,709	1,954	1,709	1,954	1,062	1,062
68 (14)	50	568	536	322	532	1,610	1,954	1,954	1,954	1,954	1,062	1,062
97 (12)	50	768	536	322	532	1,698	1,954	1,954	1,954	1,954	1,062	1,062
<b>Max Allowable Clip Load</b>		<b>768</b>	<b>536</b>	<b>322</b>	<b>532</b>	<b>1,954</b>			<b>1,954</b>		<b>1,062</b>	

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	251	377	503	320	370	534	793	259	331	417
33 (20)	50	340	506	678	362	544	727	463	536	773	1,149	376	479	604
43 (18)	33	350	522	697	373	561	749	477	552	795	1,182	386	493	622
43 (18)	50	506	753	1,009	539	810	1,082	689	798	1,150	1,710	559	713	899
54 (16)	33	493	733	981	524	789	1,053	670	776	1,119	1,663	544	693	875
54 (16)	50	711	1,059	1,417	757	1,139	1,521	968	1,121	1,616	2,401	785	1,001	1,263
68 (14)	50	1,006	1,498	2,004	1,071	1,610	1,792	1,369	1,586	2,286	3,397	1,111	1,417	1,561
97 (12)	50	1,061	1,579	2,114	1,129	1,698	1,792	1,443	1,673	2,411	3,583	1,172	1,494	1,561
<b>Max Allowable Clip Load</b>		<b>2,658</b>			<b>1,792</b>			<b>3,863</b>				<b>1,561</b>		

**\*\*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.

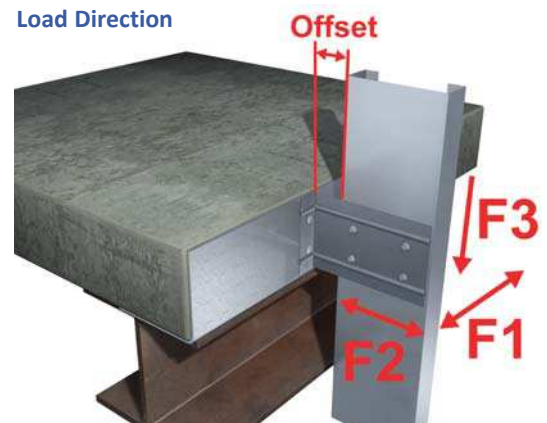
**Example:** 6" stud depth

**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
<b>Max Allowable Clip Load</b>		<b>1,793</b>			<b>1,899</b>			<b>1,192</b>		

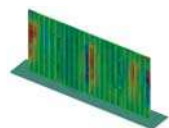
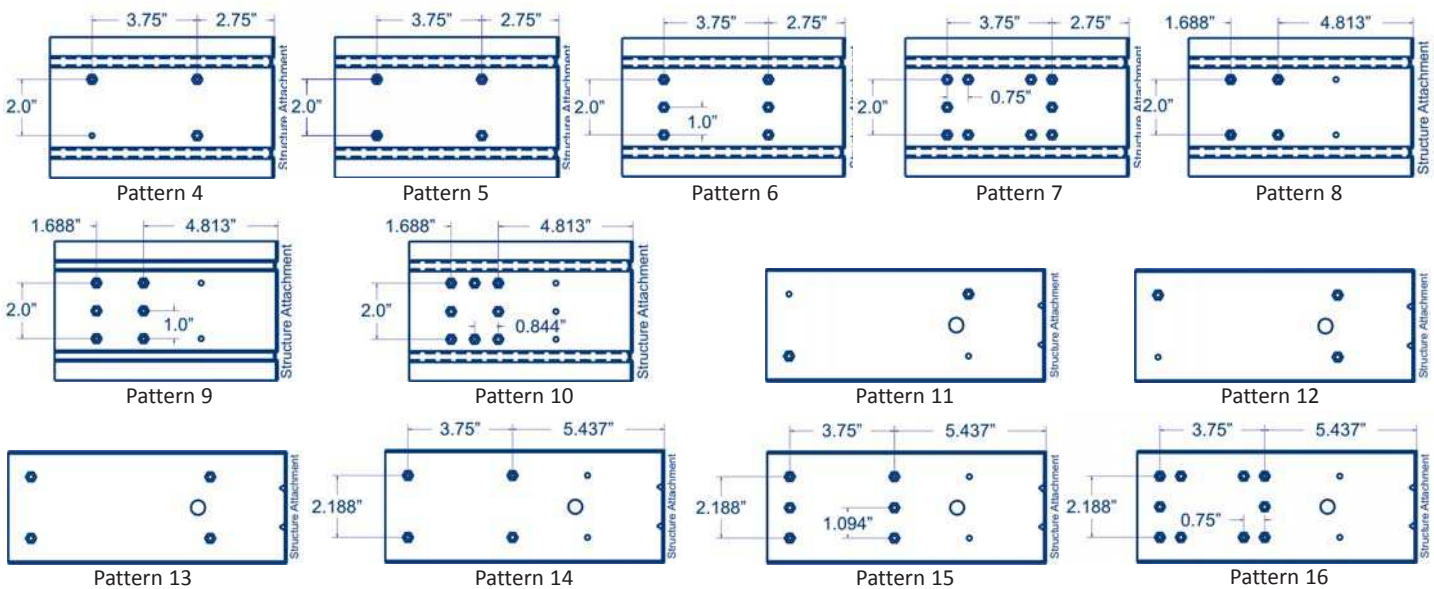
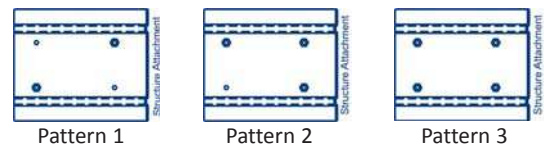
**Notes:**

- 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 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 1/2" return lips on the top and bottom of the leg attaching to the stud for increased stiffness.



**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>

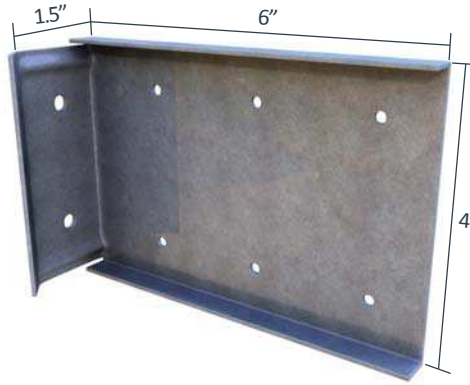
# StiffClip® LB-HD

Spandrel Wall Bypass for Seismic Conditions

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 (340 MPa) minimum yield strength, 65ksi minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/653M G90 (Z275) hot dipped galvanized coating.



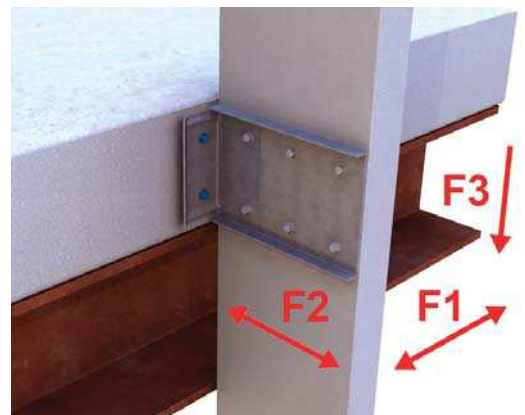
### StiffClip LB-HD Allowable Loads

StiffClip® LB-HD, Recommended Allowable Load (lbs): F1, F2 & F3								
Stud		F1 Allowable (ASD) Loads	F2 Allowable (ASD) Loads			F3 Allowable (ASD) Loads		
Thickness Mills (ga)	Yield Strength (ksi)	w/3-6' #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/6 #12 Screws
33 (20)	33	191	524	754	1,130	318	450	599
43 (18)	33	248	780	1,122	1,130	474	670	892
54 (16)	33	312	1,096	1,130	1,130	666	942	1,254
54 (16)	50	450	1,130	1,130	1,130	962	1,361	1,811
68 (14)	50	567	1,130	1,130	1,130	1,361	1,924	1,966
97 (12)	50	809	1,130	1,130	1,130	1,435	1,966	1,966
<b>Maximum Allowable Clip Load</b>		<b>857</b>	<b>1,130</b>			<b>1,966</b>		

### Note:

- Fasten within 3/4" from the angle heel (centerline of the 1 1/2" leg) to minimize eccentric load transfer.
  - Guide holes for stud connection are 0.172" diameter for #12 screws. Guide holes for structure connection are 0.375" diameter for (2) 3/4" concrete screws.
  - StiffClip LB-HD resists both 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 act on the connection, it is the responsibility of the designer to check the interaction of forces.
  - The recommended allowable load is for the clip and attachment to the stud only. The design professional must design attachment to the primary structure.
  - 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.
- <sup>1</sup> Only two screws near clip support are considered effective.

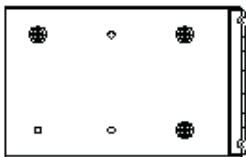
### Load Direction



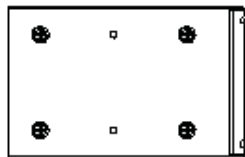
### Nomenclature

StiffClip LB-HD is designed to be used with 6" studs and is designated *StiffClip® LB600-HD*

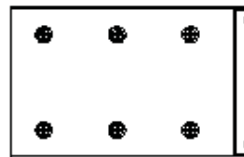
### Screw Patterns



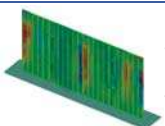
3 Screw Pattern



4 Screw Pattern



6 Screw Pattern



StiffClip LB-HD 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® Splice

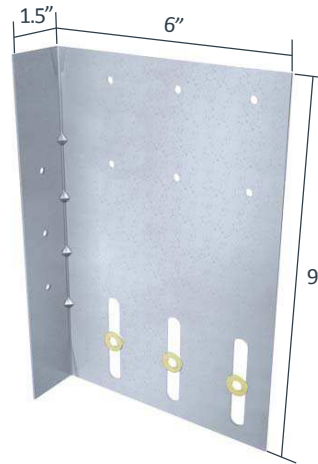
Multi-Stud Bypass



### 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 Patent # 5,906,080

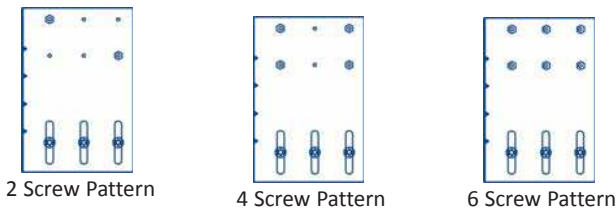
### VertiClip Splice Allowable Loads

VertiClip® Splice, Recommended Allowable Load (lbs): F2 & F3									
Stud		F2 Load Direction					F3 Load Direction		
Thickness Mils (ga)	Yield Strength (ksi)	Qty #12 screws Upper Half (Listed 1st) / Qty #12 screws Lower Half (Listed 2nd)					#12 Screws in Upper Half		
		2 screws / 2 screws	4 screws / 2 screws	4 screws / 3 screws	6 screws / 2 screws	6 screws / 3 screws	2 screws	4 screws	6 screws
33 (20)	33	754	1,041	1,229	1,041	1,229	216	431	562
33 (20)	50	1,089	1,208	1,328	1,208	1,328	313	623	813
43 (18)	33	1,122	1,225	1,328	1,225	1,328	322	642	837
43 (18)	50	1,328	1,328	1,328	1,328	1,328	465	928	1,209
54 (16)	33	1,328	1,328	1,328	1,328	1,328	453	903	1,177
54 (16)	50	1,328	1,328	1,328	1,328	1,328	654	1,304	1,700
68 (14)	50	1,328	1,328	1,328	1,328	1,328	925	1,844	2,404
97 (12)	50	1,328	1,328	1,328	1,328	1,328	976	1,944	2,432
<b>Maximum Allowable Clip Load</b>		<b>1,328</b>					<b>2,432</b>		

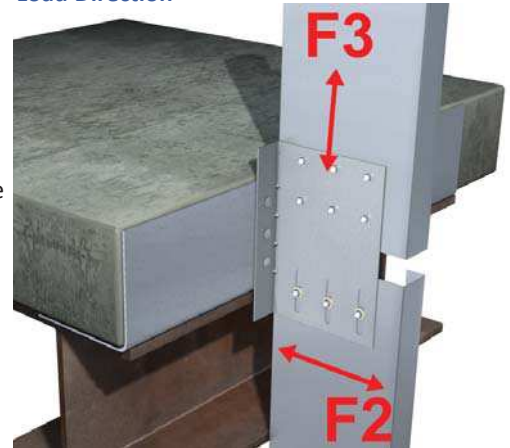
### Notes:

- Fasten within 3/4" from the angle heel centerline of the 1 1/2" leg.
- Guide holes for attachment to structure are 0.172" in diameter.
- Total vertical deflection of up to 2" (1" up and 1" down). Deflection requirements greater than 1" up and down are available.
- 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



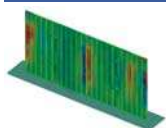
### Load Direction



### Nomenclature

VertiClip Splice is available in one size for use with 6" stud depths and is designated VertiClip® Splice

\* Clip shown is a left version of VertiClip Splice. Right side versions can be made as a custom part.



VertiClip Splice 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



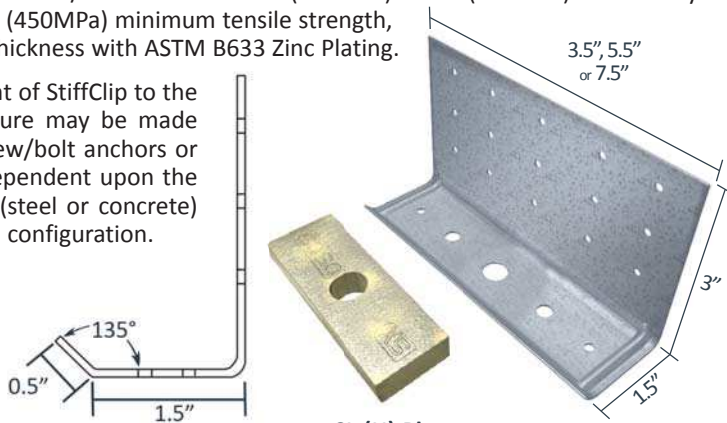
### Material Composition

**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			
<b>Max Allowable Clip Load</b>		<b>1,416</b>	<b>1,917</b>	<b>1,151</b>	<b>1,804</b>		<b>2,423</b>	<b>4,107</b>	<b>2,225</b>	<b>3,936</b>		<b>2,598</b>	<b>4,978</b>	<b>5,713</b>	<b>6,716</b>	

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	1,067	1,713	171,480	286	874	1,130	1,713	182,790	381	1,481	1,884	3,140	344,193
33 (20)	50	413	1,263	1,067	2,435		413	1,263	1,633	2,475		550	2,139	2,722	4,537	
43 (18)	33	373	1,301	1,067	2,435		373	1,301	1,682	2,549		497	2,204	2,804	4,673	
43 (18)	50	538	1,880	1,067	2,435		538	1,880	2,225	3,683		718	3,184	4,051	6,755	
54 (16)	33	468	1,830	1,067	2,435		468	1,830	2,225	3,585		624	3,099	3,943	6,571	
54 (16)	50	676	2,510	1,067	2,435		676	2,642	2,225	5,177		901	4,476	5,695	7,306	
68 (14)	50	851	2,510	1,067	2,435		851	3,736	2,225	5,702		1,134	6,329	6,007	7,306	
97 (12)	50	1,214	2,510	1,067	2,435		1,214	3,939	2,225	5,702		1,618	6,455	6,007	7,306	
118 (10)	50	1,284	2,510	1,067	2,435	1,284	3,939	2,225	5,702	1,712	6,455	6,007	7,306			
<b>Max Allowable Clip Load</b>		<b>1,421</b>	<b>2,510</b>	<b>1,067</b>	<b>2,435</b>		<b>2,580</b>	<b>4,107</b>	<b>2,225</b>	<b>5,702</b>		<b>4,158</b>	<b>6,455</b>	<b>6,007</b>	<b>7,306</b>	

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

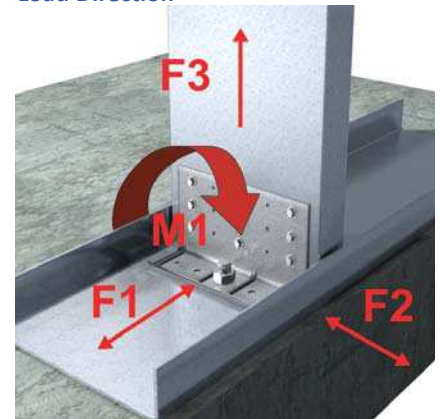


StiffClip® CL800, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL800-68					CL800-118					CL800-118 (H)				
Thickness Mils (ga)	Yield Strength (ksi)	6 #12 Screws, Pattern 5					6 #12 Screws, Pattern 5					10 #12 Screws, Pattern 6				
		F1 (lbs)	F2 (lbs)	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	
<b>Max Allowable Clip Load</b>		<b>1,435</b>	<b>2,662</b>	<b>1,077</b>	<b>2,860</b>		<b>3,356</b>	<b>6,410</b>	<b>2,666</b>	<b>8,229</b>		<b>4,816</b>	<b>8,274</b>	<b>7,446</b>	<b>11,143</b>	

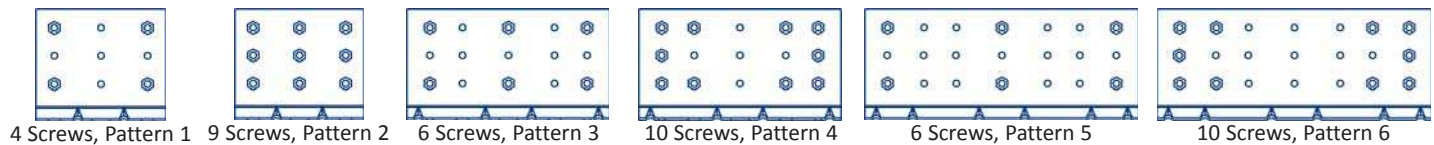
**Notes:**

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within 3/4" from the angle heel (centerline of the 1/2" leg), using pre-drilled holes.
- Center hole is .563" in diameter for 1/2" 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 1/2" leg (shown on page 1).

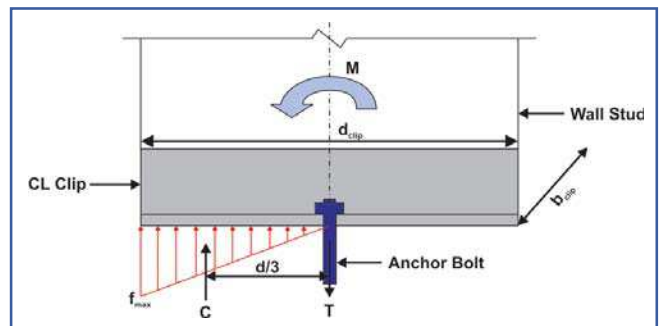
**Example:** 6" stud, uplift load of 650lbs

**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.

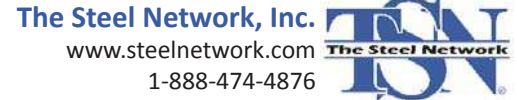
$$T = \frac{M}{(2/3)(d_{clip}/2)} = \frac{3M}{d_{clip}}$$



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

# MidWall™

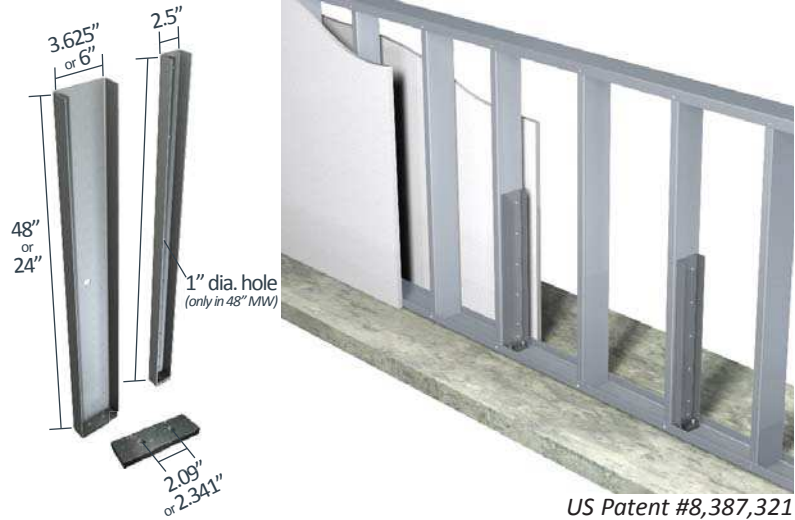
Partial Wall Framing



### Material Composition

**MidWall:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H), 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, G90 (Z275) hot-dipped galvanized coating. Material Thickness = 118mil (10 gauge, 0.1242" design thickness) for 250MW and 362MW. Material Thickness = 97mil (12 gauge, 0.1017" design thickness) for 600 MW.

**MidWall Plate:** ASTM A36/A36M: 36ksi (250MPa) minimum yield strength, 58-80ksi (400-550MPa) tensile strength, ½" minimum thickness.



US Patent #8,387,321

### MidWall Allowable Loads

Wall Width (in)	MidWall™ Member	Maximum Point Load @ 48" (ASD), lbs	Maximum Base Moment, lbs-in
2 ½	250MW	128	6,150
3 5/8"	362MW	332	15,940
6	600MW	407	19,540

### Notes

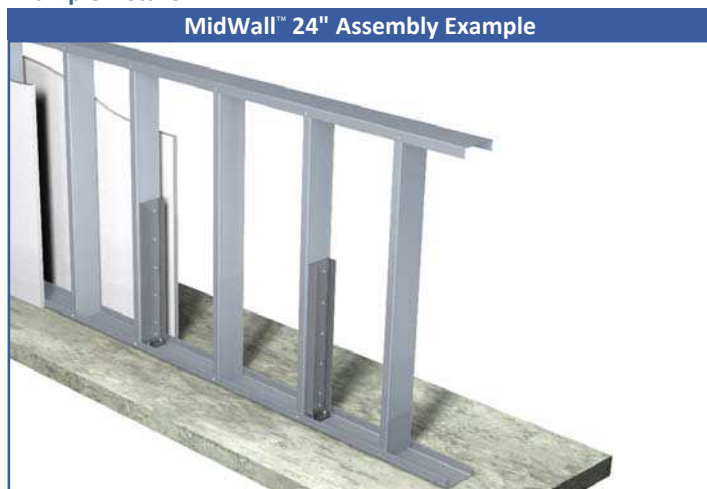
- MidWall is designed to support out-of-plane loading in cantilevered partial wall systems that are unsupported at the top track.
- Out-of-plane loads are transferred to the floor system through plate nested in the flanges of the member with two 3/8" diameter fasteners (or one ½" diameter fastener for 250MW) used for the connection.
- MidWall may be used in place of standard framing members, or in conjunction with them to frame the wall.

### Nomenclature

MidWall is currently available in two heights and three depths. Product nomenclature lists the member depth first followed by the height in inches

**Example:** 6" web depth, 24" tall MidWall  
**Designate:** 600MW-24

### Example Details



MidWall 24" is generally used in interior half walls of less than 48" in height. Attach MidWall 24" to a 54mil stud with #12 screws through all pre-drilled guide holes. Other studs in the walls are typical infill studs. Maximum spacing between MidWall connectors is 36" o.c. (see table on following page). Contact TSN Technical Services at (888) 474-4876 for design recommendations.

MidWall 48" is used in interior half walls equal to or more than 48" in height. Use one MidWall 48" as a substitute for a stud at the specified spacing, or attach to a 54mil stud with #12 screws through all pre-drilled guide holes. Maximum spacing between MidWall connectors is 36" o.c.

**Design Information**

**Criteria:**

IBC 2009

Refer to Section 1607.7.1

**Applications:**

- Handrails and Guards
- Interior Half Walls
- Parapets
- Ribbon Windows

**Handrails and Guards:**

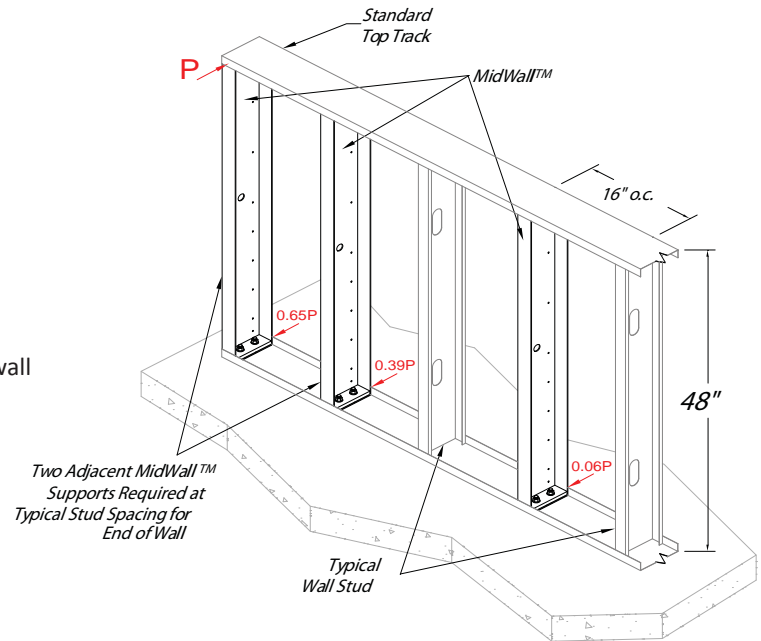
- 50 lb/ft applied in any direction at the top of wall
- 200 lbs applied in any direction at any point at the top of the wall

**Parapets & Ribbon Windows:**

- Design Wind Pressure

**Interior Half Walls:**

- Design internal pressure



**Design Procedure**

The top track spanning between MidWall members acts as a load distribution member capable of distributing localized loads to multiple MidWall members. It is recommended to design the track in these applications. Refer to the diagram above for an example of the distribution of the point load, P, to adjacent MidWall supports. At the end of the wall, MidWall is required at adjacent stud spacings. Designed spacing begins after two adjacent end supports.

Max Applied Tension in One Anchor (lbs)	250 MidWall™ ½" Anchorage Options (4,000 psi minimum concrete strength)
500	½" Wedge-Bolt, 2" Embed. (Powers); ½" Carbon Steel HUS-H Screw Anchor Mechanical, 2" Embed. (Hilti)
1,000	½" Wedge-Bolt, 2 ½" Embed. (Powers); ½" Carbon Steel Kwik Bolt 3 Expansion Anchor, 2 ¼" Embed. (Hilti) ½" Trubolt Wedge, 2 ¼" Embed. (Red Head)
1,500	½" Carbon and Stainless Steel Power-Bolt, 2 ½" Embed. (Powers) ½" Carbon Steel Kwik Bolt 3 Expansion Anchor, 3 ½" Embed. (Hilti)

Max Applied Tension in One Anchor (lbs)	362/600 MidWall™ ¾" Anchorage Options (4,000 psi minimum concrete strength)
1,500	¾" Wedge-Bolt, 3" Embed. (Powers); ¾" Carbon Steel Kwik Bolt 3 Expansion Anchor, 3 ½" Embed. (Hilti)
2,000	¾" Wedge-Bolt, 3 ½" Embed. (Powers); ¾" HAS-E Standard (ISO 898 Class 5.8) w/ HIT-HY 150 MAX Adhesive, 3 ¾" Embed. (Hilti); ¾" ASTM A307 Threaded Rod w/ A7 Adhesive, 3 ¾" Embed. (Red Head)
2,500	¾" Wedge-Bolt, 3 ½" Embed. (Powers); ¾" HAS-E Standard (ISO 898 Class 5.8) w/ HIT-HY 150 MAX Adhesive, 3 ¾" Embed. (Hilti); ¾" ASTM A193 GR. B7 Threaded Rod w/ A7 Adhesive, 3 ¾" Embed. (Red Head)
3,000	¾" HAS SS (AISI 304/316 SS) w/ HIT-HY 150 MAX Adhesive, 3 ¾" Embed. (Hilti)

# StiffClip® TD

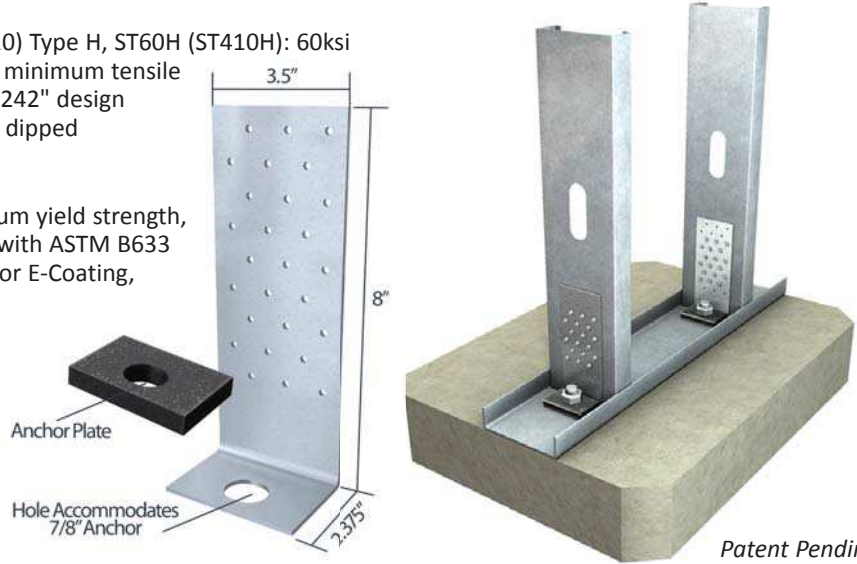
Uplift Connector



### Material Composition

**Clip:** ASTM A1003/A1003M Structural Grade 60 (410) Type H, ST60H (ST410H): 60ksi (410MPa) minimum yield strength, 70ksi (480MPa) minimum tensile strength, 118mil minimum thickness (10 gauge, 0.1242" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

**TD Plate:** ASTM A36/A36M: 36ksi (250MPa) minimum yield strength, 58-80ksi (400-550MPa) minimum tensile strength, with ASTM B633 Type II Yellow Zinc Coating, Paint, Powder Coating, or E-Coating, or approved equivalent.



Patent Pending

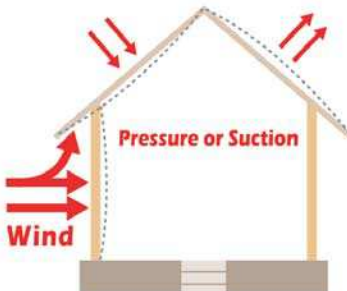
### StiffClip TD Allowable Loads

StiffClip® TD, Recommended Allowable Load for Steel Framing (lbs): F3				
Stud		w/12 #12 Screws	w/18 #12 Screws	w/27 #12 Screws
Thickness Mils (ga)	Yield Strength (ksi)			
33 (20)	33	2,261	3,391	5,087
33 (20)	50	3,266	4,900	7,349
43 (18)	33	3,365	5,047	7,571
43 (18)	50	4,861	7,292	10,718
54 (16)	33	4,732	7,097	10,646
54 (16)	50	6,834	10,251	10,718
68 (14)	50	9,662	10,718	10,718
97 (12)	50	10,188	10,718	10,718
Maximum Allowable Clip Load		10,718		

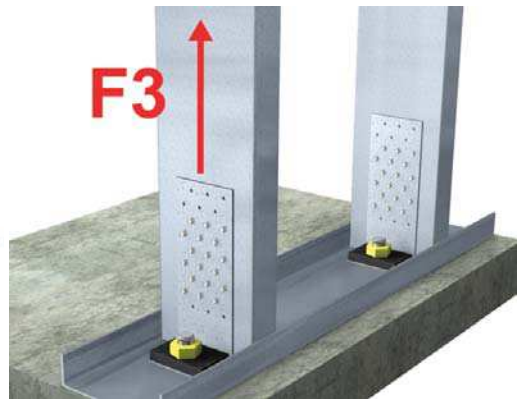
StiffClip® TD, Recommended Allowable Load for Wood Framing (lbs): F3						
Fastener Type	Douglas Fir / Southern Pine			Spruce Pine-Fir / Hem-Fir		
	Quantity of Fasteners			Quantity of Fasteners		
	12	18	27	12	18	27
10d	2,846	4,268	6,403	2,465	3,698	5,547
16d	3,279	4,919	7,378	2,838	4,257	6,386
#12 Wood Screw	3,451	5,177	7,766	3,046	4,569	6,854
Maximum Allowable Clip Load	10,718			10,718		

### Notes:

- Fasten within 1.25" from the angle heel using the existing anchor hole.
- Guide holes are in place for fastener installation efficiency. The number of fasteners are determined by the designer.
- Attachment to stud is made with up to 27 #12 screws, symmetrically placed.
- StiffClip TD resists vertical uplift loads.
- Allowable loads for steel framing have not been increased for wind, seismic, or other factors.
- Allowable shear for nails is increased 60% for wind and seismic loads in wood framing.
- For wood, moisture content > 19%. Consult The Steel Network, Inc. for reductions to values.



### Load Direction

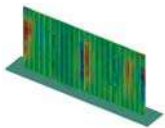
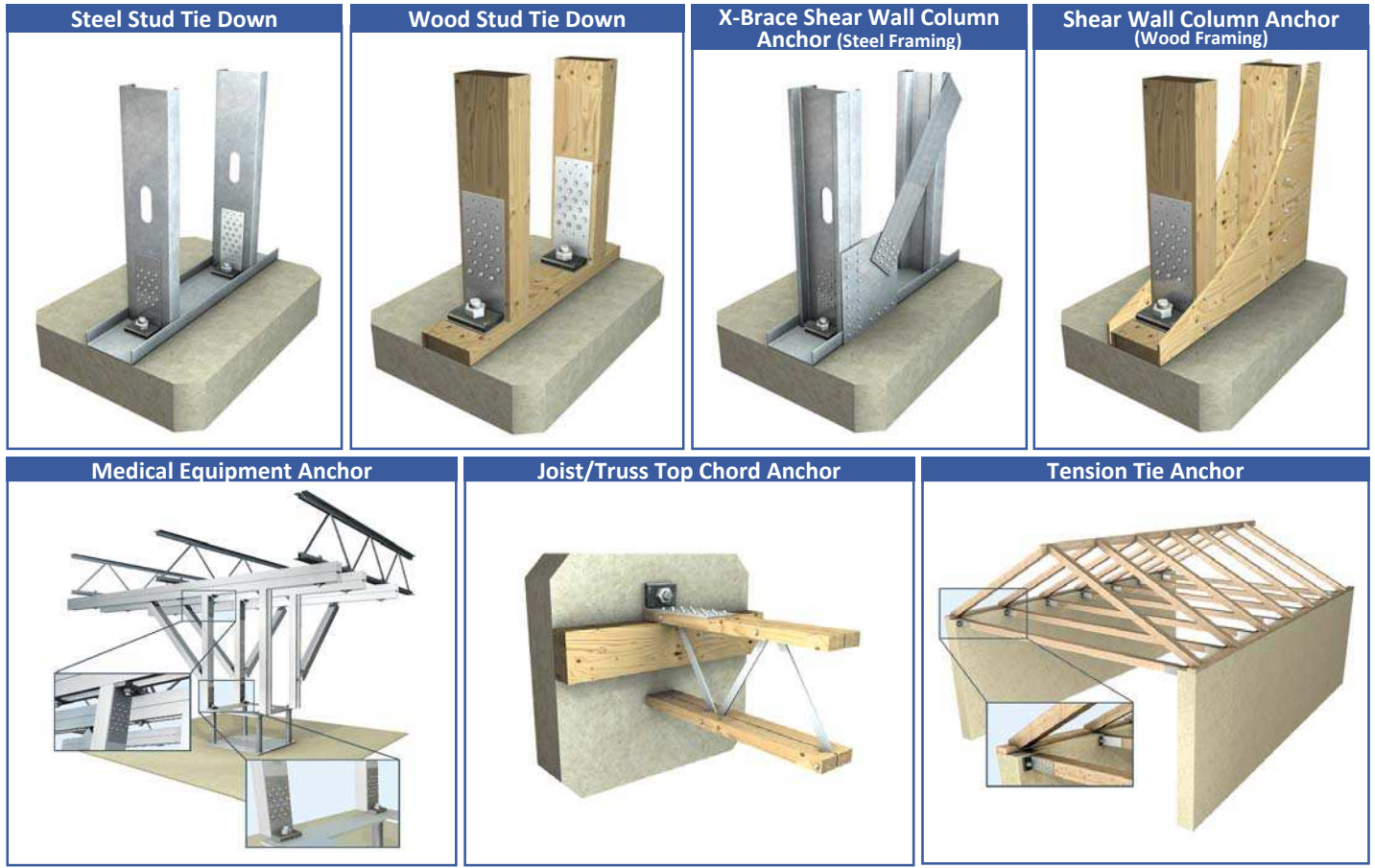


**Nomenclature**

StiffClip TD is available in one size and utilizes a 0.75" plate on top of the 2.375" leg

**Designate:** StiffClip® TD

**Example Details**



StiffClip TD Series  
Blast and Seismic Design data  
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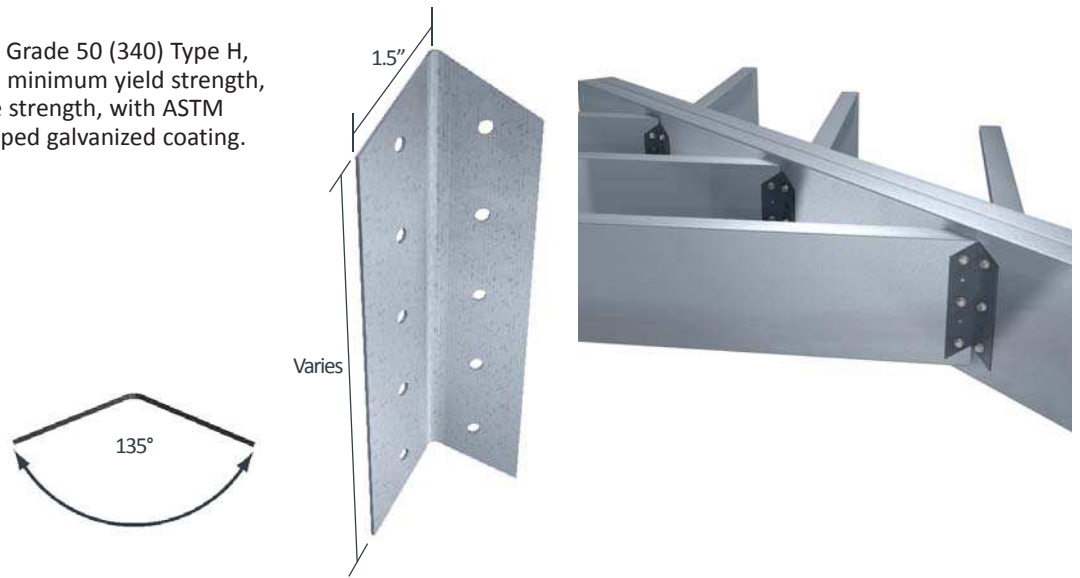
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# StiffClip® HC

Hip Connector

### Material Composition

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



### StiffClip HC Allowable Loads

StiffClip® HC Recommended Allowable Load for a Single Clip (lbs): F3								
Joist		HC362/400-43	HC362/400-68	HC600-68	HC800-43	HC800-68	HC1000-68	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/4 #12 screws	w/5 #12 screws	w/5 #12 screws	w/4 #12 screws	w/6 #12 screws
33 (20)	33	337	337	722	910	910	N/A	N/A
33 (20)	50	487	487	1,043	1,315	1,315	N/A	N/A
43 (18)	33	502	502	1,074	1,354	1,354	1,102	1,646
43 (18)	50	725	725	1,552	1,957	1,957	1,592	2,378
54 (16)	33	706	706	1,510	1,904	1,904	1,550	2,315
54 (16)	50	1,019	1,019	2,181	2,751	2,751	2,238	3,343
68 (14)	50	1,020	1,441	3,084	2,753	3,889	3,164	4,727
97 (12)	50	1,020	1,520	3,252	2,753	4,101	3,337	4,779
<b>Max Allowable Clip Load</b>		<b>1,606</b>	<b>2,302</b>	<b>3,639</b>	<b>3,960</b>	<b>4,488</b>	<b>4,779</b>	

Joist		HC1200-43		HC1200-68		HC1400-68		HC1600-68	
Thickness Mils (ga)	Yield Strength (ksi)	w/6 #12 screws	w/8 #12 screws	w/6 #12 screws	w/8 #12 screws	w/5 #12 Screws	w/9 #12 Screws	w/6 #12 Screws	w/10 #12 Screws
54 (16)	33	2,342	3,111	2,342	3,111	1,956	3,509	2,346	3,908
54 (16)	50	3,383	3,776	3,383	4,493	2,825	4,560	3,389	4,560
68 (14)	50	3,385	3,776	4,560	4,560	3,994	4,560	4,560	4,560
97 (12)	50	3,385	3,776	4,560	4,560	4,211	4,560	4,560	4,560
<b>Max Allowable Clip Load</b>		<b>3,776</b>		<b>4,560</b>		<b>4,560</b>		<b>4,560</b>	

### Notes:

- Design loads consider loads on the clip only.
- Number of fasteners used is based on fastener manufacturer’s allowable load data.
- Allowable loads have not been increased for wind, seismic, or other factors.
- All guide holes may not require fasteners. Fastener amount determined by designer.
- Torsional effects are considered on screw groups for 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.

### Nomenclature

StiffClip HC is designated by multiplying joist depth by 100, then listing material thickness.

**Example:** 6” stud depth, 68mil steel thickness

**Designate:** StiffClip® HC600-68

\*\*Standard angle bend is 135°. Other angle shapes are available.

### Load Direction



# StiffClip® RT

Roof Tie

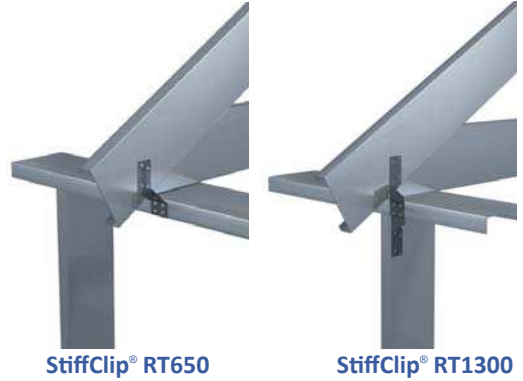
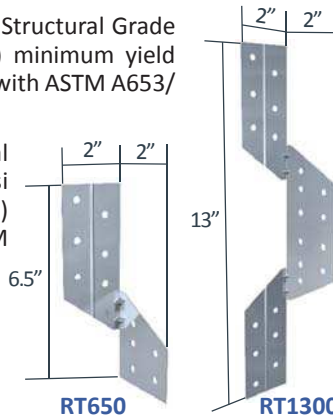
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1-888-474-4876



### Material Composition

**33 mil & 43 mil thicknesses:** ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

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



### StiffClip RT Allowable Loads

StiffClip® RT, Recommended Allowable Load (lbs): F1							
Stud		RT650-33 & RT1300-33		RT650-43 & RT1300-43		RT650-54 & RT1300-54	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws
33 (20)	33	94	95	94	95	94	95
33 (20)	50	136	138	136	138	136	138
43 (18)	33	124	124	124	124	124	124
43 (18)	50	175	175	179	179	179	179
54 (16)	33	156	156	156	156	156	156
54 (16)	50	175	175	225	225	225	225
68 (14)	50	175	175	231	231	284	284
97 (12)	50	175	175	231	231	342	342
Maximum Allowable Clip Load		175		231		342	

StiffClip® RT, Recommended Allowable Load (lbs): F2										
Stud		RT650-33	RT650-33 & RT1300-33		RT650-43	RT650-43 & RT1300-43		RT650-54	RT650-54 & RT1300-54	
Thickness Mils (ga)	Yield Strength (ksi)	w/5 #12 Screws in Short Leg	w/2 #12 Screws	w/4 #12 Screws	w/5 #12 Screws in Short Leg	w/2 #12 Screws	w/4 #12 Screws	w/5 #12 Screws in Short Leg	w/2 #12 Screws	w/4 #12 Screws
33 (20)	33	191	95	128	191	95	159	191	95	191
33 (20)	50	239	128	128	275	138	159	275	138	275
43 (18)	33	239	124	128	248	124	159	248	124	248
43 (18)	50	239	128	128	329	159	159	359	179	323
54 (16)	33	239	128	128	312	156	159	312	156	312
54 (16)	50	239	128	128	329	159	159	450	225	323
68 (14)	50	239	128	128	329	159	159	567	284	323
97 (12)	50	239	128	128	329	159	159	614	323	323
Max Allowable Clip Load		239	128		329	159		614	323	

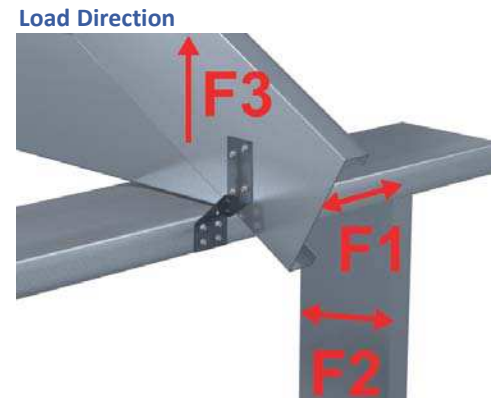
**\*\*StiffClip RT Allowable Load tables and important notes continued on next page.**



StiffClip® RT, Recommended Allowable Load (lbs): F3							
Stud		RT650-33 & RT1300-33		RT650-43 & RT1300-43		RT650-54 & RT1300-54	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws
33 (20)	33	198	384	198	384	198	384
33 (20)	50	286	453	286	537	286	555
43 (18)	33	294	453	294	537	294	572
43 (18)	50	425	453	425	537	425	826
54 (16)	33	414	453	414	537	414	804
54 (16)	50	453	453	537	537	598	1,024
68 (14)	50	453	453	537	537	751	1,024
97 (12)	50	453	453	537	537	751	1,024
<b>Maximum Allowable Clip Load</b>		<b>453</b>		<b>537</b>		<b>1,024</b>	

**Notes:**

- StiffClip RT resists horizontal, lateral, and uplift loads.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Number of screws designated represents the amount required in each leg of the clip.
- Loads listed reflect force in a single direction. When multiple loads act on the connection, it is the responsibility of the designer to check the interaction of forces.
- Torsional effects are considered on screw groups for F1, 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.



**Nomenclature**

StiffClip RT650 is 6½” long, and may be used when wall studs do not align with roof framing member. The RT1300 is 13” long, and is used when wall studs align with roof framing member. Clips are designated by length, followed by thickness and number of screws used in each leg (determined by load requirements - refer to load tables).

**Example:** Stud aligns with roof framing member (see application image)

**Designate:** StiffClip® 1300

\* StiffClip RT650 are packaged in pairs.



# StiffClip® WC

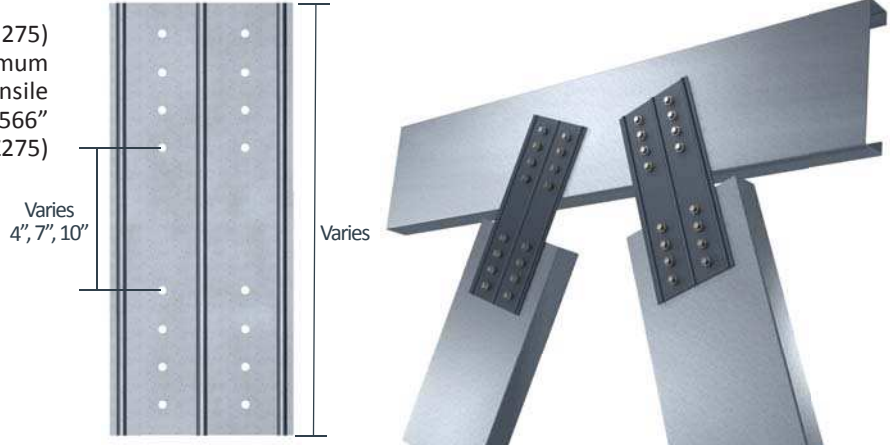
Web Connector



### Material Composition

**54mil:** ASTM A1003/A1003M Structural Grade 40 (275) Type H, ST40H (ST275H): 40ksi (275MPa) minimum yield strength, 55ksi (380MPa) minimum tensile strength, 54mil minimum thickness (16 gauge, 0.0566" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

**118mil:** 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.



### StiffClip WC Allowable Loads

StiffClip® WC, Recommended Allowable Load (lbs)														
Stud		WC350-54, 10" lg				WC350-118, 10"lg				WC550-54, 13"lg				
Max Thickness (Web or Chord) Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/10 #12 Screws
33	33	167	246	398	1,300	377	754	1,130	1,507	82	118	184	327	737
33	50	167	246	398	1,300	544	1,089	1,633	2,178	82	118	184	327	737
43	33	167	246	398	1,300	561	1,122	1,682	2,243	82	118	184	327	737
43	50	167	246	398	1,300	810	1,620	2,431	3,241	82	118	184	327	737
54	33	167	246	398	1,300	789	1,577	2,366	3,154	82	118	184	327	737
54	50	167	246	398	1,300	1,139	1,817	2,944	4,556	82	118	184	327	737
68 & 97	50	167	246	398	1,300	1,232	1,817	2,944	5,275	82	118	184	327	737
<b>Max Allowable Clip Load</b>		<b>1,300*</b>				<b>5,275*</b>				<b>737**</b>				

StiffClip® WC, Recommended Allowable Load (lbs)															
Stud		WC550-118, 13" lg				WC750-54, 16"lg					WC750-118, 16"lg				
Max Thickness (Web or Chord) Mils (ga)	Yield Strength (ksi)	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/10 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/10 #12 Screws	w/12 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws	w/10 #12 Screws	w/12 #12 Screws
33	33	754	1,130	1,507	1,884	112	161	251	447	1,005	754	1,130	1,507	1,884	2,261
33	50	1,089	1,633	2,178	2,722	112	161	251	447	1,005	1,089	1,633	2,178	2,722	3,266
43	33	1,122	1,682	2,243	2,804	112	161	251	447	1,005	1,122	1,682	2,243	2,804	3,365
43	50	1,249	1,951	3,241	4,051	112	161	251	447	1,005	1,183	1,703	2,661	4,051	4,861
54	33	1,249	1,951	3,154	3,943	112	161	251	447	1,005	1,183	1,703	2,661	4,731	6,834
54	50	1,249	1,951	3,469	5,695	112	161	251	447	1,005	1,183	1,703	2,661	4,731	6,834
68	50	1,249	1,951	3,469	7,774	112	161	251	447	1,005	1,183	1,703	2,661	4,731	9,662
97	50	1,249	1,951	3,469	7,774	112	161	251	447	1,005	1,183	1,703	2,661	4,731	10,188
<b>Max Allowable Clip Load</b>		<b>7,774**</b>				<b>1,005**</b>					<b>10,601**</b>				

### Notes:

- Allowable design loads apply to tension or compression on StiffClip WC utilizing the fastener patterns shown on next page.
- Allowable loads have not been increased for wind, seismic, or other factors.
- All guide holes may not require fasteners. Number and size of fasteners used is based on fastener manufacturer's allowable load data, and is to be determined by designer.
- Use of strengthening ribs varies with each clip.

\* Load based on structural test.

\*\* Load based on calculations.

### Load Direction



\*\*\*StiffClip WC Screw Patterns are shown on next page.

**Screw Patterns**

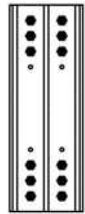
**WC350-XX**



2 Screws



4 Screws

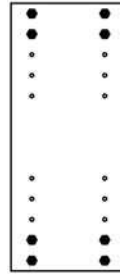


6 Screws

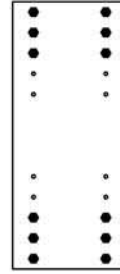


8 Screws

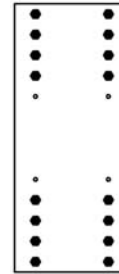
**WC550-XX**



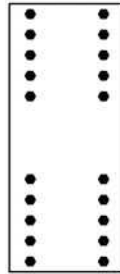
4 Screws



6 Screws

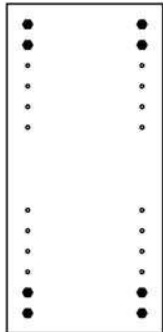


8 Screws

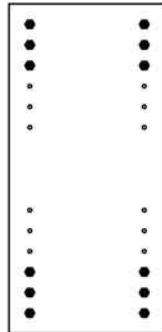


10 Screws

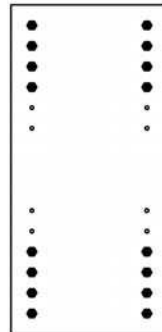
**WC750-XX**



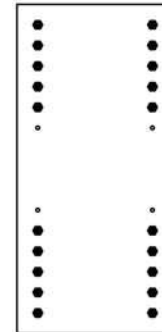
4 Screws



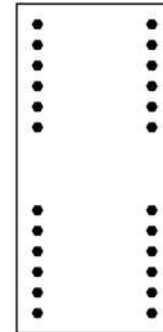
6 Screws



8 Screws



10 Screws



12 Screws

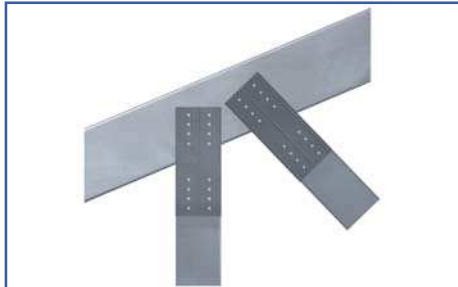
**Nomenclature**

StiffClip WC is designated by multiplying stud depth in inches by 100, then listing material, thickness and length.

**Example:** 3½" stud depth, 54mil steel thickness, 10" long

**Designate:** StiffClip® WC350-54 10"


**Example Details**



# StiffClip® PL

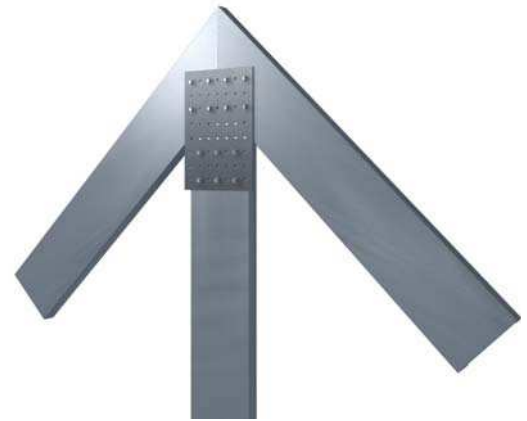
Truss Plate Connector

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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, with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



## StiffClip PL Allowable Loads

Plates used to connect framing are generally considered as pinned joints. Load transfers through screw or welded connections between members.

### Notes:

- All guide holes may not require fasteners. Number and size of fasteners used is based on fastener manufacturer's allowable load data, and is to be determined by designer.
- Guide holes are 0.172" in diameter unless specified.
- Guide holes have ½" minimum edge distance and 1" minimum spacing. Spacing will vary based on plate size and specified project requirements.

## Nomenclature

StiffClip PL is available in many different shapes and is designated as width x length - material thickness.

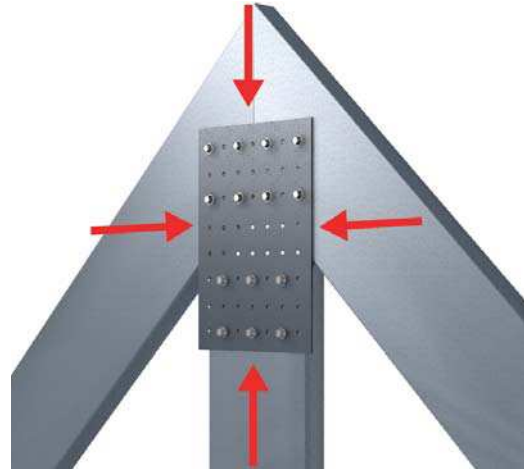
**Example:** 10" wide x 24" long with 68 mil thickness

**Designate:** StiffClip® PL10x24-68

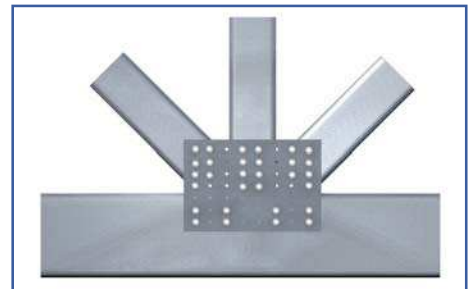
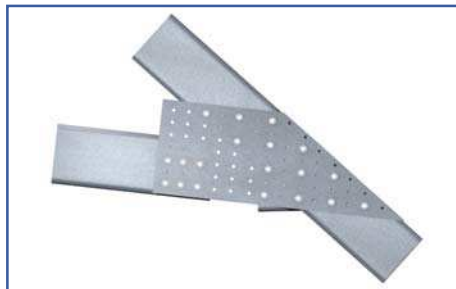
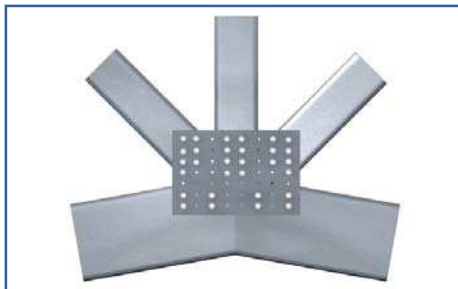
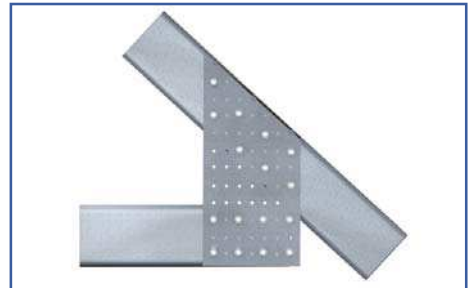
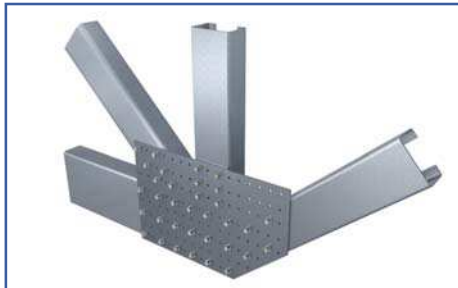
\* Clip sizes vary within each application

\*\*StiffClip PL are typically made to order per project specifications.

## Load Direction



## Example Details

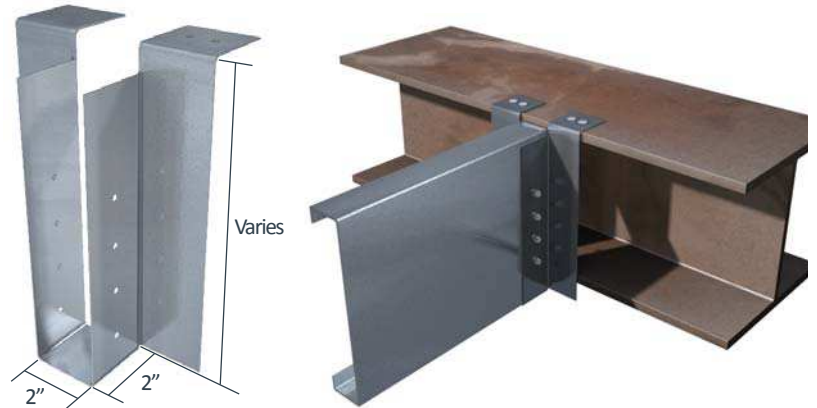


# StiffClip® JH

Joist Hanger

### Material Composition

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



### StiffClip JH Allowable Loads

StiffClip® JH Recommended Allowable Load (lbs): F3						
Joist		JH362/JH400- 43	JH362/JH400-68	JH600-43	JH600-68	JH800-43
Thickness Mils (ga)	Yield Strength (ksi)	w/1 #12 screw	w/1 #12 screw	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws
33 (20)	33	1,024	1,024	638	638	474
33 (20)	50	1,102	1,102	644	644	478
43 (18)	33	1,739	1,739	1,416	1,416	1,051
43 (18)	50	2,038	2,141	1,433	1,433	1,060
54 (16)	33	2,038	2,341	2,038	2,575	2,038
54 (16)	50	2,038	2,575	2,038	2,575	2,038
68 (14)	50	2,038	2,575	2,038	2,575	2,038
97 (12)	50	2,038	2,575	2,038	2,575	2,038
118 (10)	50	2,038	2,575	2,038	2,575	2,038
Max Allowable Clip Load		2,038	2,575	2,038	2,575	2,038

StiffClip® JH Recommended Allowable Load (lbs): F3						
Joist		JH800-68	JH1000-68	JH1000-97	JH1200-68	JH1200-97
Thickness Mils (ga)	Yield Strength (ksi)	w/3 #12 screws	w/4 #12 screws	w/4 #12 screws	w/5 #12 screws	w/5 #12 screws
33 (20)	33	474	N/A	N/A	N/A	N/A
33 (20)	50	478	N/A	N/A	N/A	N/A
43 (18)	33	1,051	836	836	N/A	N/A
43 (18)	50	1,060	842	842	N/A	N/A
54 (16)	33	2,091	1,661	1,661	1,377	1,377
54 (16)	50	2,091	1,661	1,661	1,377	1,377
68 (14)	50	2,575	2,575	3,345	2,575	2,771
97 (12)	50	2,575	2,575	4,167	2,575	4,167
118 (10)	50	2,575	2,575	4,167	2,575	4,167
Max Allowable Clip Load		2,575	2,575	4,167	2,575	4,167

### Notes:

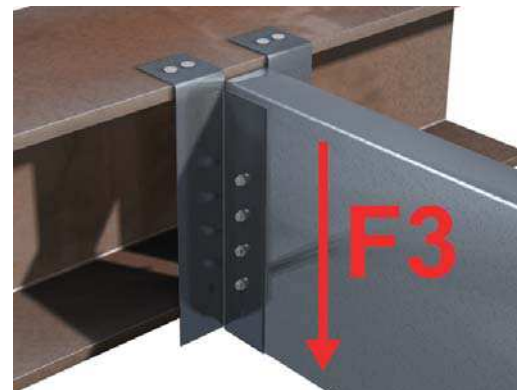
- Screw size and quantity shown is required for JH to serve as web stiffener.
- Design loads based on clip capacity and allowable shear in joist. Allowable loads have not been increased for wind, seismic, or other factors.
- If beam web is larger than clip length, use blocking behind clip for support.
- StiffClip JH resists vertical loads and web crippling.
- Screws, powder-actuated fasteners, or weld attachment may be used to connect StiffClip JH to the steel header/beam. StiffClip JH 68mil and heavier can be welded to the steel beam. Powder-actuated fasteners into steel are recommended to be 0.157" diameter, and are limited to a maximum of 3/4" substrate thick.

### Nomenclature

StiffClip JH is designated by listing the joist depth in inches, followed by the inside flange dimension in inches x 100 (2" flange is standard, and will also service 1 5/8" flange), and the required clip thickness in mils that will accommodate anticipated loads. (see load tables)

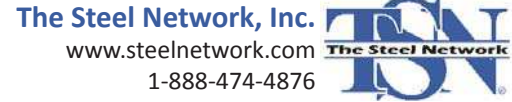
**Example:** 6" joist, 2" flange, 2,250 lbs. load  
**Designate:** StiffClip® JH600x200-68

### Load Direction



# StiffClip® JC

Joist Connector



### Material Composition

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



### StiffClip JC Allowable Loads

StiffClip® JC Recommended Allowable Load (lbs): F3											
Joist		JC362/400-43	JC362/400-68	JC600-68		JC800-43		JC800-68		JC1000-68	
Thickness Mils (ga)	Yield Strength (ksi)	w/3 #12 screws	w/3 #12 screws	w/3 #12 screws	w/5 #12 screws	w/4 #12 screws	w/7 #12 screws	w/4 #12 screws	w/7 #12 screws	w/5 #12 screws	w/9 #12 screws
33 (20)	33	492	492	544	882	735	1,270	735	1,270	N/A	N/A
33 (20)	50	710	710	787	1,274	1,062	1,835	1,062	1,835	N/A	N/A
43 (18)	33	732	732	810	1,312	1,094	1,890	1,094	1,890	1,377	2,462
43 (18)	50	1,057	1,057	1,171	1,896	1,580	2,730	1,580	2,730	1,989	3,557
54 (16)	33	1,029	1,029	1,140	1,845	1,538	2,658	1,538	2,658	1,936	3,462
54 (16)	50	1,486	1,486	1,646	2,665	2,221	3,838	2,221	3,838	2,796	4,779
68 (14)	50	1,487	2,102	2,327	3,639	2,223	3,841	3,140	4,488	3,954	4,779
97 (12)	50	1,487	2,216	2,454	3,639	2,223	3,841	3,311	4,488	4,169	4,779
<b>Max Allowable Clip Load</b>		<b>1,606</b>	<b>2,302</b>	<b>3,639</b>		<b>3,960</b>		<b>4,488</b>		<b>4,779</b>	

StiffClip® JC Recommended Allowable Load (lbs): F3									
Joist		JC1200-43		JC1200-68		JC1400-68		JC1600-68	
Thickness Mils (ga)	Yield Strength (ksi)	w/6 #12 screws	w/11 #12 screws	w/6 #12 screws	w/11 #12 screws	w/7 #12 screws	w/13 #12 screws	w/8 #12 screws	w/15 #12 screws
54 (16)	33	2,334	3,776	2,334	4,262	2,732	5,063	3,131	5,855
54 (16)	50	3,371	3,776	3,371	6,156	3,947	6,670	4,522	6,670
68 (14)	50	3,374	3,776	4,467	6,670	5,580	6,670	6,393	6,670
97 (12)	50	3,374	3,776	5,026	6,670	5,884	6,670	6,670	6,670
<b>Max Allowable Clip Load</b>		<b>3,776</b>		<b>6,670</b>		<b>6,670</b>		<b>6,670</b>	

### Notes:

- StiffClip JC resists vertical loads.
- The attachment to the beam or structure must be designed to be greater than or equivalent to the joist attachment.
- Design loads consider clip capacity and screw connection to the joist only.
- Allowable loads have not been increased for wind, seismic, or other factors.
- All guide holes may not require fasteners. Fastener size and amount determined by designer.
- Torsional effects are considered on screw group for 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, i.e. ½ in the joist connection and ½ in the structure connection.

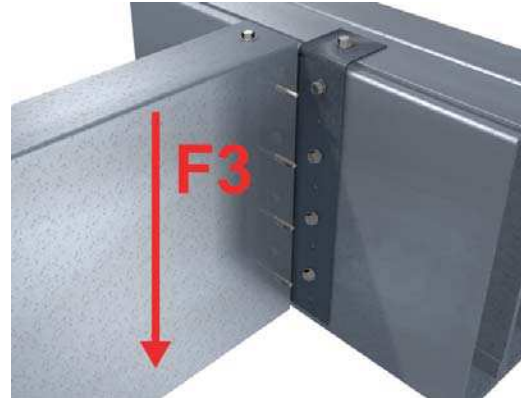
### Nomenclature

StiffClip JC is designated by listing the joist depth in inches, followed by the required clip thickness in mils that will accommodate anticipated loads. (see load tables above)

**Example:** 6" joist, 3,000 lbs. load

**Designate:** StiffClip® JC600-68

### Load Direction

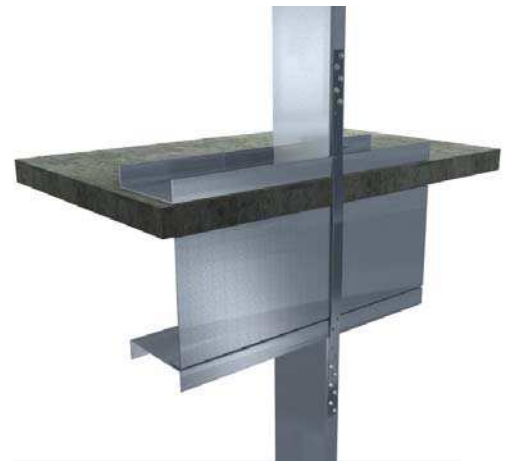


# StiffClip® FS

Floor Strap

### Material Composition

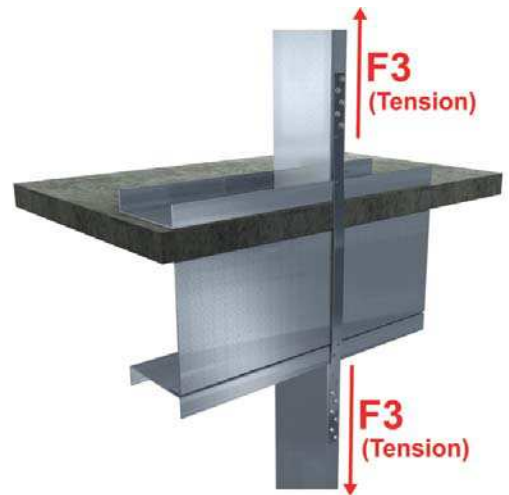
ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



### StiffClip FS Allowable Loads

StiffClip® FS Recommended Allowable Load (lbs): F3	
Designation	Load
FS125-33	1,163
FS125-43	1,516
FS125-54	1,902
FS125-68	2,396
FS125-97	3,418
FS275-33	2,849
FS275-43	3,713
FS275-54	4,660
FS275-68	5,871
FS275-97	8,374

### Load Direction



### Notes:

- StiffClip FS resists tension forces only.
- Design loads based on strap capacity only.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Number of fasteners used is based on fastener manufacturer's allowable load data.
- Guide holes located 1/2" from each end, with 3/8" edge distance at 2" o.c. staggered for FS125 and 3/4" edge distance at 2" o.c. staggered for FS275.

### Nomenclature

StiffClip FS is designated by the width of the strap in inches followed by strap thickness in mils.

**Example:** 16ga, 2 3/4" strap, 24" long

**Designate:** StiffClip® FS275-54-24

\* Additional guide holes for fasteners available upon request.

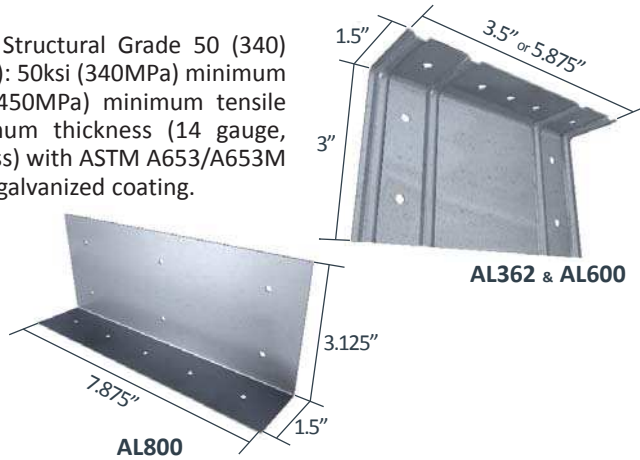
\*\*StiffClip FS are typically made to order per project specifications.

# StiffClip® AL

Multi-Directional Load Resistant Angle

### 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.

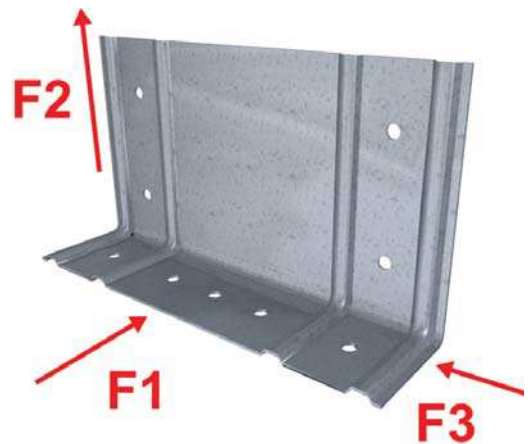


### StiffClip AL Allowable Loads

StiffClip® AL, Recommended Allowable Load (lbs): F1 & F2													
Stud		F1 Load Direction					F2 Load Direction						
Thickness Mils (ga)	Yield Strength (ksi)	AL362	AL600	AL800									
		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
<b>Max Allowable Clip Load</b>		<b>975</b>	<b>866</b>	<b>1,768</b>	<b>1,470</b>			<b>2,091</b>			<b>2,516</b>		

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
<b>Maximum Allowable Clip Load</b>		<b>2,458</b>			<b>3,015</b>			<b>6,128</b>		

### Load Direction



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

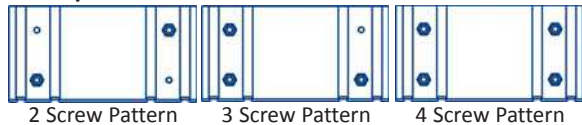


**Notes:**

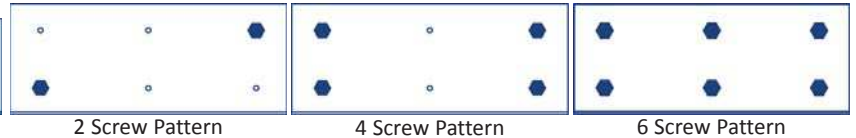
- Allowable load tables incorporate eccentric loading of fasteners attached 3/4" from the heel of the clip. Values with welded connection may increase.
- The attachment of the 1.5" leg of StiffClip AL is dependent on the allowable loads of the fasteners, and is to be designed by others.
- Fasten within 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.\*

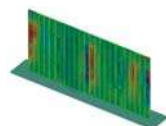
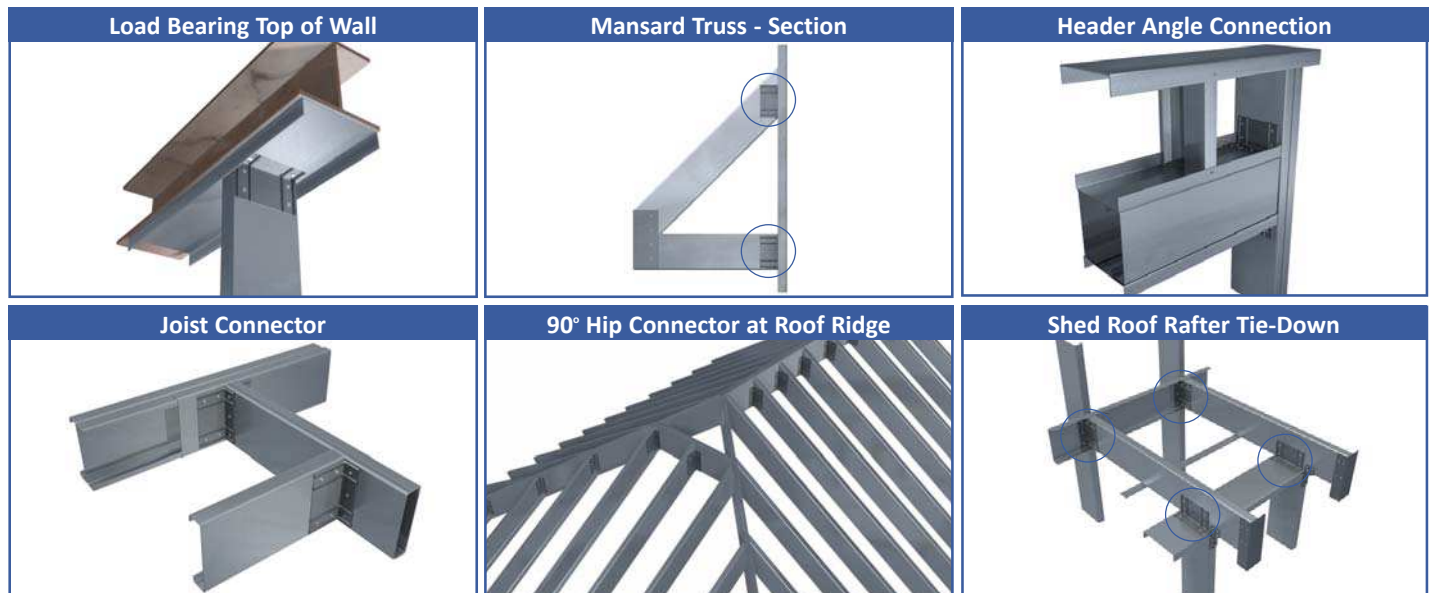
**Example:** 6" stud depth

**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](http://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® LS

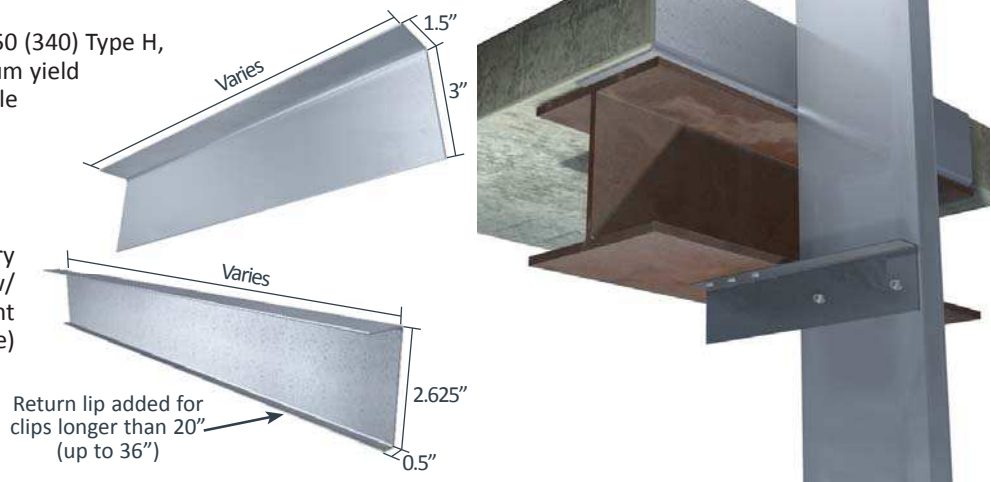
Spandrel/Multi-Purpose



### 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.



### Material Analysis

StiffClip® LS Section Properties

Designation	Area (in <sup>2</sup> )	I <sub>x</sub> (in <sup>4</sup> )	I <sub>y</sub> (in <sup>4</sup> )	R <sub>x</sub> (in)*	R <sub>y</sub> (in)**	S <sub>x</sub> (in <sup>3</sup> )	S <sub>y</sub> (in <sup>3</sup> )
StiffClip® LS < 20" Length	0.325	0.344	0.057	1.030	0.418	0.169	0.046
StiffClip® LS > 20" Length	0.320	0.298	0.055	0.965	0.415	0.186	0.046

### Notes:

- For PAFs, fasten within 3/4" from the angle heel centerline of the 1 1/2" leg.
- StiffClip LS resists axial tension and compression loads.
- Allowable design loads may be calculated based on the section properties shown above.
- Lengths greater than 20" incorporate a stiffening lip to increase compressive strength.

\* R<sub>x</sub> = Radius of Gyration about x-x axis

\*\* R<sub>y</sub> = Radius of Gyration about y-y axis

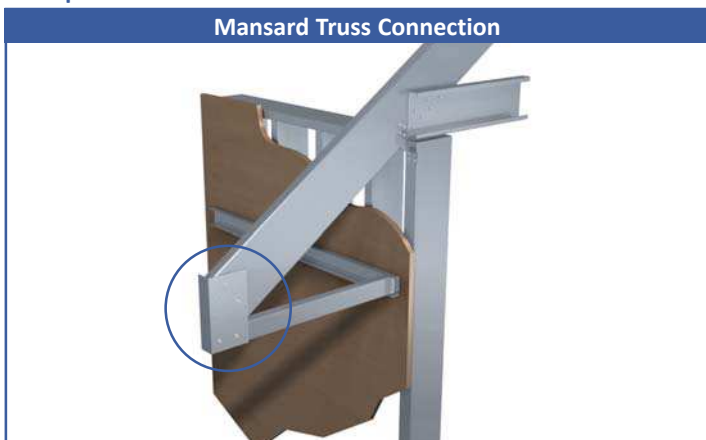
### Nomenclature

StiffClip LS is available in various lengths. To calculate length for spandrel wall connectors, add stud depth, 3" for attachment to steel (5.5" for attachment to concrete), and the distance of construction tolerance. For other applications, simply designate length (in.) multiplied by 100.

**Example:** 6" stud depth, 4" attachment to structure, 2" tolerance (6+4+2=12)

**Designate:** StiffClip® LS1200

### Example Details

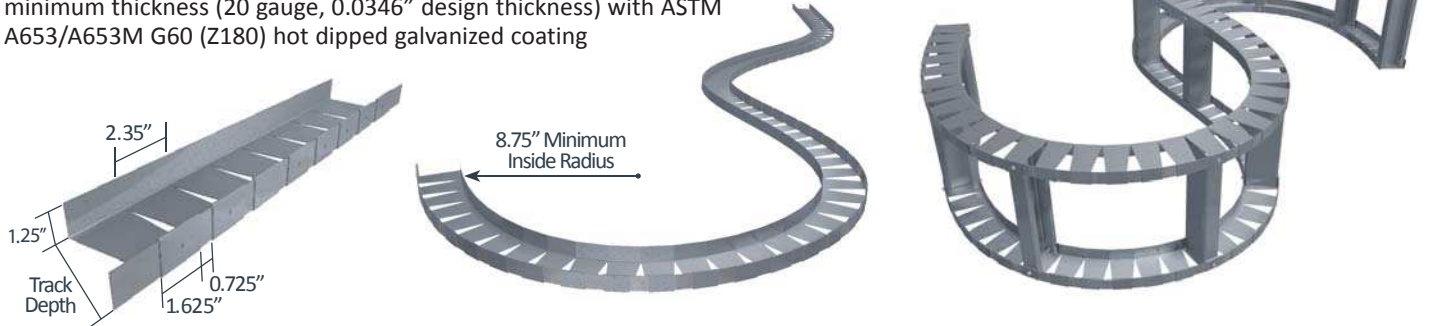


# CircleTrak®

Curved Wall Track

### Material Composition

ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 33mil minimum thickness (20 gauge, 0.0346" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating



Product Designation	Thickness			
	Mils	Gauge	Design Thickness	
			in	mm
CircleTrak®	33	20	0.0346	0.878

### Nomenclature

CircleTrak is available in 10' lengths and is designated by inside web depth x 100, then style (CT), followed by leg length and then material thickness in mils.

**Example:** 6" inside web depth

**Designate:** 600CT125-33

### Example Details



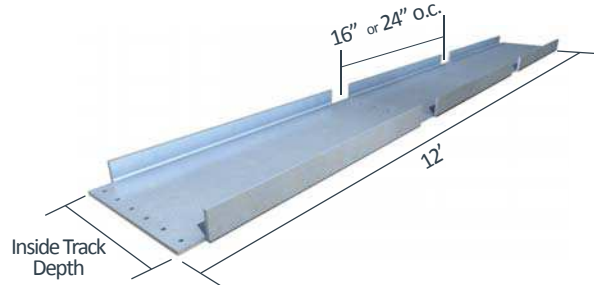
# NotchTrak® NT

Rigid Wall Backing & Bridging Alternative



## Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating, or equivalent.



Patent Pending

## Material Analysis

NotchTrak® NT Section Properties																		
Designation	Gross Properties													Effective Properties 50 ksi				
	Area (Full)	Area (Notch)	$I_x$	$S_x$	$R_x$	$I_y$	$R_y$	$J \times 10^3$	$C_w$	$R_o$	$X_o$	$m$	$\beta$	$A_e$ (Full)	$I_x^1$	$S_x$	$M_{xa}$	$V_a$
	(in <sup>2</sup> )	(in <sup>2</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>6</sup> )	(in)	(in)	(in)	(in)	(in <sup>2</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(lbs-in)	(lbs)
600NT125-43	0.383	0.262	1.861	0.604	2.205	0.044	0.337	0.260	0.307	2.289	-0.513	0.335	0.950	0.159	1.745	0.403	12,060	1,380
600NT125-54	0.480	0.329	2.345	0.757	2.209	0.054	0.335	0.513	0.384	2.292	-0.508	0.332	0.951	0.243	2.300	0.593	17,760	2,730
600NT125-68	0.605	0.414	2.971	0.951	2.216	0.067	0.332	1.025	0.483	2.296	-0.503	0.329	0.952	0.370	2.971	0.859	25,730	5,350
800NT125-43	0.473	0.352	3.773	0.925	2.824	0.046	0.311	0.321	0.589	2.874	-0.436	0.292	0.977	0.162	3.402	0.553	16,550	1,030
800NT125-54	0.594	0.442	4.747	1.158	2.828	0.057	0.309	0.634	0.735	2.877	-0.432	0.289	0.977	0.248	4.617	0.824	24,680	2,040
800NT125-68	0.748	0.557	6.001	1.455	2.833	0.070	0.307	1.267	0.920	2.882	-0.427	0.286	0.978	0.381	6.001	1.217	36,430	4,090

<sup>1</sup>Effective moment of inertia,  $I_e$ , is calculated at a stress level equal to 0.6  $F_y$  (service load level).

## Example Details



<sup>1</sup> Use NotchTrak in conjunction with flat strap and blocking where applicable

<sup>2</sup> Design screw connection of track to stud for actual design load

**\*\*NotchTrak® allowable load tables continued on next page.**

**Nomenclature**

NotchTrak is manufactured in 12 ft. lengths. NotchTrak is designated by track depth in inches multiplied by 100, followed by type (NT), leg size, mil thickness and notch spacing.

**Example:**

600 NT 125 - 43 - 160c  
(Inside Track Dimension) (NotchTrak) (Leg) (Thickness) (Notch Spacing)

\* Special lengths available by request.

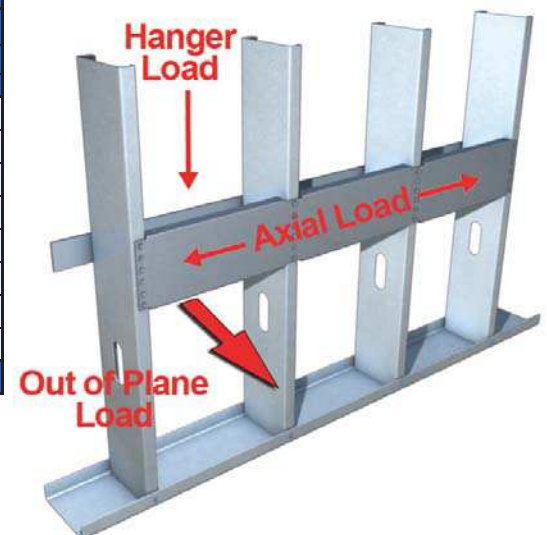
**NotchTrak NT Allowable Loads**

NotchTrak® NT, Recommended Allowable Load (lbs): Hanger													
Stud		16" o.c. stud spacing						24" o.c. stud spacing					
Thickness Mils (ga)	Yield Strength (ksi)	NT43		NT54		NT68		NT43		NT54		NT68	
		6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws
33 (20)	33	1,319	1,030	1,319	1,884	1,319	1,884	1,319	1,030	1,319	1,884	1,319	1,884
33 (20)	50	1,377	1,030	1,905	2,039	1,905	2,722	1,377	1,030	1,905	2,039	1,905	2,722
43 (18)	33	1,377	1,030	1,963	2,039	1,963	2,804	1,377	1,030	1,963	2,039	1,963	2,804
43 (18)	50	1,377	1,030	2,728	2,039	2,836	4,051	1,377	1,030	2,728	2,039	2,836	4,051
54 (16)	33	1,377	1,030	2,728	2,039	2,760	3,943	1,377	1,030	2,728	2,039	2,760	3,943
54 (16)	50	1,377	1,030	2,728	2,039	3,986	4,087	1,377	1,030	2,728	2,039	3,986	4,087
68 (14)	50	1,377	1,030	2,728	2,039	5,350	4,087	1,377	1,030	2,728	2,039	4,135	4,087
97 (12)	50	1,377	1,030	2,728	2,039	5,350	4,087	1,377	1,030	2,728	2,039	4,135	4,087
<b>Max Allowable Member Load</b>		<b>1,377</b>	<b>1,030</b>	<b>2,728</b>	<b>2,039</b>	<b>5,350</b>	<b>4,087</b>	<b>1,377</b>	<b>1,030</b>	<b>2,728</b>	<b>2,039</b>	<b>4,135</b>	<b>4,087</b>

NotchTrak® NT, Recommended Allowable Load (lbs): Axial								
Stud		16" & 24" o.c. stud spacing						
Thickness Mils (ga)	Yield Strength (ksi)	NT43		NT54		NT68		
		6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	6" w/7 #12 Screws	8" w/10 #12 Screws	
33 (20)	33	1,319	1,884	1,319	1,884	1,319	1,884	
33 (20)	50	1,529	2,064	1,905	2,722	1,905	2,722	
43 (18)	33	1,529	2,064	1,963	2,804	1,963	2,804	
43 (18)	50	1,529	2,064	2,836	4,051	2,836	4,051	
54 (16)	33	1,529	2,064	2,760	3,943	2,760	3,943	
54 (16)	50	1,529	2,064	3,022	4,080	3,986	5,695	
68 (14)	50	1,529	2,064	3,022	4,080	5,521	7,441	
97 (12)	50	1,529	2,064	3,022	4,080	5,521	7,441	
<b>Maximum Allowable Member Load</b>		<b>1,529</b>	<b>2,064</b>	<b>3,022</b>	<b>4,080</b>	<b>5,521</b>	<b>7,441</b>	

NotchTrak® NT, Recommended Allowable Out of Plane Load (lbs): Lateral							
Stud		6" w/7 #12 Screws & 8" w/10 #12 Screws					
Thickness Mils (ga)	Yield Strength (ksi)	16" o.c. stud spacing			24" o.c. stud spacing		
		NT43	NT54	NT68	NT43	NT54	NT68
33 (20)	33	73	155	324	48	104	216
33 (20)	50	73	155	324	48	104	216
43 (18)	33	73	155	324	48	104	216
43 (18)	50	73	155	324	48	104	216
54 (16)	33	73	155	324	48	104	216
54 (16)	50	73	155	324	48	104	216
68 (14)	50	73	155	324	48	104	216
97 (12)	50	73	155	324	48	104	216
<b>Max Allowable Member Load</b>		<b>73</b>	<b>155</b>	<b>324</b>	<b>48</b>	<b>104</b>	<b>216</b>

Load Direction




**Notes:**

- Table data based on 1.25" track leg, but other leg sizes are available to obtain higher capacities.
- NotchTrak NT resists weak axis buckling and torsional rotation of members.
- Meets OSHPD 2013 CBC Standard Backing Details for Cabinet and Grab Bar (Details ST5.00 and ST5.03)
- Meets OSHA & IBC load requirements.

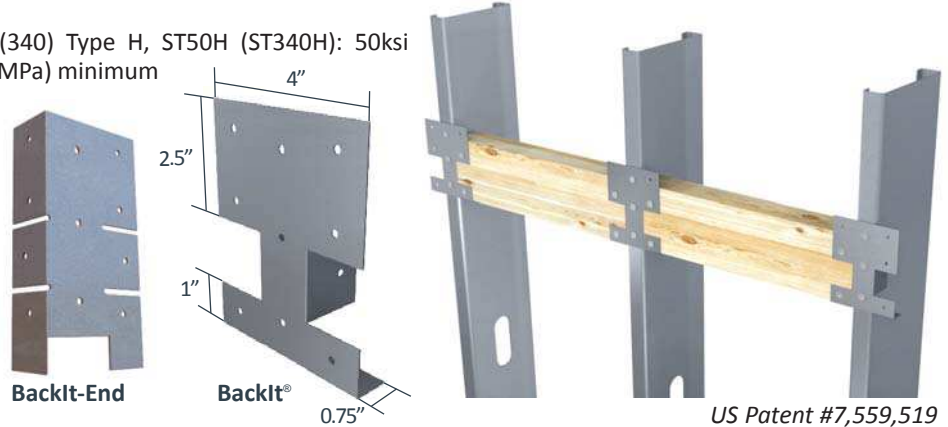
# BackIt®

Rigid Wall Backing

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, 43mil minimum thickness (18 gauge, 0.0451" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.



### BackIt Allowable Loads

**BackIt®, Recommended Allowable Load (lbs) (in-lbs or in-lbs/rad): F2 & F3 & M1**

Stud		F2 Load Direction (lbs)		F3 Load Direction (lbs)		M1 Load Direction	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	Moment w/3 #12 screws	Stiffness up to 0.02 rad
18 (25)	33	--	155*	151	--	272	16,800
27 (22)	33	--	234	279	418	409	
30 (20dw)	33	--	258	322	483	451	
33 (20)	33	--	286	377	565	500	
33 (20)	50	275	391	544	817	722	
43 (18)	33	248	373	561	841	652	
43 (18)	50	359	391	810	1,215	942	
54 (16)	33	312	391	789	1,183	818	
54 (16), 68 (14) & 97 (12)	50	391	391	1,139	1,388	967	
<b>Maximum Allowable Clip Load</b>		<b>391</b>		<b>1,388</b>		<b>967</b>	

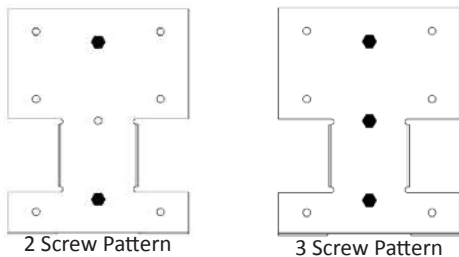
### Notes:

- The recommended allowable loads and moments reported in this table are for the clip and attachment to the stud only. The attachment to the backing material must be designed by a design professional.

\* Additional screws may be added to increase the allowable load. F2 value with (4) #12 screws is 207 lbs.

IBC (International Building Code) and OSHA (Occupational Safety and Health Administration) load requirements include the ability of wall backing to resist a minimum of 200 lbs of concentrated load, or 50 lbs per linear foot in any direction. BackIt satisfies the load requirements in vertical (F3) and horizontal (F2) directions. Extra testing has been done in the rotational (M1) direction. Product test reports are available upon request. Contact TSN Technical Support at (888) 474-4876 for more information.

### Screw Patterns



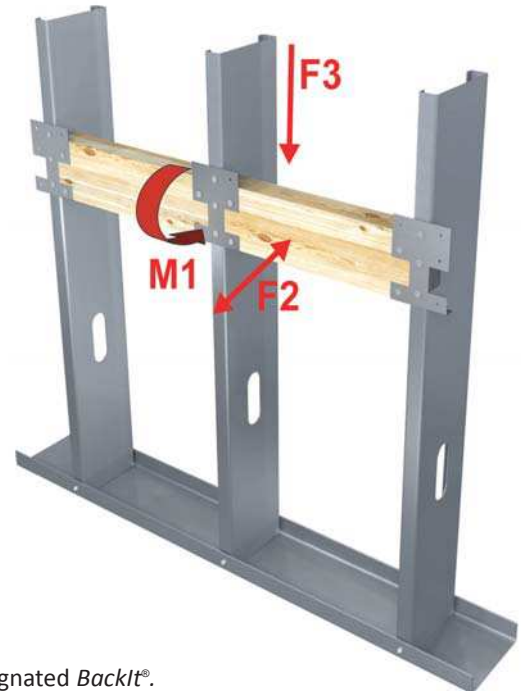
### Nomenclature

BackIt is designed to be used with studs having flanges up to 1 5/8" wide\*, and is designated BackIt®.

\* Custom clips are available by request for use with studs having flanges greater than 1 5/8"

\*\* Also Available by Request: End-of-Run BackIt® to finish walls with a flat angle

### Load Direction

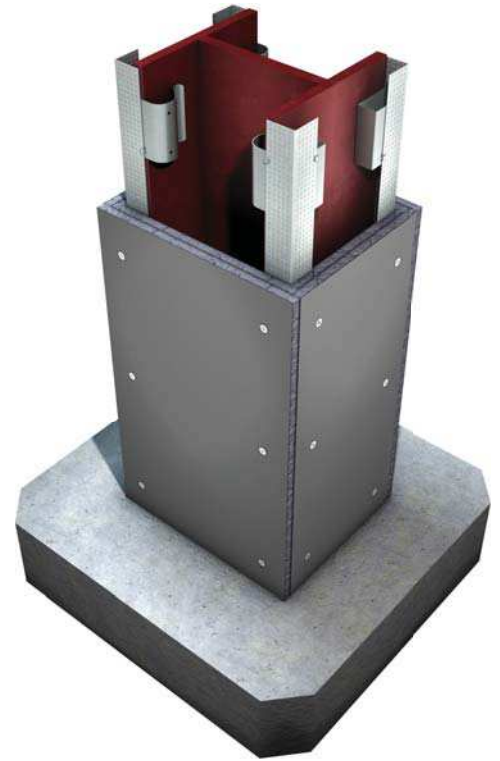
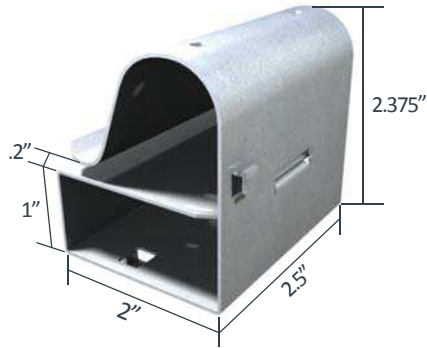


# GripClip®

Column/Beam Connector

### Material Composition

ASTM A1003 A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 27mil minimum thickness (22 gauge, 0.0283" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating.

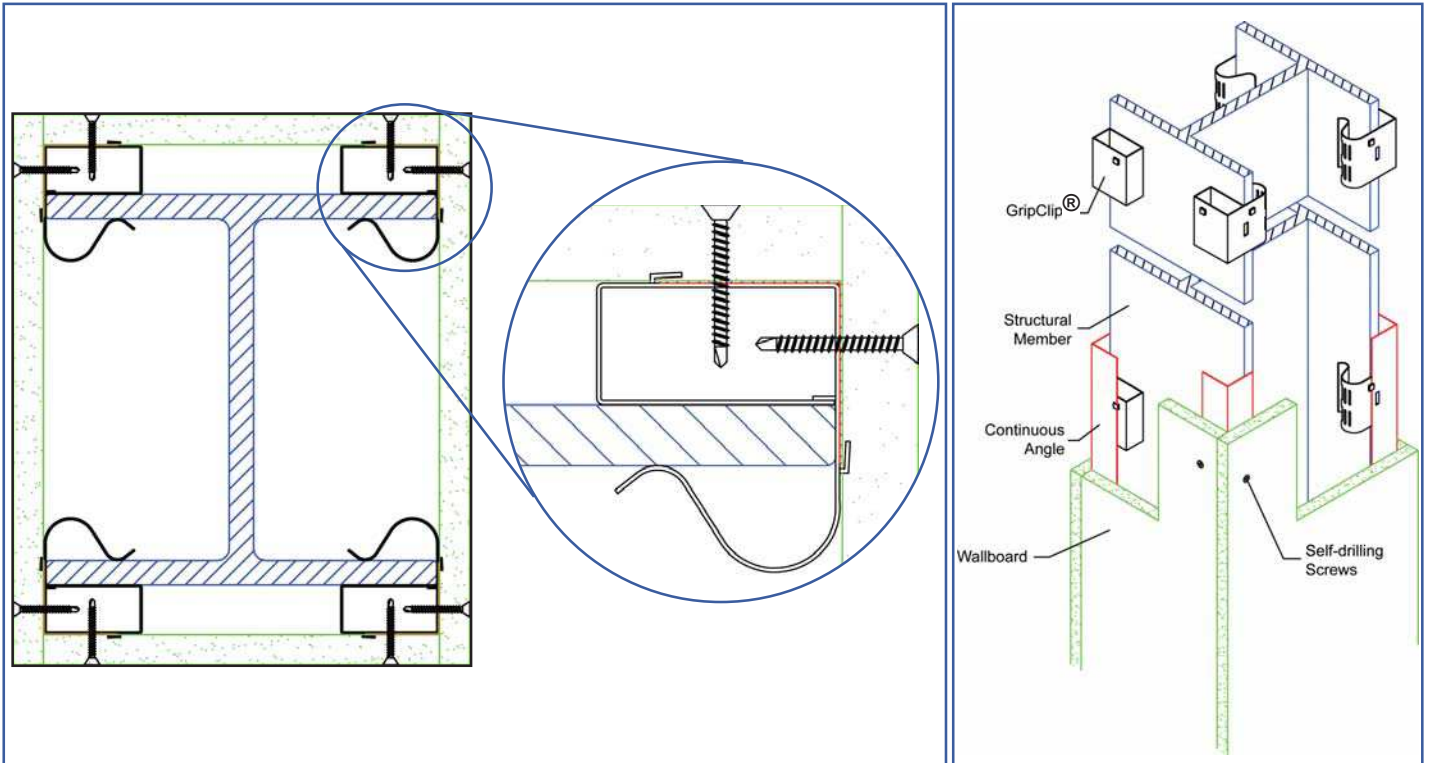


### Nomenclature

GripClip is made in one size and is designated *GripClip*®.

Patent # 8,132,383

### Example Details

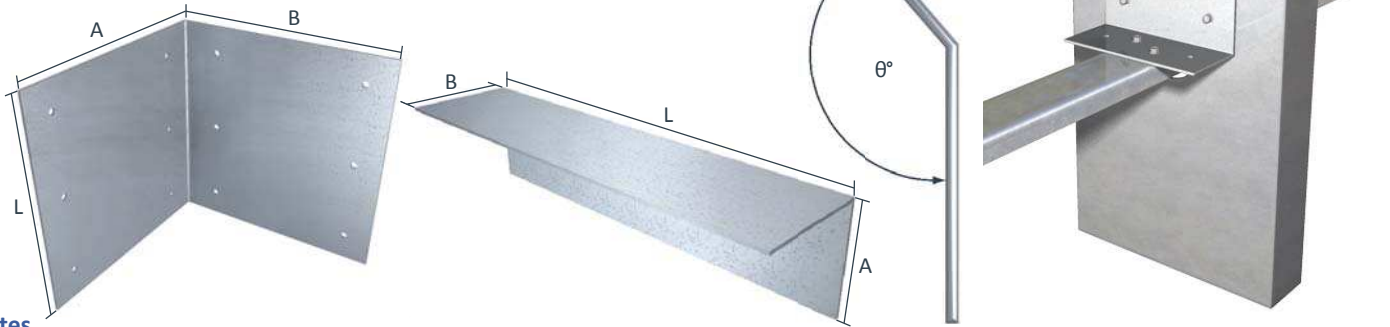


# Common Clip Angle

Common Angle For All Applications

## Material Composition

ASTM A1003/A1003M Structural Grade 50 (345) 50ksi (345MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating. Available in 33mil minimum thickness (20 gauge, 0.0346" design thickness), 43mil minimum thickness (18 gauge, 0.0451" design thickness), 54mil minimum thickness (16 gauge, 0.0566" design thickness), 68mil minimum thickness (14 gauge, 0.0713" design thickness), 97mil minimum thickness (12 gauge, 0.1017" design thickness) or 118 mil minimum thickness (10 gauge, 0.1242" design thickness).



## Notes

- The Steel Network is equipped to manufacture cold-formed steel connections of any size and shape. Some examples of common clip angle manufactured and stocked are shown below.
- Pre-punched holes come standard for increased efficiency (Unpunched & custom punch patterns available upon request)
- Any thickness up to & including 10ga (118mil)
- Any bent radius is possible
- Structural testing is available upon request.
- Contact TSN for assistance designing custom products for special applications or requirements. Please allow reasonable time for production of all custom parts.

## Nomenclature

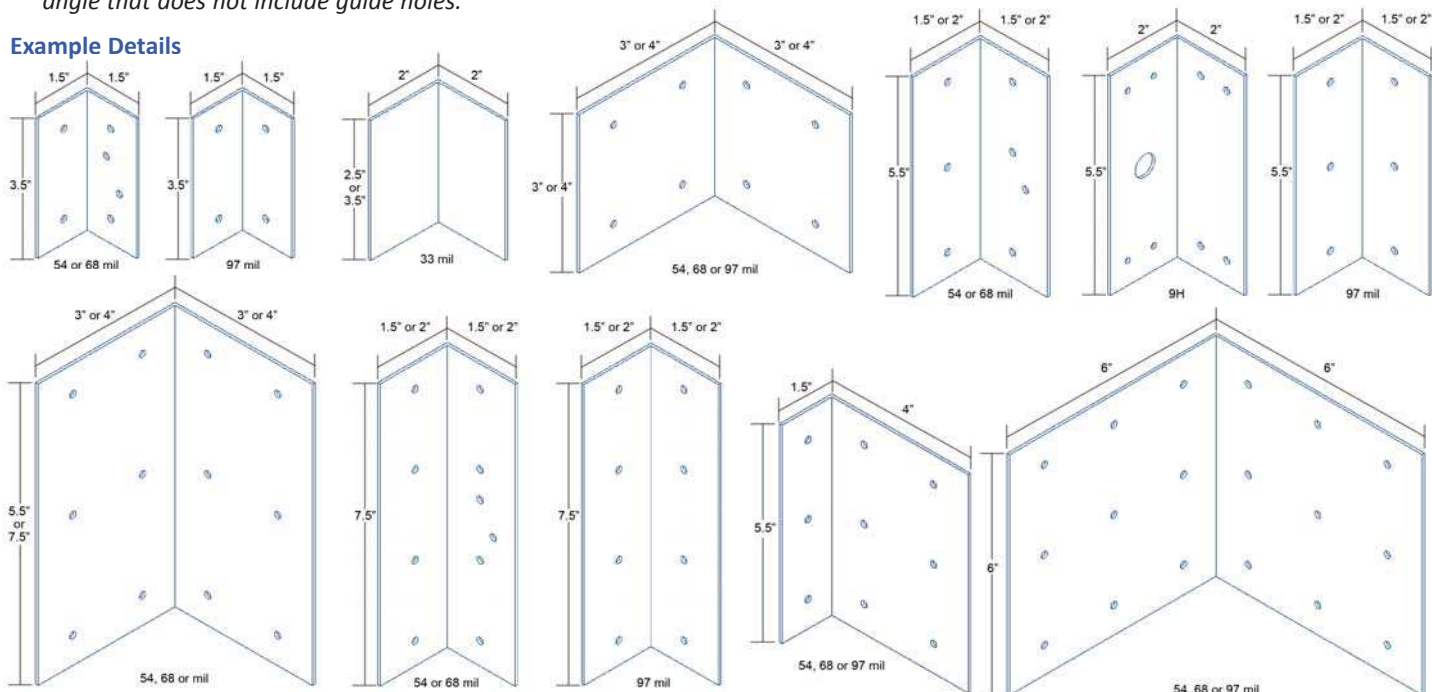
Clip angle can be manufactured to any specifications, however TSN stocks some more common sizes. Angle is classified with the letter "L" followed by (Leg A) x (Leg B) x length (inches), then mil thickness.

**Example:** Leg A = 3", Leg B = 3", Length = 5 1/2", 54 mil material  
**Designate:** L3x3x5.5-54

\* Special product drawing is required for all non-standard products.

\*\* Most common stocked angles come pre-punched for easy installation, though holes are not required. Refer to images below for some angle that does not include guide holes.

## Example Details





# Custom Connectors

Specialized Products For All Applications



## Material Composition

ASTM A1003/A1003M Structural Grade 50 (345) 50ksi (345MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating. Available in 33mil minimum thickness (20 gauge, 0.0346" design thickness), 43mil minimum thickness (18 gauge, 0.0451" design thickness), 54mil minimum thickness (16 gauge, 0.0566" design thickness), 68mil minimum thickness (14 gauge, 0.0713" design thickness), 97mil minimum thickness (12 gauge, 0.1017" design thickness) or 118 mil minimum thickness (10 gauge, 0.1242" design thickness).

## Notes

- The Steel Network is equipped to manufacture cold-formed steel connections of any size and shape. Some examples of custom products manufactured are shown and described below.
- Please allow reasonable time for production of all custom parts.
- Structural testing is available upon request.
- Contact TSN for assistance designing custom products for special applications or requirements.



## Nomenclature

Contact TSN with product requirements

\* Special product drawing is required for all non-standard products.

## Example Details

Custom VertiClip® SLB



Unique condition brought to TSN by Specialty Engineer. TSN helped design a solution and test & fabricate clips.

Custom VertiClip® Splice (Notched)



Unique condition brought to TSN by Specialty Engineer. TSN helped design a solution and test & fabricate clips.

Custom VertiClip® Splice (Angled)



Unique condition brought to TSN by Specialty Engineer. TSN helped design a solution and test & fabricate clips.

Custom VertiClip® Splice



Connector for parallel wall studs. One stud rigidly attached to wall stud. The other stud accommodates vertical deflection of the primary structural frame.

Custom VertiClip® SLS (extra long)



Retrofit situation where a stud does not run full height, creating a situation where a modified VertiClip SLS was lengthened to bridge a large gap from the structure of 26".

Custom VertiTrak® VTD (VertiClip® SLD with Elongated Slots)



VertiTrak VTD modified to accommodate 4" slots in VertiClip SLD provides an effective, efficient solution for large demising walls typically seen in retail stores and theaters.

# Blast & Seismic Design

## Load Tables

### Background

Various specifications and design standards allow the use of nominal strength of material when calculating resistance values of components for special blast or seismic design. Beyond the use of nominal strength, some design codes allow the use of an increased nominal strength or an increased expected strength. The Steel Network has developed the following tables to present the LRFD design strength, nominal strength, and ultimate strength for each connector manufactured which can be used in special seismic and blast design and are compatible with the Static and Dynamic Strength Increase factors.

For additional information the full tech note, Strength Tables for Special Seismic and Blast Design of Cold Formed Steel Connections is available at [www.steelnetwork.com/Site/TechnicalNotes](http://www.steelnetwork.com/Site/TechnicalNotes)

VertiClip® Series (lbs)				
Connector	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength
SL362	F1	397	441	721
	F2	1,696	1,885	2,680
SL400	F1	318	353	600
	F2	1,817	2,019	3,074
SL600	F1	588	653	1,068
	F2	2,691	2,990	4,251
SL800	F1	579	643	1,052
	F2	2,994	3,327	4,730
SL1000	F1	664	738	1,206
	F2	2,521	2,801	4,266
SL1200	F1	611	679	1,110
	F2	2,863	3,182	4,845
SLD150	F2	82	91	139
SLD250	F2	254	282	430
SLD362/400	F2	575	639	973
SLD600	F2	648	720	1,302
SLD800	F2	1,091	1,212	1,844
SLB362	F1	364	405	661
	F2	2,563	2,848	4,381
SLB600	F1	364	405	661
	F2	2,563	2,848	4,381
SLB800	F1	357	397	604
	F2	2,563	2,848	4,381
SLB1000	F2	2,266	2,517	4,112
SLB1200	F2	2,266	2,517	4,112
SLBxxx-10, -12	F2	2,266	2,517	4,112
SLB600-HD, (2) 1/4" Screws	F1	374	416	679
	F2	1,901	2,112	3,216
SLB600-HD, (1) 1/2" Anchor	F1	388	431	704
	F2	1,606	1,785	2,718
SLS362/400-9, -12	F2	1,991	2,096	3,821
SLS600-12	F2	3,315	3,489	5,237
SLS600-15, -18, -20	F2	3,398	3,577	5,750
SLS600-24	F2	3,036	3,196	5,137
SLS800-12, -15, -18, -20	F2	2,909	3,062	4,922
SLT9.5	F1	546	575	991
	F2	822	865	1,492
SLT(L)	F1	784	825	1,422
	F2	1,116	1,175	2,026
Splice	F2	2,282	2,402	3,861
	F3	3,888	4,092	6,578

MasterClip™ Series (lbs)				
Connector (Application)	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength
VLB600 (Vertical Deflection)	F1	364	405	661
	F2	2,509	2,788	4,245
VLB600 (Rigid Connection)	F1	1,481	1,646	2,506
	F2	3,297	3,664	5,579
	F3	2,869	3,188	4,855

DriftClip® & DriftTrak® Series (lbs)					
Connector	Load Direction	Fastener Pattern	LRFD Design Strength	Nominal Strength	Ultimate Strength
DSL800	F2	1	1,467	1,630	2,317
		2	916	1,018	1,663
DSLS600-12	F2	1	2,980	3,311	4,707
		2	2,788	3,098	4,405
DSLS600-15	F2	1	3,045	3,383	4,811
DSLS600-15'	F2	2	3,045	3,383	5,008
DSL362	F2	1	186	207	317
		2	85	94	141
DSL600	F2	1	286	317	481
		2	399	443	869
DSL800	F2	1	318	354	578
		2	293	326	858
DSL362	F2	1	796	884	1,320
		2	397	441	720
DSL600	F2	1	1,242	1,380	2,254
		2	1,840	2,044	3,051
DSL800	F2	1	1,666	1,851	3,023
DSL800'	F2	2	1,666	1,851	4,122
DTSL	F2	8" Fastener Spacing - Pattern 1	1001	1,112	1,807
		8" Fastener Spacing - Pattern 2	770	856	1,303
		16" Fastener Spacing - Pattern 1	1,338	1,487	2,264
		16" Fastener Spacing - Pattern 2	774	860	1,309
DTSLB	F2	8" Fastener Spacing - Patterns 1 & 2	1,292	1,435	2,186
		16" Fastener Spacing - Patterns 1 & 2	1,206	1,340	2,040
DTLB600	F2	8" Fastener Spacing	1,292	1,435	2,186
	F3	8" Fastener Spacing	2,434	2,704	4,118
DTLB800	F2	8" Fastener Spacing	1,292	1,435	2,186
	F3	8" Fastener Spacing	2,434	2,704	4,118

### Notes:

- 'LRFD strength limited by fastener pattern 1.
- Strength values provided are those of the clip only (one clip). Attachment to stud framing and to structure must be evaluated independently.
- Nominal Strength is calculated as LRFD Strength divided by an average resistance factor of 0.9.
- Ultimate Strength is the average maximum load obtained from tests.
- When dynamic analysis is used for blast design, the Nominal Strength may be allowed to be increased by a Static Increase Factor (SIF) and a Dynamic Increase Factor (DIF).

Visit [www.steelnetwork.com/Site/TechnicalNotes](http://www.steelnetwork.com/Site/TechnicalNotes) to view the full technical note on Blast and Seismic Design.

StiffClip® Series (lbs or in-lbs)					StiffClip® Series (lbs or in-lbs)				
Connector	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength	Connector	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength
AL362	F1	1,177	1,308	2,137	CL362/400-118	F1	2,267	2,519	4,122
	F2	2,493	2,770	4,219		F2	3,071	3,412	4851
	F3	4,522	5,025	7,652		F3	1,842	2,047	3,349
				M1 (in-lbs)		2,888	3,209	5,251	
AL600	F1	1,388	1,542	2,348	CL362/400-118	F1	3,880	4,311	6,129
	F2	3,493	3,882	5,911		F2	7,090	7,878	11,201
	F3	4,830	5,366	8172		F3	3,611	4,012	6,565
				M1 (in-lbs)		6,299	6,999	11,453	
AL800	F1	2,827	3,141	4,784	CL362/400-118H	F1	4,160	4,622	6,572
	F2	4,022	4,469	6,806		F2	7,973	8,858	12,595
	F3	9,798	10,887	16,579		F3	9,150	10,167	14,455
				M1 (in-lbs)		10,750	11,944	19,545	
LB362	F1	1,481	1,646	2,506	CL600-68	F1	2,275	2,528	3,594
	F2	3,297	3,664	5,579		F2	4,020	4,467	6,351
	F3	4,256	4,729	7,202		F3	1,932	2,147	3,513
				M1 (in-lbs)		4,978	5,531	9,050	
LB600	F1	1,481	1,646	2,506	CL600-118	F1	4,131	4,590	7,147
	F2	3,297	3,664	5,579		F2	6,578	7,308	10,391
	F3	3,080	3,423	5,212		F3	3,561	3,956	6,474
				M1 (in-lbs)		9,126	10,140	16,592	
LB800	F1	1,993	2,214	3,617	CL600-118H	F1	6,659	7,399	10,520
	F2	3,297	3,664	5,579		F2	10,337	11,485	16,330
	F3	6,188	6,875	10,470		F3	9,620	10,689	15,197
				M1 (in-lbs)		9,958	11,065	18,106	
LB800-4" Offset	F1	1,993	2,214	3,617	CL800-68	F1	2,298	2,553	3,630
	F2	3,297	3,664	5,579		F2	4,263	4,736	6,734
	F3	2,496	2,773	4,223		F3	1,724	1,916	3,135
				M1 (in-lbs)		4,578	5,086	8,323	
LB1000	F1	1,465	1,627	2,658	CL800-118	F1	5,375	5,972	8,491
	F2	2,270	2,522	4,120		F2	10,265	11,406	16,217
	F3	2,872	3,191	4,859		F3	4,270	4,744	8,291
				M1 (in-lbs)		13,170	14,634	23,946	
LB1000 - 4" Offset	F2	2,270	2,522	4,120	CL800-118H	F1	7,713	8,570	12,185
	F3	2,506	2,784	4,240		F2	13,251	14,723	20,933
LB1200	F1	1,465	1,627	2,658		F3	11,925	13,250	18,839
	F2	2,270	2,522	4,120		M1 (in-lbs)	17,834	19,815	32,425
	F3	3,041	3,379	5,146	TD	F3	17,149	19,055	20,863
LB600-HD, (2) ¼" Screws	F1	1,764	1,959	2,984					
	F2	1,810	2,011	3,062					
	F3	3,149	3,499	5,328					
HE(L)-43	F2	1,003	1,114	1,696					
	F3	4,901	5,446	8,293					
HE(H)-68	F2	1,739	1,932	2,943					
	F3	8,880	9,867	15,026					
HE(S)-68	F2	1,739	1,932	2,943					
	F3	4,753	5,281	8,043					

**Notes:**

- Strength values provided are those of the clip only (one clip). Attachment to stud framing and to structure must be evaluated independently.
- Nominal Strength is calculated as LRFD Strength divided by an average resistance factor of 0.9.
- Ultimate Strength is the average maximum load obtained from tests.
- When dynamic analysis is used for blast design, the Nominal Strength may be allowed to be increased by a Static Increase Factor (SIF) and a Dynamic Increase Factor (DIF).

Quality Light Steel Framing Connections and Members

# LOAD BEARING QUICK REFERENCE



Roof Joist



StiffClip® RT650



StiffClip® WC



StiffClip® JH



StiffClip® PL



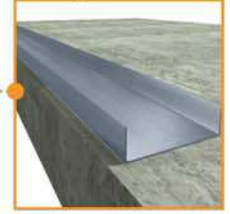
Floor Joist



BuckleBridge®



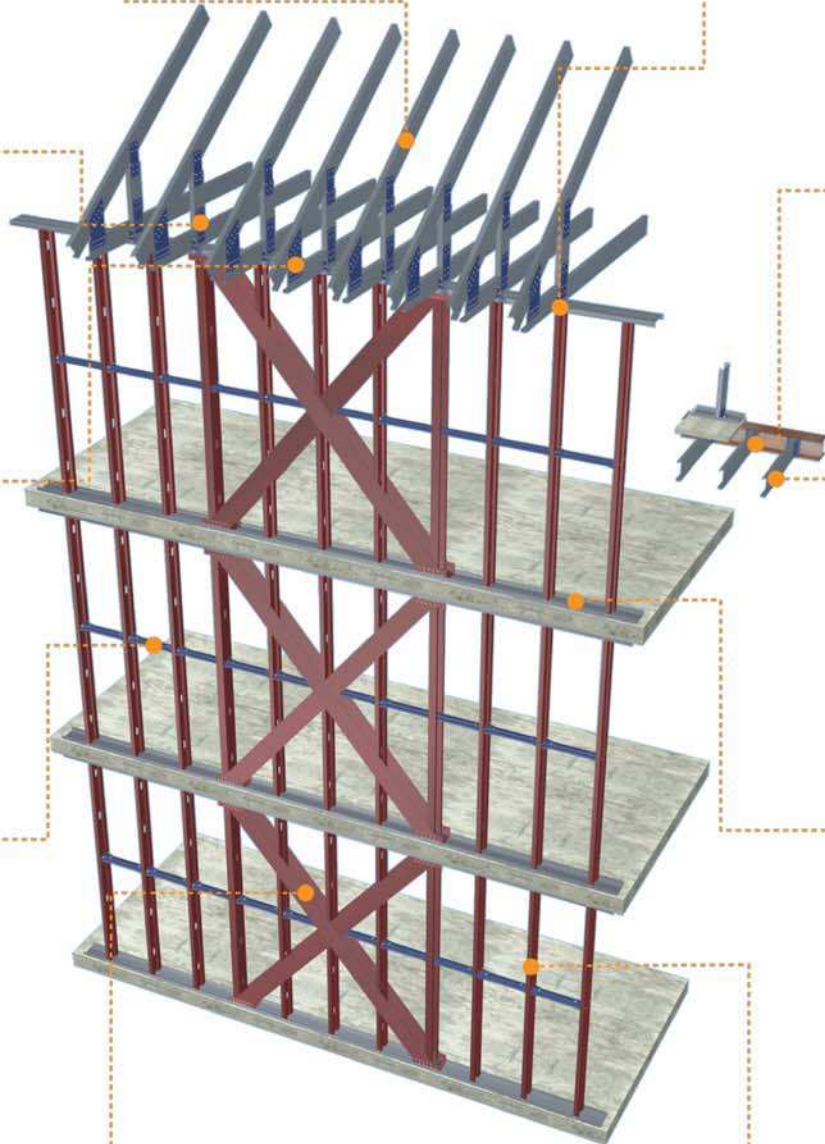
SigmaTrak®



StiffWall® SW-S



SigmaStud®



For these and other product details visit our website!

[www.steelnetwork.com](http://www.steelnetwork.com) | 888.474.4876

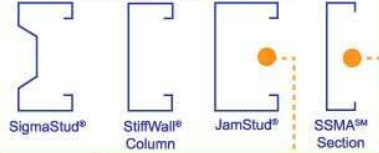
Quality Light Steel Framing Connections and Members

# CURTAIN WALL QUICK REFERENCE

JamStud®



All Framing Members



StiffClip® CL



VertiTrack®



BridgeClip®



BridgeBar®



VertiClip® SLB



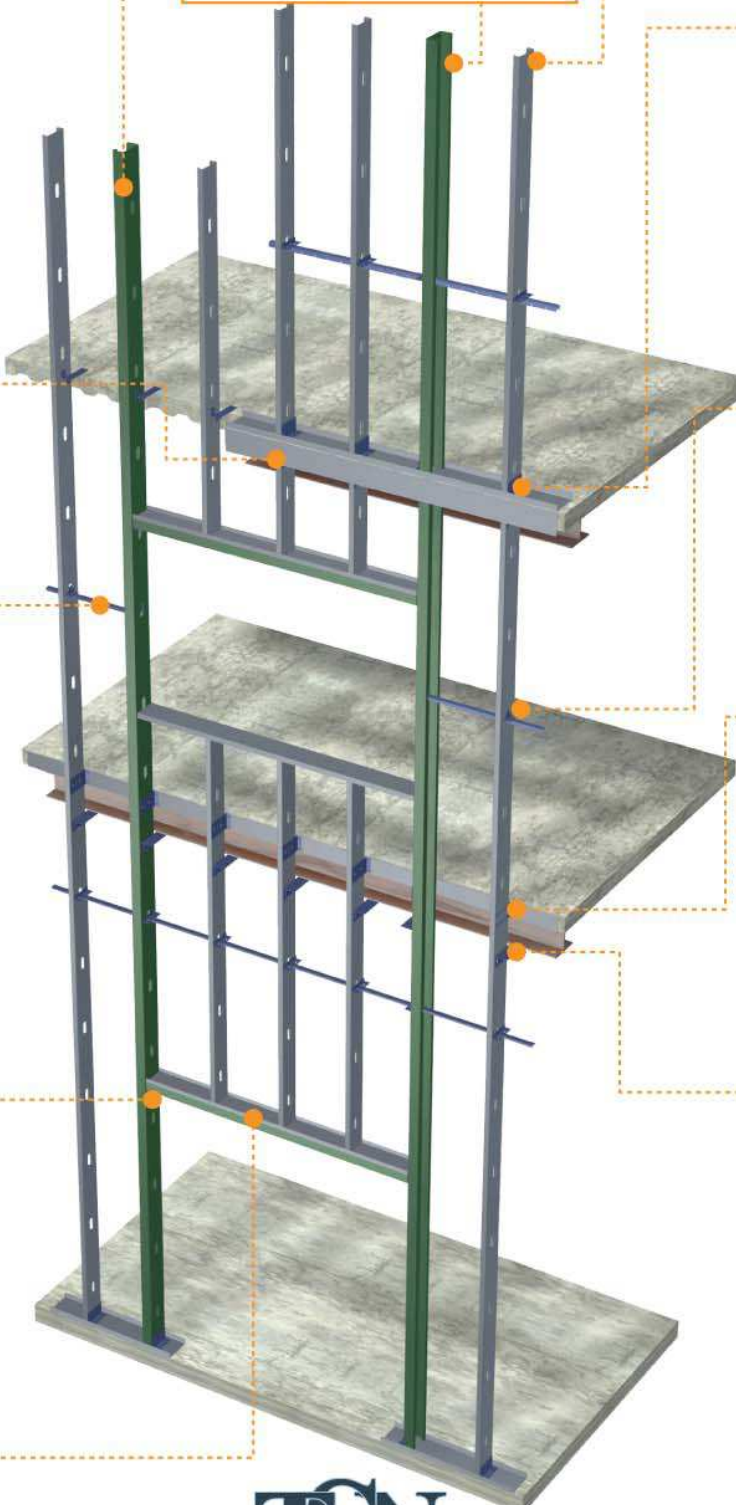
StiffClip® AL



VertiClip® SLS



JamStud® Header



Check us out at [www.steelnetwork.com](http://www.steelnetwork.com) or call today at 1.888.474.4876

# Building Codes & Fire Ratings

## Building Code Reference

### ICC-ES

The Steel Network assisted the ICC-ES in the development of AC261, "Acceptance Criteria for Connectors Used with Cold-Formed Steel Structural Members," which establishes test protocols and requirements for connections used in cold-formed steel assemblies. TSN provides structural test reports for each connector product which are in compliance with the listed criteria.

#### 2006 IBC (Section 713.2), 2009 IBC (Section 714.2) and 2012 IBC (Section 715.2):

**Installation:** Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

#### 2006 IBC (Section 713.3), 2009 IBC (Section 714.3) and 2012 IBC (Section 715.3):

**Fire test criteria:** Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E 1966 or UL 2079.



ICC-ES Evaluation Reports for select VertiClip®, DriftClip® & DriftTrak® products are available. Refer to ICC-ES ESR-2049 at [www.icc-es.org](http://www.icc-es.org) or at [www.steelnetwork.com](http://www.steelnetwork.com)



A New York MEA Acceptance for VertiClip SLD & VertiTrack® VTD is available. Refer to MEA-326-06-M.

### Fire Rating Criteria

Full-height interior partitions are often required to be fire-rated. Fire-resistive joint systems require movement capabilities at head of wall. UL 2079 is a test standard for fire-resistive joint systems and includes requirements for the system's ability to allow building movement. Since the runner track or deflection channel in UL HW-D (Head of Wall-Dynamic) fire-resistive joint system assemblies provide closure to the assembly and must be fire tested for each assembly, the clip components of the assembly must only satisfy the criteria for cyclic movement. The Steel Network's VertiClip® SLD and DriftClip® DSLD series clips both satisfy the criteria for cyclic movement and are classified for use in all UL 2079 rated assemblies with a 1 or 2 hour ratings and up to 1-1/2" of deflection for SLD and 2" of deflection for DSLD. The Steel Network's VertiTrack® VTD, VTX and VT are also classified for use in certain UL HW-D fire-resistive joint system assemblies as listed below.

### UL®-Classified Assemblies

VertiClip® SLD150, SLD250, SLD362, SLD400, SLD600 and SLD800 installed with standard ceiling runners or generic deflection channels are classified for use in all UL 2079 rated Head of Wall-Dynamic joint systems rated for 1 or 2 hours with maximum movement capabilities of 3/4" compression and 3/4" extension.

DriftClip® DSLD362/400, DSLD600 and DSLD800 installed with standard ceiling runners or generic deflection channels are classified for use in all UL 2079 rated Head of Wall-Dynamic joint systems rated for 1 or 2 hours with maximum movement capabilities of 1" compression and 1" extension.

VertiTrack VTD or VTX, Series 250, 362, 400, 600 and 800 consist of VertiClip SLD and SL clips pre-attached to a standard top track. VertiTrack VTD and VTX both allow maximum movement capabilities of 3/4" compression and 3/4" extension and are classified for use in the following UL HW-D joint system details:



HW-D-0003, HW-D-0024, HW-D-0025, HW-D-0036, HW-D-0042, HW-D-0043, HW-D-0044, HW-D-0045, HW-D-0046, HW-D-0047, HW-D-0048, HW-D-0049, HW-D-0054, HW-D-0062, HW-D-0063, HW-D-0066, HW-D-0067, HW-D-0068, HW-D-0069, HW-D-0071, HW-D-0072, HW-D-0073, HW-D-0076, HW-D-0077, HW-D-0082, HW-D-0083, HW-D-0084, HW-D-0085, HW-D-0087, HW-D-0089, HW-D-0091, HW-D-0102, HW-D-0106, HW-D-0152, HW-D-0154, HW-D-0160, HW-D-0162, HW-D-0167, HW-D-0184, HW-D-0185, HW-D-0186, HW-D-0190, HW-D-0193, HW-D-0209, HW-D-0218, HW-D-0246, HW-D-0256, HW-D-0259, HW-D-0263, HW-D-0271, HW-D-0272, HW-D-0275, HW-D-0277, HW-D-0278, HW-D-0280, HW-D-0293, HW-D-0299, HW-D-0310, HW-D-0313, HW-D-0321, HW-D-0322, HW-D-0324, HW-D-0341, HW-D-0342\*, HW-D-0353, HW-D-0356, HW-D-0357, HW-D-0358, HW-D-0363, HW-D-0365, HW-D-0368, HW-D-0370, HW-D-0371, HW-D-0401\*, HW-D-0404, HW-D-0420, HW-D-0421, HW-D-0453, HW-D-0455, HW-D-0460, HW-D-0461, HW-D-0462, HW-D-0463, HW-D-0466, HW-D-0468, HW-D-0470, HW-D-0475, HW-D-0477, HW-D-0483, HW-D-0491, HW-D-0526, HW-D-0527, HW-D-0532, HW-D-0545, HW-D-0639, HW-D-0642\*, HW-D-0644\*, HW-D-0645\*, HW-D-0646\*, HW-D-0687, HW-D-0689, HW-D-0695, HW-D-0696

VertiTrack VT series 250VT, 362VT, 400VT, 600VT and 800VT with the suffix 250-33 is slotted deflection track that is an improvement on generic deflection channel. VertiTrack VT allows maximum movement capabilities of 3/4" compression and 3/4" extension and is classified for use in the following UL HW-D joint system details:

HW-D-0043, HW-D-0044, HW-D-0054, HW-D-0088, HW-D-0099, HW-D-0154, HW-D-0184, HW-D-0194\*, HW-D-0218, HW-D-0252, HW-D-0259, HW-D-0264, HW-D-0324, HW-D-0363, HW-D-0377, HW-D-0388, HW-D-0456, HW-D-0538, HW-D-0539, HW-D-0540, HW-D-0548\*, HW-D-0606

The list is updated as UL classifies new assemblies. Please visit [www.steelnetwork.com/FireRated](http://www.steelnetwork.com/FireRated) and click on the UL link for a complete list of VertiTrack HW-D classified fire rated construction systems.

\* Shaft wall assemblies

# Terms, Conditions & Limited Warranty



For All Products Manufactured by The Steel Network, Inc.

## Product Use

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