

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 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



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

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Building Load Paths

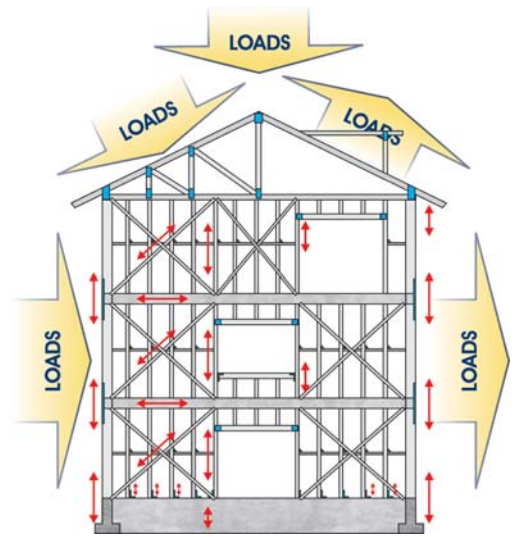
Introduction

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.

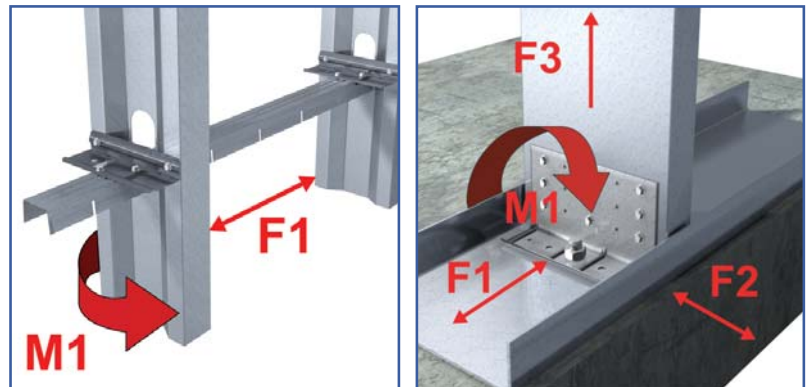
F1 = Lateral (In the plane of the wall), lbs

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.



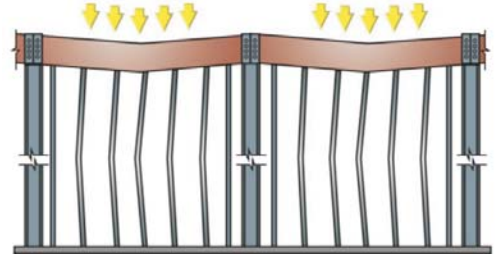
Movement-Allowing Connectors

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 1/2" (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 .125" in very heavy rigid structures to 6" in lightweight open frames.

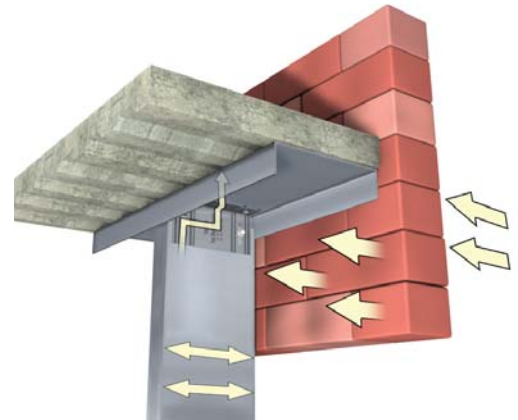
Step Bushing Technology

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.

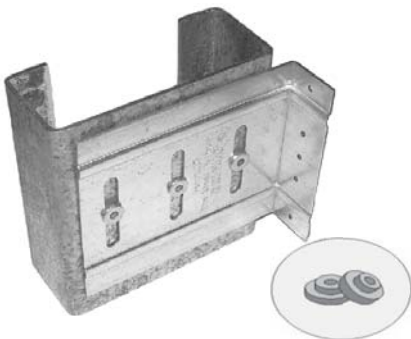
The image on the right illustrates the horizontal load path. The load transitions into shear at the VertiClip to stud web attachment. VertiClip prevents the track flange from bending and stiffens the stud web.



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.

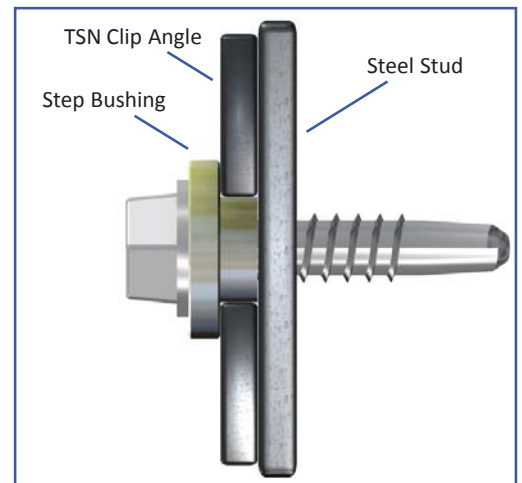
The Step Bushing allows horizontal loads to transfer from the stud web into the structure through a positive, mechanical attachment, while simultaneously allowing friction-free vertical movement. TSN's solutions replace friction-held configurations and flange gripping devices, further reducing liability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

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-1903 and ICC-ES ESR-2049 at www.icc-es.org or at www.steelnetwork.com



Los Angeles Research Reports for select VertiClip®, DriftClip® & DriftTrak® products are available. Refer to LARR #25631 and LARR #25781.



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 ¾" compression and ¾" 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 ¾" compression and ¾" 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 ¾" compression and ¾" 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 and click on the UL link for a complete list of VertiTrack HW-D classified fire rated construction systems.

* Shaft wall assemblies

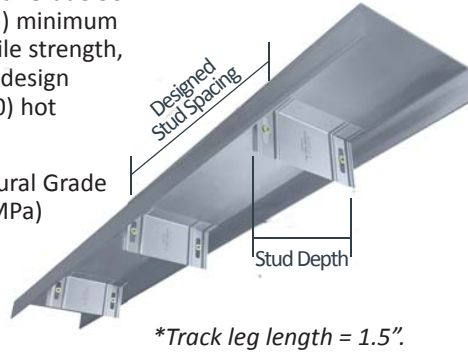
VertiTrack® VTD

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.



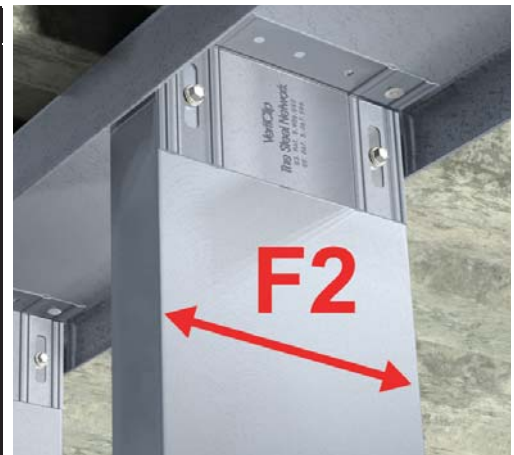
US Patents #5,467,566 & #5,906,080

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) Loads¹

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
Maximum Allowable Clip Load		159	359	405	682

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.

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

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

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



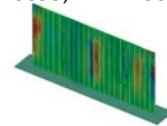
VertiClip SLD600

ICC-ESR-1903

www.icc-es.org



Meets criteria for New York MEA 326-06-M



VertiClip SLD Series

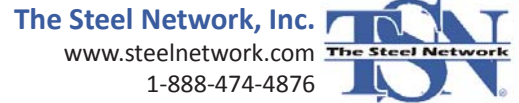
Blast and Seismic Design data

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>

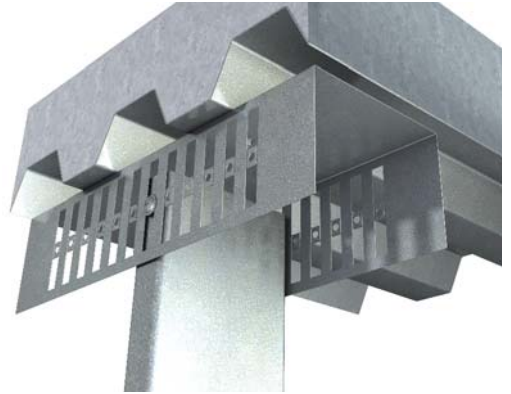
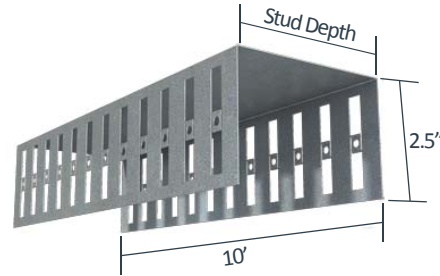
VertiTrack® VT

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

VertiTrack® VT Section Properties																
Section	Design Thickness (in)	Yield Strength (ksi)	Gross Properties								Torsional Properties					
			Area (in ²)	Weight (lbs/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	S _y (in ³)	R _y (in)	Jx1000 (in ⁴)	C _w (in ⁶)	X _o (in)	R _o (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

VertiTrack® VT Section Properties																				
Section	Design Thickness (in)	Yield Strength (ksi)	Effective Properties: Full Leg									Effective Properties: Net (Slotted) Leg								
			I _x (in ⁴)	S _x (in ³)	M _x (k-in)	I _y ¹ (in ⁴)	S _y ¹ (in ³)	M _y ¹ (k-in)	I _y ² (in ⁴)	S _y ² (in ³)	M _y ² (k-in)	I _x (in ⁴)	S _x (in ³)	M _x (k-in)	I _y ¹ (in ⁴)	S _y ¹ (in ³)	M _y ¹ (k-in)	I _y ² (in ⁴)	S _y ² (in ³)	M _y ² (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_x). This effective moment of inertia is calculated at a stress 0.6 F_y (service load level).
 - Properties (I_y, S_y and M_y)¹ are based on the web element in compression while (I_y, S_y and M_y)² 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>

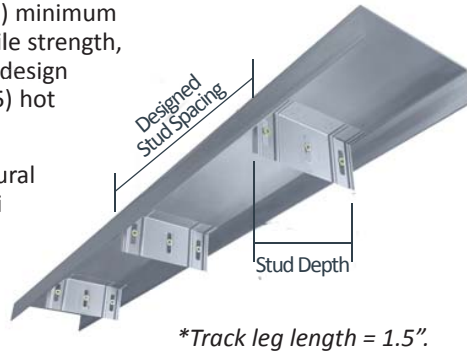
VertiTrack® VTX

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.



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) Loads¹

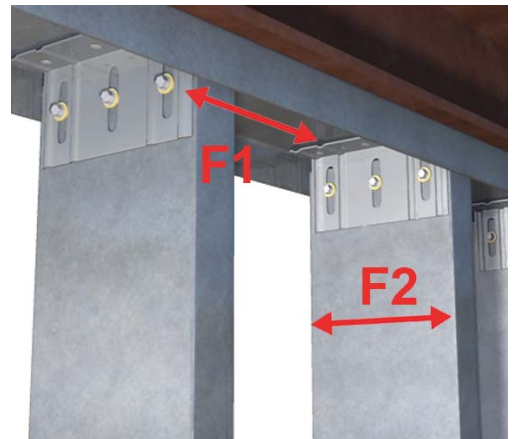
VertiTrack® VTX, Recommended Allowable Load (lbs): F1 & F2 (VertiClip® SL Loads)												
Stud		F1 Load Direction					F2 Load Direction					
Thickness Mils (ga)	Yield Strength (ksi)	VTX362	VTX400	VTX600		VTX800	VTX362	VTX400	VTX600		VTX800	
		w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	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
Max Allowable Clip Load		248	199	367	367	362	790	1,136	1,680	1,680	1,870	1,870

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 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.

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

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

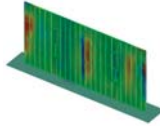


UL®-Classified Head of Wall Assemblies

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-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-1903
www.icc-es.org



VertiClip SL 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>

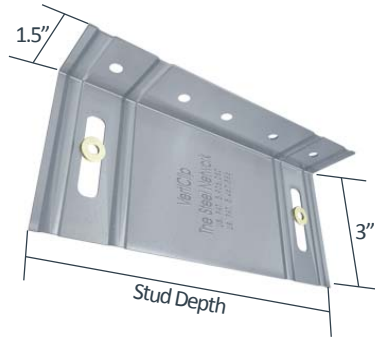
VertiClip® SLD

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) Loads¹

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
Maximum Allowable Clip Load		51	159	359	405	682

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.

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

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	9 ft.	SLD	SLD	SLD	SL	SLD	SLD	SLD	SL	SLD	SLD	SL	SL*	SLD	SLD	SL	SL
		10 ft.	SLD	SLD	SL	SL	SLD	SL	SL	SL*	SLD	SL	SL	SL*	SLD	SL	SL	SL*
		12 ft.	SL	SL*	SL*	SL*	SL	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*
		15 ft.	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*
600 Stud Depth	Wall Height	9 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD
		10 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD
		12 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SL	SLD	SLD	SLD	SL
		15 ft.	SLD	SLD	SL	SL	SLD	SL	SL	SL	SLD	SL	SL	SL*	SLD	SL	SL	SL*
		18 ft.	SL	SL	SL	SL*	SL	SL	SL*	SL*	SL	SL*	SL*	SL*	SL	SL*	SL*	SL*
21 ft.	SL	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	SL*	
800 Stud Depth	Wall Height	9 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD
		10 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD
		12 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD
		15 ft.	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SLD	SL	SLD	SL	SLD	SLD	SLD	SL
		18 ft.	SLD	SLD	SLD	SL	SLD	SL	SL	SL	SLD	SL	SL	SL	SLD	SL	SL	SL
		21 ft.	SLD	SL	SL	SL*	SL	SL	SL	SL*	SL	SL	SL*	SL*	SL	SL	SL*	SL*
24 ft.	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
LARR #25631
www.ladbs.org



VertiClip SLD600
ICC-ESR-1903
www.icc-es.org



Meets criteria for New
York MEA 326-06-M

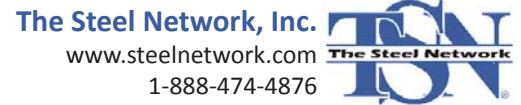


VertiClip SLD Series
Blast and Seismic Design data
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VertiClip® SL

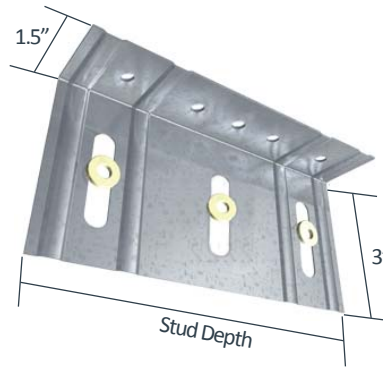
Exterior Head of Wall



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) Loads¹

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
Maximum Allowable Clip Load		248	199	367	367	362	414	414	381	381

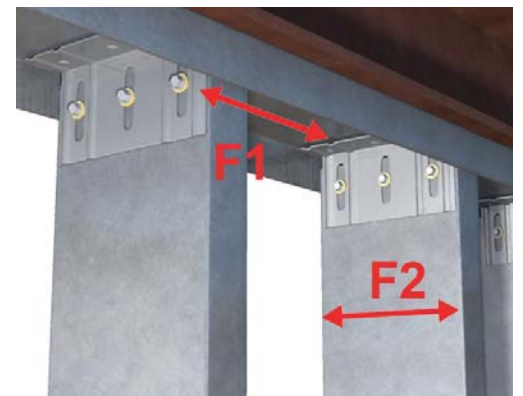
VertiClip® SL, Recommended Allowable Load (lbs): F2											
Stud		SL362	SL400	SL600		SL800	SL1000		SL1200		
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws
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
Maximum Allowable Clip Load		790	1,136	1,680	1,680	1,870	1,870	1,577	1,577	1,791	1,791

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.

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

Load Direction



Nomenclature

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

Example: 6" stud

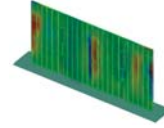
Designate: VertiClip® SL600



VertiClip SL362, SL600 & SL800
ICC-ESR-1903
www.icc-es.org



VertiClip SL Series
LARR #25631
www.ladbs.org



VertiClip SL 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® SLD w/ 3" slots

Interior Head of Wall

The Steel Network, Inc.

www.steelnetwork.com

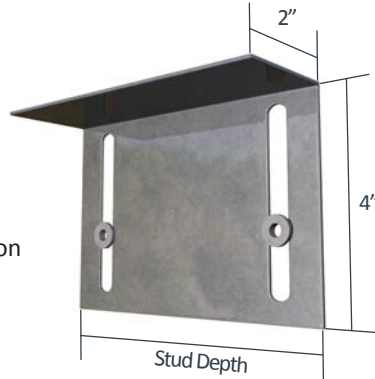
1-888-474-4876



Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 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

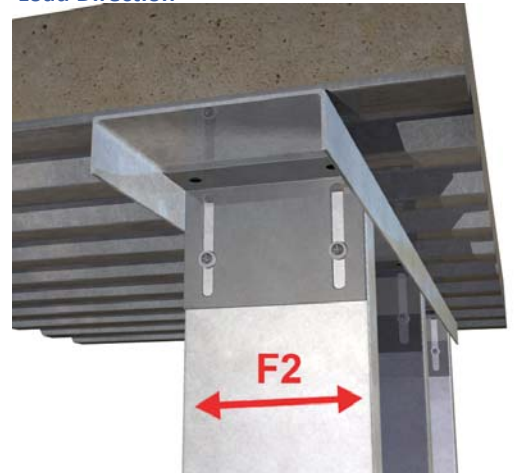
VertiClip SLD w/ 3" Deflection Allowable (Unfactored) Loads¹

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 3/4" 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 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.
- #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

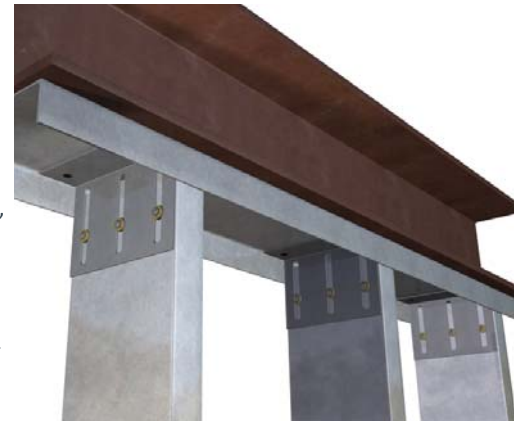
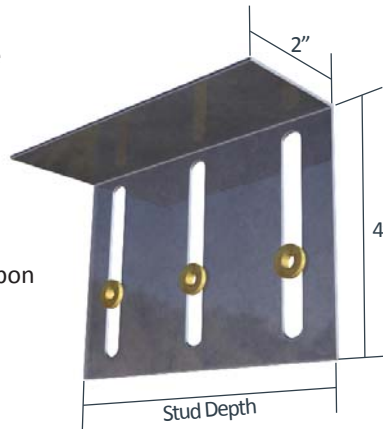
VertiClip® SL w/ 3" slots

Exterior Head of Wall

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

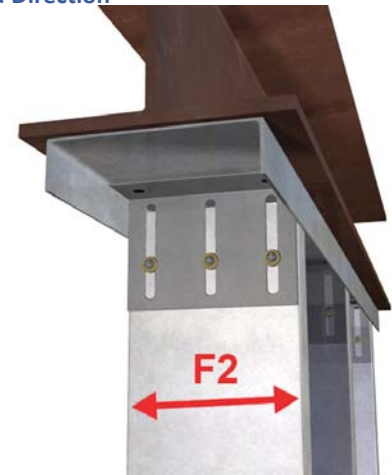
VertiClip SL w/ 3" Deflection Allowable (Unfactored) Loads'

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
Maximum Allowable Clip Load		617	1,571	1,571	1,915	1,915

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 3/4" 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

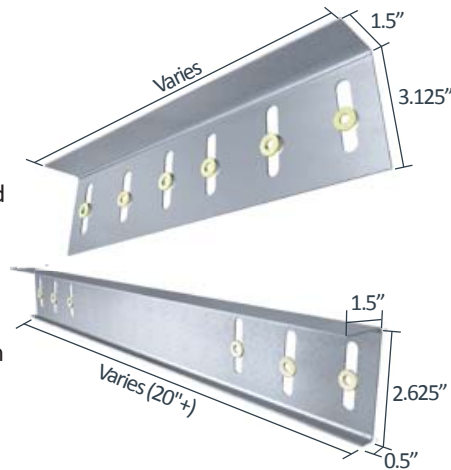
Bypass Structure



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) Loads¹

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
Max Allowable Clip Load		124	164	130	100	141	125

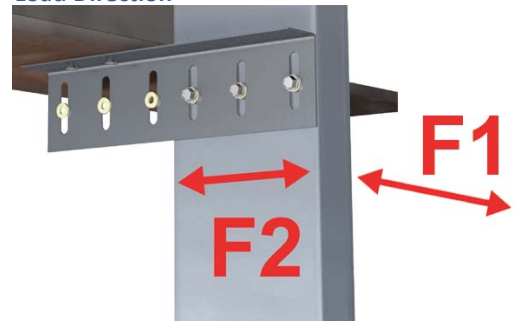
VertiClip® SLS, Recommended Allowable Load (lbs): F2										
Stud		SLS362/400-9, -12	SLS600-12		SLS600-15, -18, -20		SLS600-24		SLS800-12, -15, 18, -20	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	w/2 #12 screws	w/3 #12 screws	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
Max Allowable Clip Load		1,245	2,070		2,122		1,896		1,816	

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 ¼" from the angle heel (centerline of the 1½" 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 1½" (¾" up and ¾" down). Deflection requirements greater than ¾" up and down are available.

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

Load Direction



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")



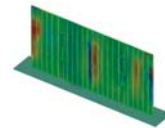
VertiClip SLS at jamb (studs facing each other).



VertiClip SLS600-12
ICC-ESR-1903
www.icc-es.org



VertiClip SLS Series
LARR #25631
www.ladbs.org

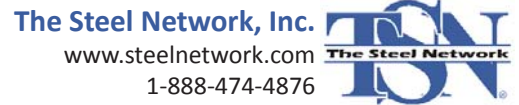


VertiClip SL Series
Blast and Seismic Design data
www.steelnetwork.com

** 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

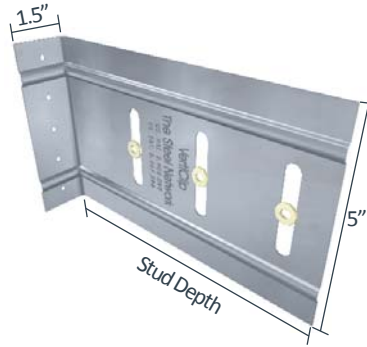
Bypass Slab



Material Composition

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

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



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

VertiClip SLB Allowable (Unfactored) Loads¹

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

Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within 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.

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

Load Direction



Nomenclature

VertiClip SLB is designated by multiplying stud depth by 100.

Example: 6" stud.

Designate: VertiClip® SLB600

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

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

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

Example Details



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.

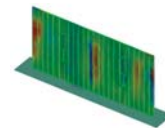
The VertiClip SLB600-10 and 600-12 accommodate an even greater construction tolerance of studs from structure and are now standard products. The VertiClip SLB600-10 is 10" in depth with slot spacing designed for a 6" stud, and the VertiClip SLB600-12 is 12" in depth with slot spacing designed for a 6"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



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



VertiClip SLB Series
LARR #25631
www.ladbs.org



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

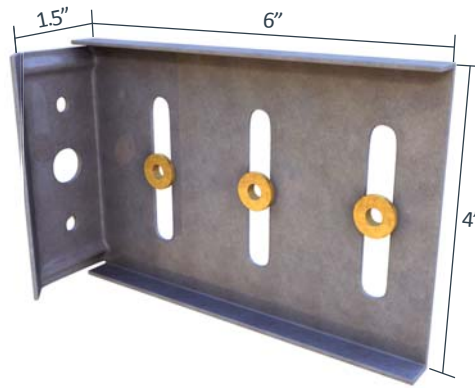
** For more information or to review a copy of each of these reports, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

VertiClip® SLB-HD

Bypass Slab for Seismic Conditions

Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340 MPa) minimum yield strength, 65ksi (340 MPa) 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) Loads¹

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	234	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	
Maximum Allowable Clip Load		234	1,187	1,187	1,003	1,003	

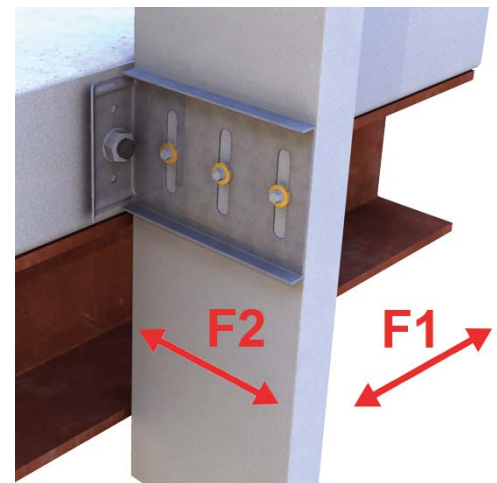
Notes:

- Fasten within ¼" from the angle heel (centerline of the 1 ½" leg) to minimize eccentric load transfer.
- Guide holes for structure connection are 0.29" 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.

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

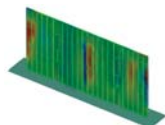
* First and third bushings installed

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 each of these reports, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

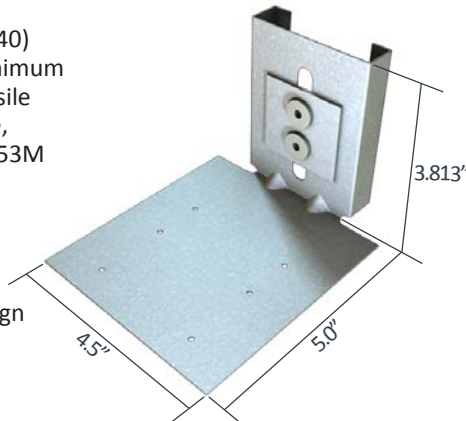
VertiClip® SLF

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) Loads¹

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

Load Direction



Nomenclature

VertiClip SLF is available in one size for all stud depths with 1⅝" 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

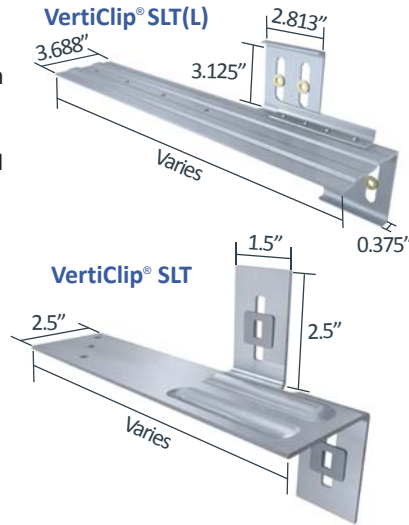
Structure/Slab Bypass



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

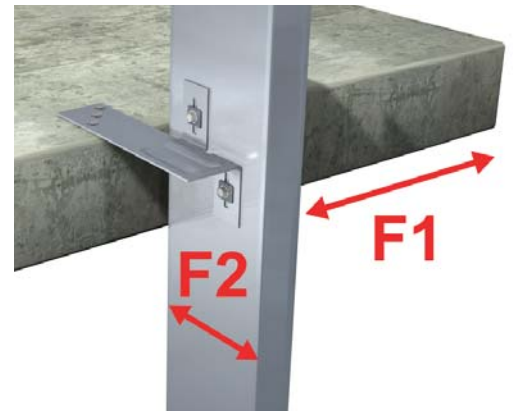
VertiClip SLT Allowable (Unfactored) Loads¹

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	
Max Allowable Clip Load		341	452	452	510	903	903	744	744	700	700	

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

Load Direction



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

Example Details



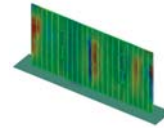
VertiClip SLT attached to the underside of wide flange beam.



VertiClip SLT 9.5 & SLT(L)-18
ICC-ESR-1903
www.icc-es.org



VertiClip SLT Series
LARR #25631
www.ladbs.org

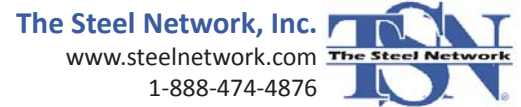


VertiClip SLT Series
Blast and Seismic Design data
www.steelnetwork.com

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

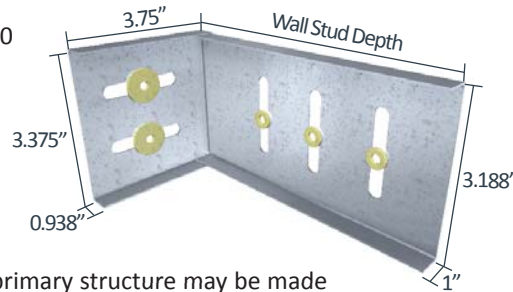
DriftClip® DSLB

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, 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 1/4" 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) Loads¹

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
Max Allowable Clip Load		917	917	572	572

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 1/4" - 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.

¹ 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

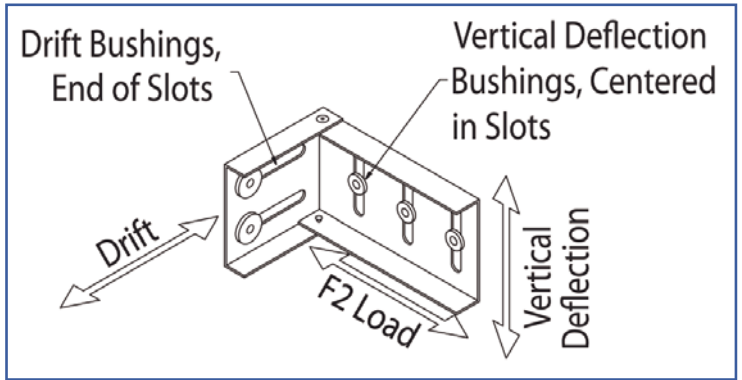
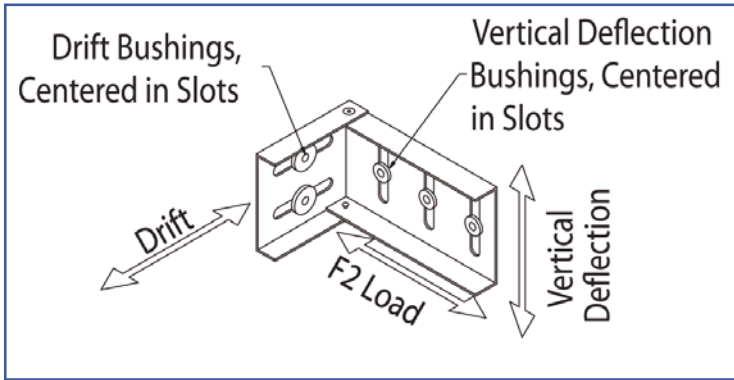
* If more than 2" lateral drift is required, contact TSN engineering.

** 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.

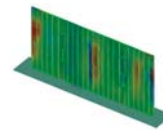
Fastener Pattern 2 replicates a condition of out-of-plane wind or seismic force with or without full vertical live load deflection and full in-plane drift.



DriftClip DSLB
ICC-ESR-2049
www.icc-es.org



DriftClip DSLB Series
LARR #25781
www.ladbs.org

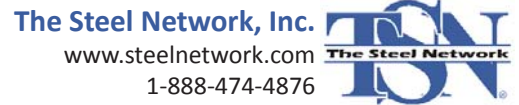


DriftClip DSLB Series
Blast and Seismic Design data
www.steelnetwork.com

** 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

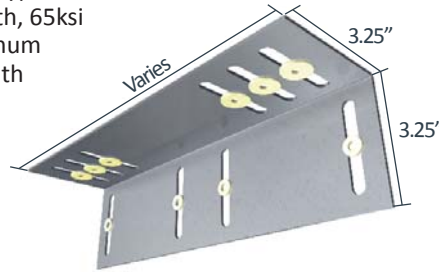
Bypass Structure



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 1/4" 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) Loads¹

DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 1					
Stud		DSLS600-12		DSLS600-15	
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	817
43 (18)	33	561	841	561	841
43 (18)	50	810	1,215	810	1,215
54 (16)	33	789	1,183	789	1,183
54 (16)	50	1,139	1,709	1,138	1,709
68 (14)	50	1,610	1,862	1,610	1,903
97 (12)	50	1,698	1,862	1,698	1,903
Maximum Allowable Clip Load		1,862	1,862	1,903	1,903

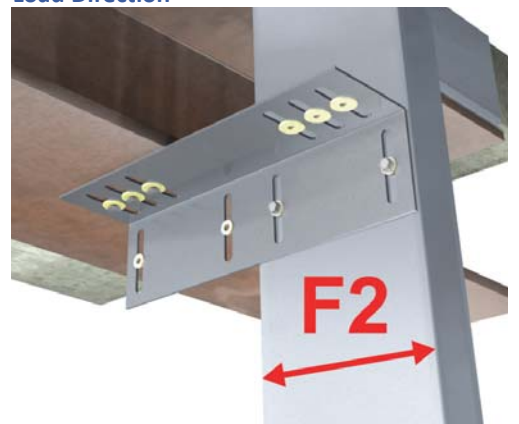
DriftClip® DSLS, Recommended Allowable Load (lbs): F2 - Fastener Pattern 2					
Stud		DSLS600-12		DSLS600-15	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	377	565	377	565
33 (20)	50	544	817	544	817
43 (18)	33	561	841	561	841
43 (18)	50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

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 1/4" - 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.

¹ For LRFD Design Strengths 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

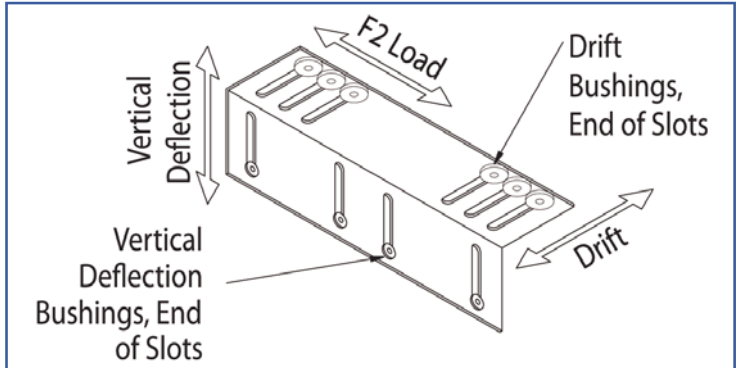
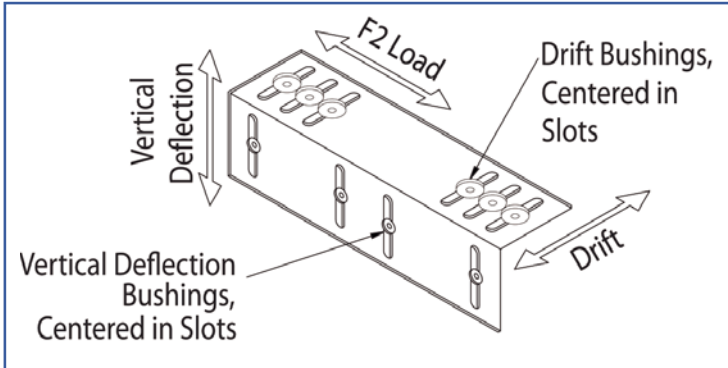
Designate: DriftClip® DSLS600-15

* 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.

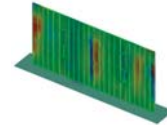
Fastener Pattern 2 replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



DriftClip DSLS
ICC-ESR-2049
www.icc-es.org



DriftClip DSLS Series
LARR #25781
www.ladbs.org



DriftClip DSLS Series
Blast and Seismic Design data
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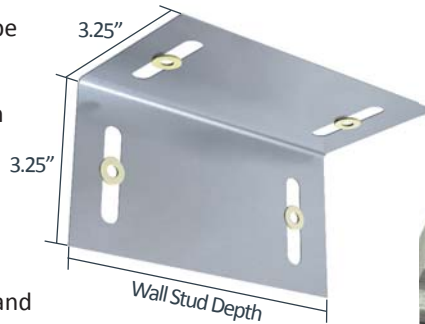
DriftClip® DSLD

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) Loads¹

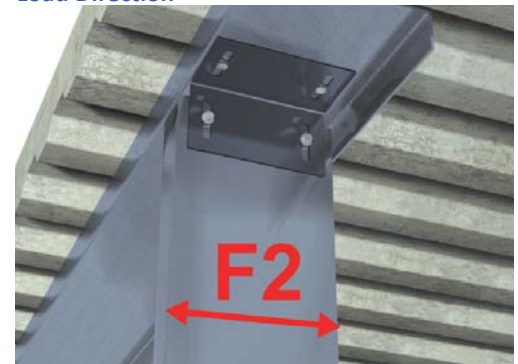
DriftClip® DSLD, Recommended Allowable Load (lbs): F2							
Stud		Fastener Pattern 1			Fastener Pattern 2		
Thickness Mils (ga)	Yield Strength (ksi)	DSL362 w/2 #8 Screws	DSL600 w/2 #8 Screws	DSL800 w/2 #8 Screws	DSL362 w/2 #8 Screws	DSL600 w/2 #8 Screws	DSL800 w/2 #8 Screws
18 (25)	33	70	132	132	27	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
Maximum Allowable Clip Load		70	178	199	27	107	183

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.

¹ For LRFD Design Strengths refer to ICC-ESR-2049.

Load Direction



Nomenclature

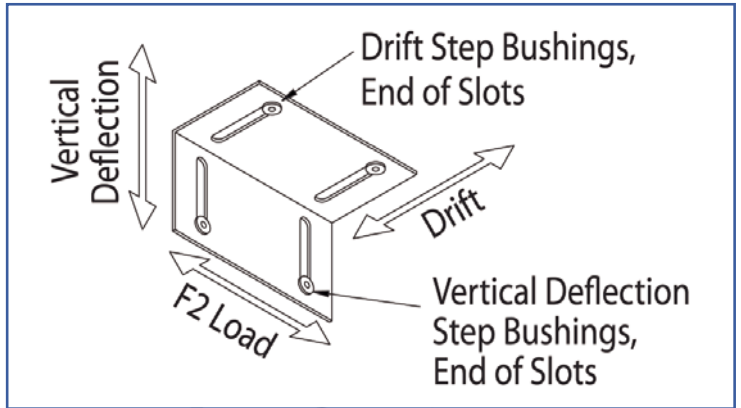
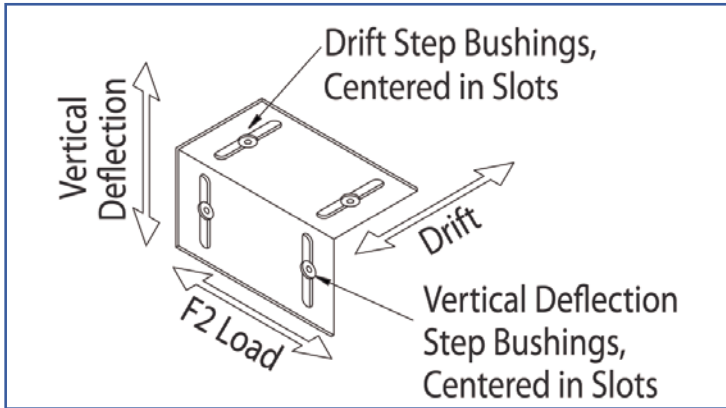
DriftClip DSLD is classified by multiplying stud depth by 100.

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.

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.



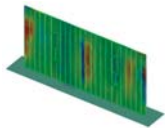
UL2079 Head of Wall Assemblies



DriftClip DSLD
ICC-ESR-2049
www.icc-es.org



DriftClip DSLD Series
LARR #25781
www.ladbs.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

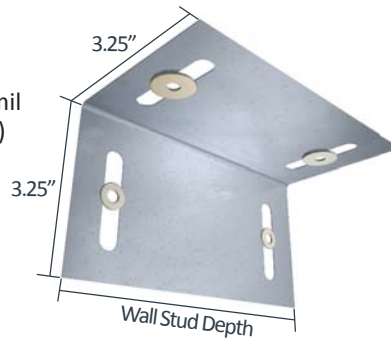
Exterior Head of Wall



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 1/4" 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) Loads¹

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	1041	129	418	418	810	1,041	
54 (16)	33	357	776	776	789	1041	129	418	418	789	1,041	
54 (16)	50	357	776	776	1041	1041	129	418	418	1,041	1,041	
68 (14)	50	357	776	776	1041	1041	129	418	418	1,041	1,041	
97 (12)	50	357	776	776	1041	1041	129	418	418	1,041	1,041	
Max Allowable Clip Load		357	776	776	1041	1041	129	418	418	1,041	1,041	

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 1/4" - 20 size with various plate thickness.

¹ For LRFD Design Strengths refer to ICC-ESR-2049.

Load Direction



Nomenclature

DriftClip DSL is classified by multiplying stud depth by 100.

Example: 6" stud depth

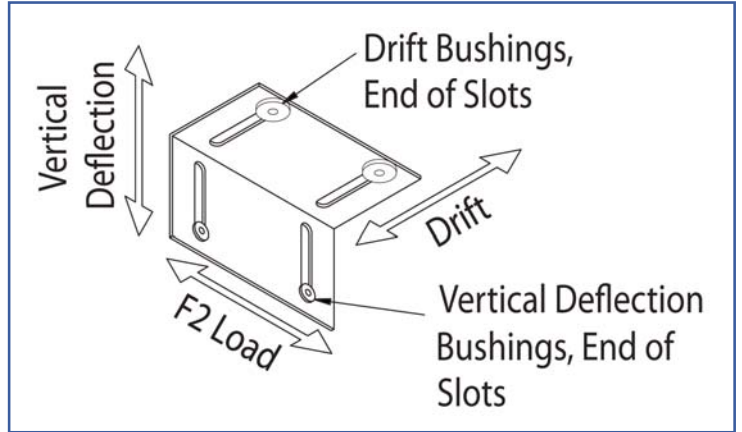
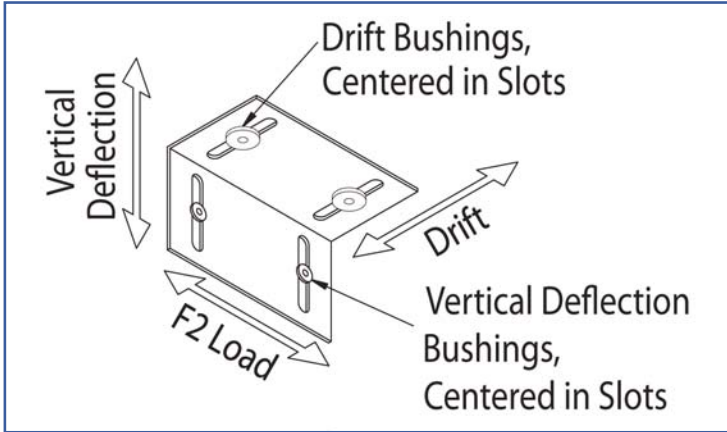
Designate: DriftClip® DSL600

* 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.

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.

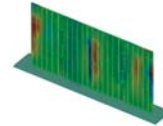
Fastener Pattern 2 replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



DriftClip DSL
ICC-ESR-2049
www.icc-es.org



DriftClip DSL Series
LARR #25781
www.ladbs.org



DriftClip DSL Series
Blast and Seismic Design data
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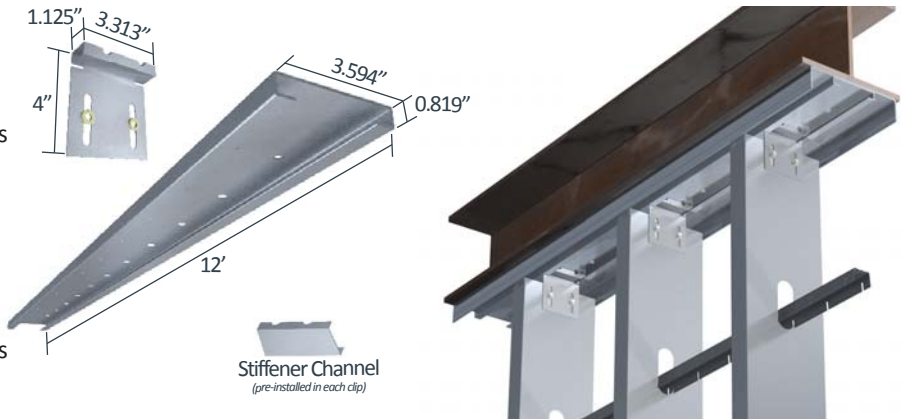
DriftTrak® DTSL

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) Loads¹

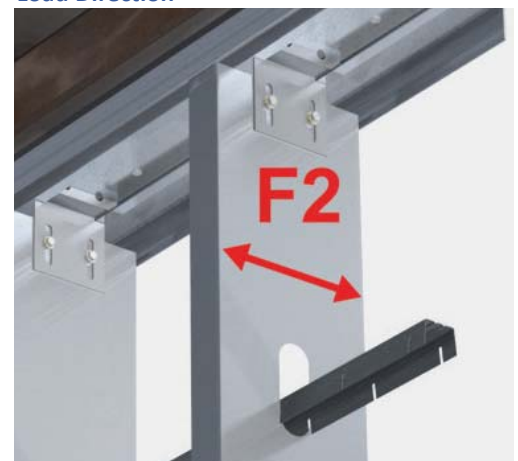
DriftTrak® DTSL, Recommended Allowable Load (lbs): F2					
Stud		8" Fastener Spacing in Track to Structure (or welded on both sides)		16" Fastener Spacing in Track to Structure (or welded on both sides)	
		Fastener Pattern 1	Fastener Pattern 2	Fastener Pattern 1	Fastener Pattern 2
Thickness Mils (ga)	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
Maximum Allowable Clip Load		625	482	625	449

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.

¹ For LRFD Design Strengths refer to ICC-ESR-2049.

Load Direction



Nomenclature

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

Example: 6" stud depth

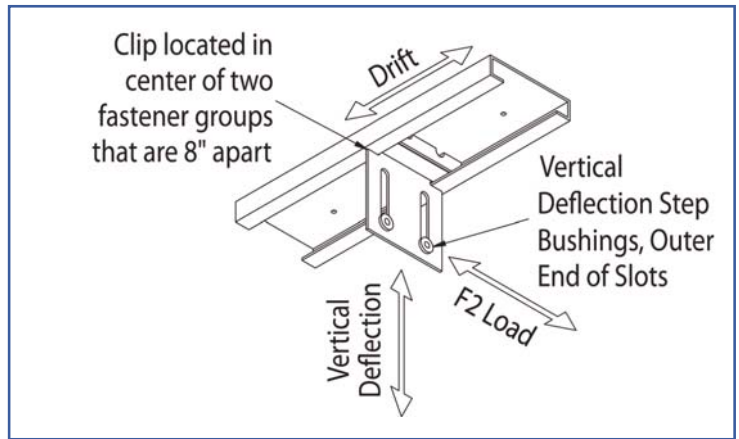
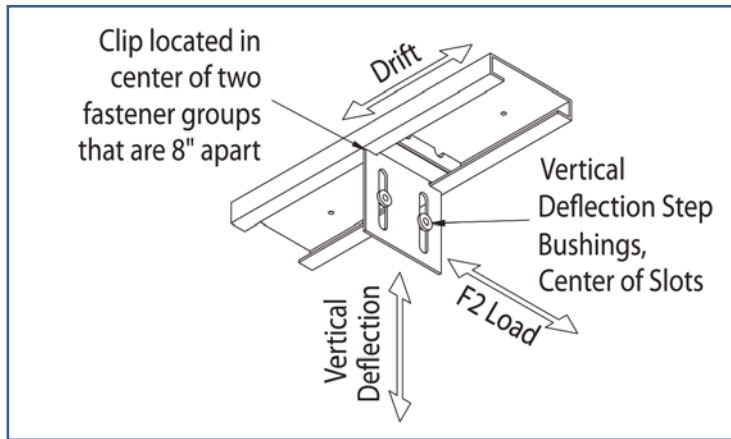
Designate: DriftTrak® DTSL

* 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.

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.

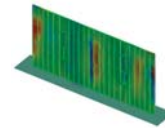
Fastener Pattern 2 replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



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



DriftTrak DTSL Series
LARR #25781
www.ladbs.org



DriftTrak DTSL Series
Blast and Seismic Design data
www.steelnetwork.com

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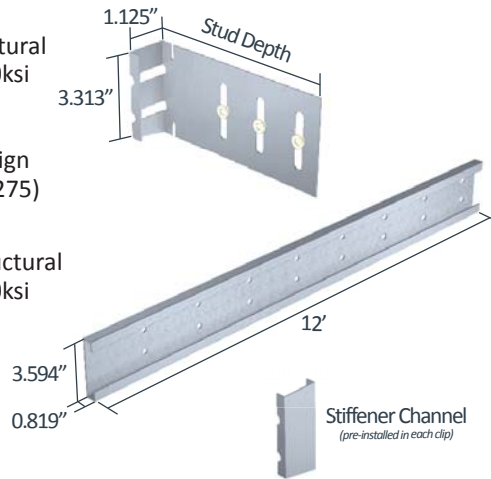
DriftTrak® DTSLB

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) Loads¹

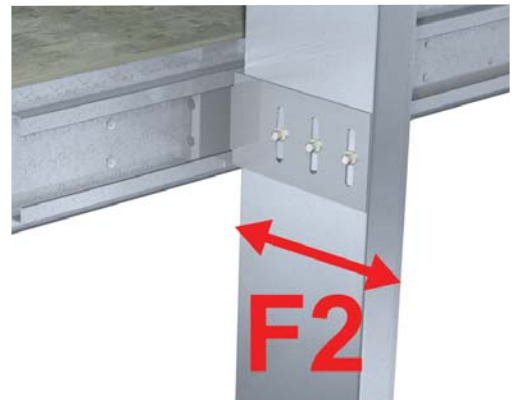
DriftTrak® DTSLB362, 600 & 800, Recommended Allowable Load (lbs): F2					
Stud		Fastener Pattern 1 & 2			
		8" Fastener Spacing in Track to Structure (or welded on each side)		16" Fastener Spacing in Track to Structure (or welded on each side)	
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	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
Maximum Allowable Clip Load		808	808	753	753

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.

¹ For LRFD Design Strengths refer to ICC-ESR-2049.

Load Direction



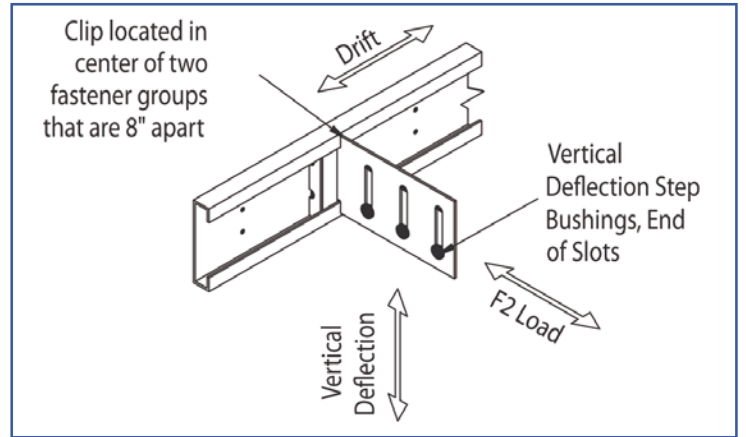
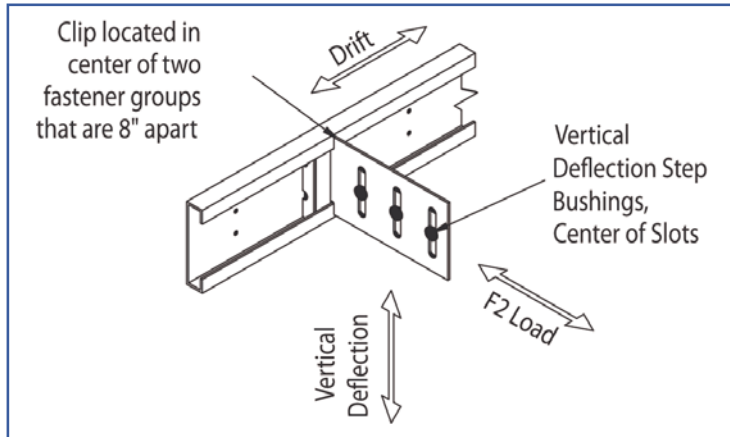
Nomenclature

DriftTrak DTSLB is classified by multiplying stud depth by 100.

Example: 6" stud depth

Designate: DriftTrak® DTSLB600

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.

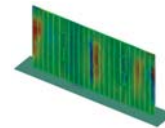
Fastener Pattern 2 replicates a condition of out-of-plane wind or seismic force with full vertical live load deflection and full in-plane drift.



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



DriftTrak DTSLB Series
LARR #25781
www.ladbs.org

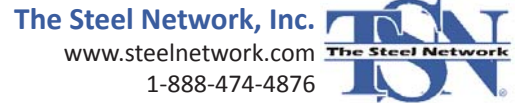


DriftTrak DTSLB Series
Blast and Seismic Design data
www.steelnetwork.com

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

DriftCorner®

Infill or Bypass Corners

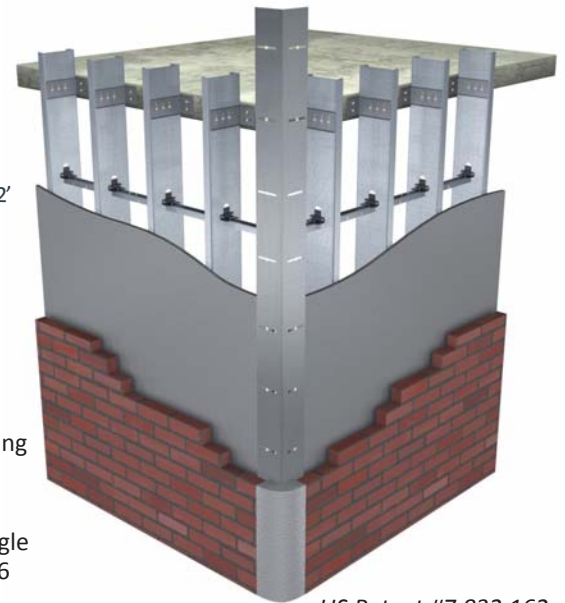
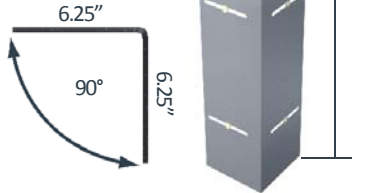


Material Composition

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.



US Patent #7,832,162

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.

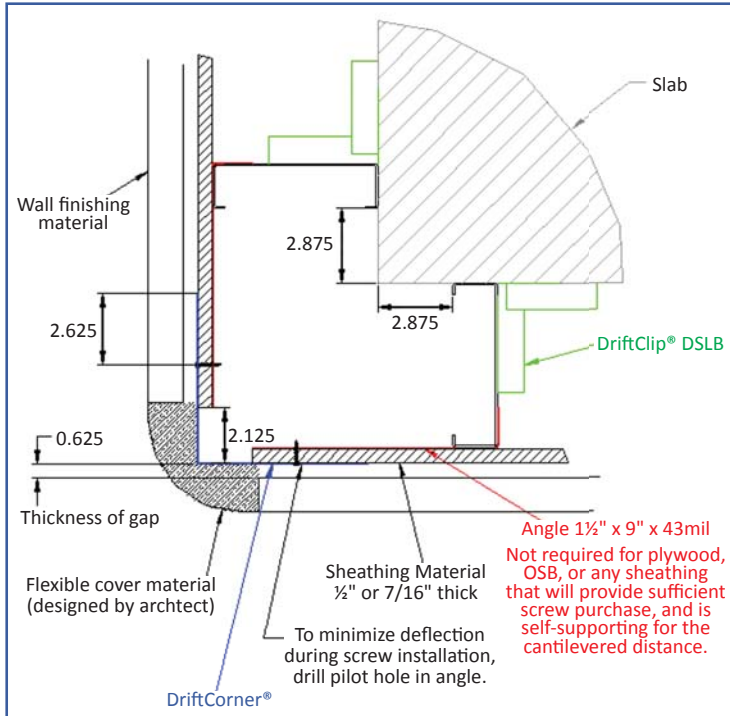
Notes:

- 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

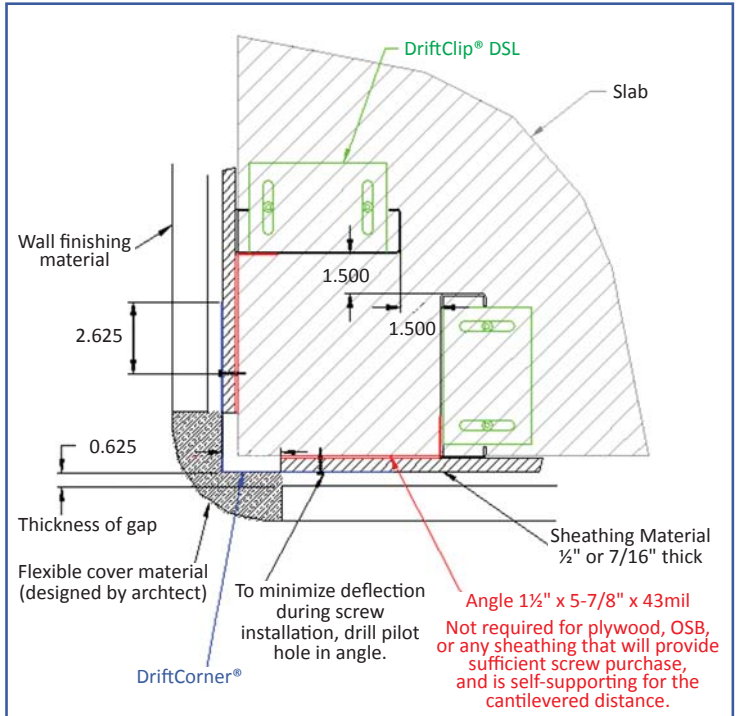
DriftCorner is made in one size and is designated *DriftCorner®*.

DriftCorner at Slab Bypass:



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

DriftCorner at Infill Framing:



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

Wall Bridging

Background

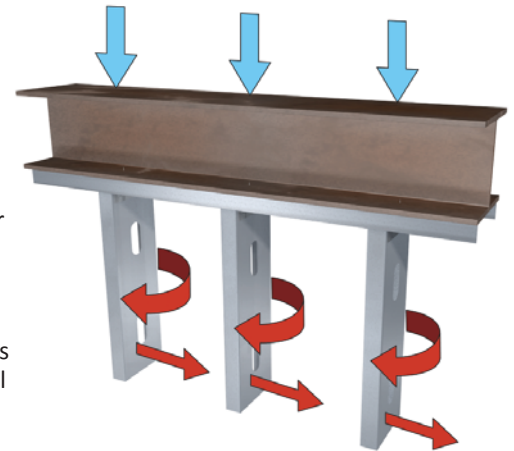
Bridging Background

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 (2007), referenced by 2009 IBC; or AISI-NAS Specification (2007) provides 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.

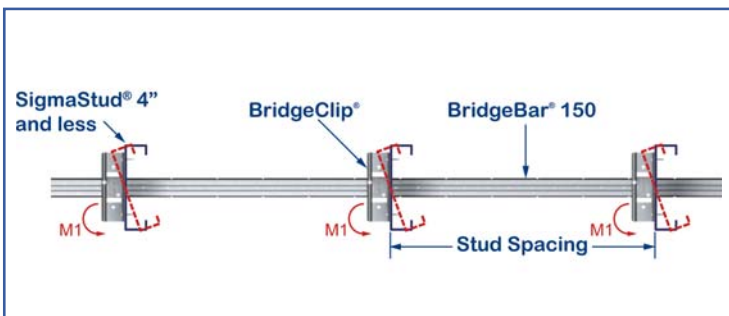


Bridging Requirements

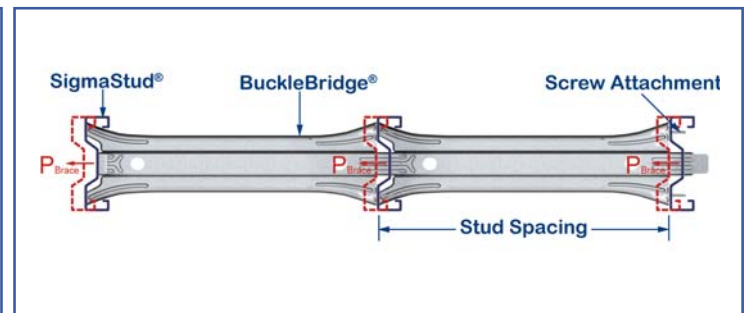
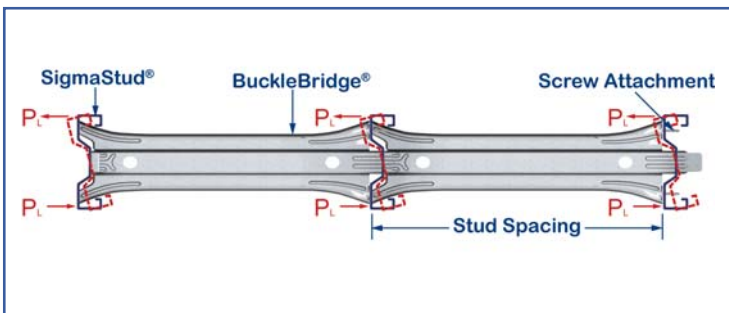
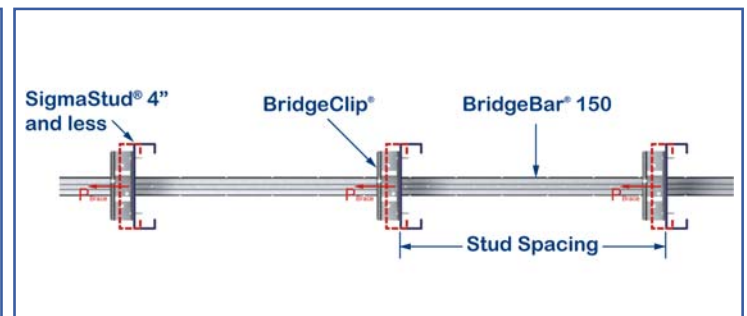
	AISI Wall Stud Design Standard 2007	AISI-NAS Specification 2007
Stud Axial Compression	Load Capacity: Bracing Load $P_{\text{Brace}}^* = 0.02 \times \text{Stud Design Compression Force } (P_{\text{Stud}}) \times \text{\# of studs braced.}$	Load Capacity: Bracing Load $P_{\text{Brace}}^* = 0.01 \times \text{Stud Axial Strength } (P_{\text{Stud}}) \times \text{\# of studs braced.}$ Stiffness Capacity: 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).
Wind	Load Capacity: 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 Stud Spacing										
Stud Designation	10psf*	20psf		25psf		30psf		40psf		50psf
	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.
362S162-33, 33ksi	BB	BB / BC1	N / A	N / A	N / A	N / A	N / A	N / A	N / A	N / A
362S162-43, 33ksi	BB	BB / BC1	BB / BC3	BB / BC3	N / A	BB / BC3	N / A	N / A	N / A	N / A
362S162-54, 50ksi	BB	BB / BC1	BB / BC3	BB / BC3	BB / BC3	BB / BC3	N / A	BB / BC3	N / A	N / A
362S162-68, 50ksi	BB	CRC / BC1	CRC / BC3	CRC / BC3	CRC / BC3	CRC / BC3	N / A	CRC / BC3	N / A	N / A
600S162-33, 33ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	N / A	N / A
600S162-43, 33ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC600	BB / BC3 or BC600
600S162-54, 50ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC600	BB / BC3 or BC600
600S162-68, 50ksi	BB	CRC / BC1	CRC / BC3 or BC600	CRC / BC1	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC600	CRC / BC3 or BC600
600S162-97, 50ksi	BB	CRC / BC1	CRC / BC3 or BC600	CRC / BC1	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC600	CRC / BC3 or BC600
800S162-33, 33ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S162-43, 33ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S162-54, 50ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S162-68, 50ksi	BB	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800
800S162-97, 50ksi	BB	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800
362S200-33, 33ksi	BB	BB / BC3	N / A	BB / BC3	N / A	N / A	N / A	N / A	N / A	N / A
362S200-43, 33ksi	BB	BB / BC3	BB / BC3	BB / BC3	N / A	BB / BC3	N / A	N / A	N / A	N / A
362S200-54, 50ksi	BB	BB / BC3	BB / BC3	BB / BC3	N / A	BB / BC3	N / A	N / A	N / A	N / A
362S200-68, 50ksi	BB	CRC / BC3	CRC / BC3	CRC / BC3	N / A	CRC / BC3	N / A	N / A	N / A	N / A
600S200-33, 33ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC600	BB / BC600	N / A	BB / BC600
600S200-43, 33ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC600	BB / BC600	N / A	BB / BC600
600S200-54, 50ksi	BB	BB / BC1	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC3 or BC600	BB / BC600	BB / BC600	BB / BC600	BB / BC600
600S200-68, 50ksi	BB	CRC / BC1	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC600	CRC / BC600	CRC / BC600	CRC / BC600
600S200-97, 50ksi	BB	CRC / BC1	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC3 or BC600	CRC / BC600	CRC / BC600	CRC / BC600	CRC / BC600
800S200-33, 33ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S200-43, 33ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S200-54, 50ksi	BB	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800	BB / BC800
800S200-68, 50ksi	BB	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800
800S200-97, 50ksi	BB	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800	CRC / BC800

- Notes:**
- See also Curtain Wall BuckleBridge chart.
 - Stud height assumed 10' and bridging spacing assumed 60 o.c. 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:

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

- 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.

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.

BuckleBridge Bridging Chart: Design Wind Pressure and Bridging Spacing															
Stud Designation	20 psf					25 psf					30 psf				
	4' o.c.	5' o.c.	6' o.c.	7' o.c.	8' o.c.	4' o.c.	5' o.c.	6' o.c.	7' o.c.	8' o.c.	4' o.c.	5' o.c.	6' o.c.	7' o.c.	8' o.c.
600S162-33, 33 ksi	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A	BKB	BKB	N/A	N/A	N/A
600S162-43, 33 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A
600S162-54, 50 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A
600S162-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A
600S162-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S162-33, 33 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A
800S162-43, 33 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A
800S162-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A
800S162-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S162-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
600S200-33, 33 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A
600S200-43, 33 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A
600S200-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
600S200-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
600S200-97, 50 ksi	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	BKB	BKB	BKB	N/A
800S200-43, 33 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S200-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S200-68, 50 ksi	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

BuckleBridge Bridging Chart: Design Wind Pressure and Bridging Spacing											
Stud Designation	40 psf					50 psf					
	4' o.c.	5' o.c.	6' o.c.	7' o.c.	8' o.c.	4' o.c.	5' o.c.	6' o.c.	7' o.c.	8' o.c.	
600S162-33, 33 ksi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
600S162-43, 33 ksi	BKB	BKB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
600S162-54, 50 ksi	BKB	BKB	N/A	N/A	N/A	BKB	BKB	N/A	N/A	N/A	N/A
600S162-68, 50 ksi	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A	N/A
600S162-97, 50 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A	N/A
800S162-33, 33 ksi	BKB	BKB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
800S162-43, 33 ksi	BKB	BKB	BKB	N/A	N/A	BKB	BKB	N/A	N/A	N/A	N/A
800S162-54, 50 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A	N/A
800S162-68, 50 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A	N/A
800S162-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	N/A
600S200-33, 33 ksi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
600S200-43, 33 ksi	BKB	BKB	BKB	N/A	N/A	BKB	BKB	BKB	N/A	N/A	N/A
600S200-54, 50 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	BKB	N/A	N/A
600S200-68, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	N/A
600S200-97, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB
800S200-33, 33 ksi	BKB	BKB	BKB	N/A	N/A	BKB	BKB	N/A	N/A	N/A	N/A
800S200-43, 33 ksi	BKB	BKB	BKB	BKB	N/A	BKB	BKB	BKB	N/A	N/A	N/A
800S200-54, 50 ksi	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	BKB	N/A	N/A
800S200-68, 50 ksi	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

- Notes**
- 4' o.c. condition assumes 12' stud height with two rows of BuckleBridge bracing.
 - 5' o.c. condition assumes 10' stud height with a single row of BuckleBridge bracing.
 - 6' o.c. condition assumes 12' stud height with a single row of BuckleBridge bracing.
 - 7' o.c. condition assumes 14' stud height with a single row of BuckleBridge bracing.
 - 8' o.c. condition assumes 16' stud height with a single row of BuckleBridge bracing.
 - BuckleBridge design chart calculations are based on studs spaced at 16" o.c.
 - Stud flexural strength limited pressure calculated with torsional bracing assumed at the bridging spacing and $k_{\phi} = 0$.
 - Stud deflection limited pressure calculated with deflection limit equal to $l/360$. Listed wind pressures have been reduced by 0.70 as allowed by the IBC code.
 - BuckleBridge calculated twist moment (Reference AISI S100-07) is equal to:

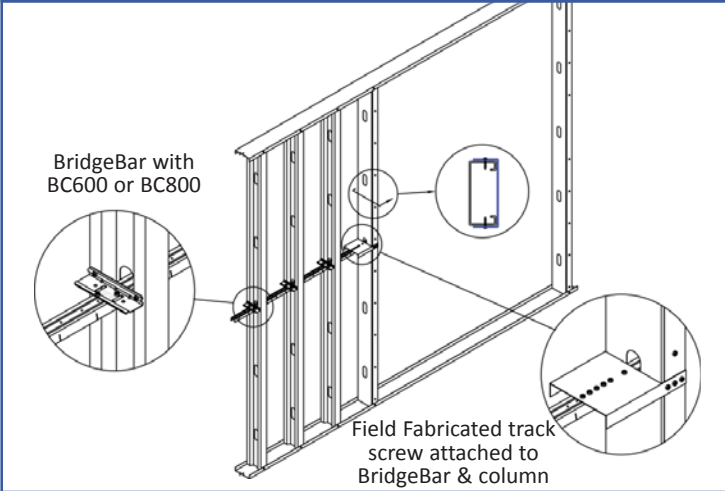
$$(1.5 \times \text{Wind Load} \times \text{Bridging Spacing} \times \text{Stud Spacing} \times m \text{ (distance from stud web to shear center)})$$
 - Listed wind pressures represent calculated design wind pressures (1.0W based on IBC 2009 or 0.6W based on IBC 2012).
 - Self weight of wall span assumed as 12 psf.
 - N/A indicates stud section is insufficient.
 - 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.

Wall Bridging Anchorage

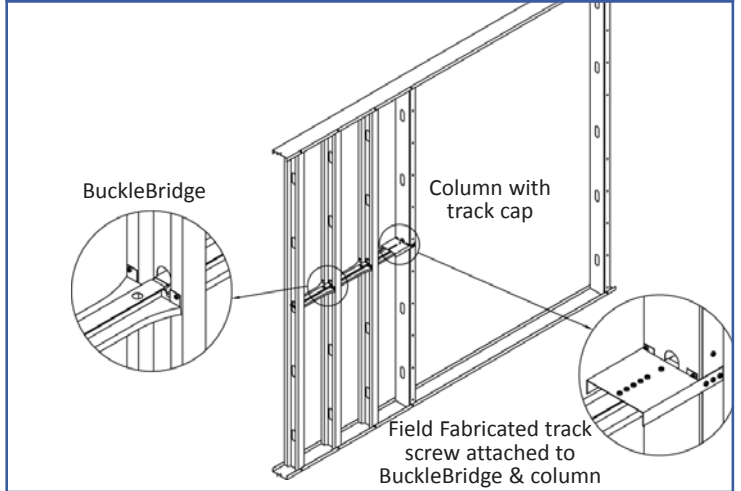
Quick Reference

Anchorage of Lateral Bracing (Bridging) Forces

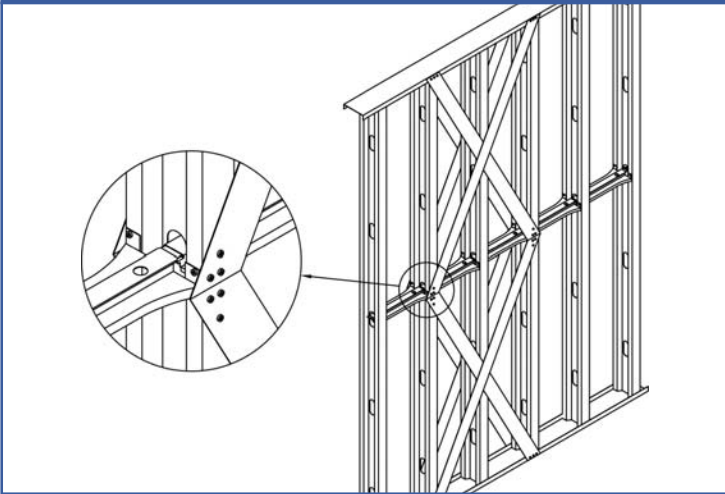
Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BridgeBar® 150 with BC600/BC800



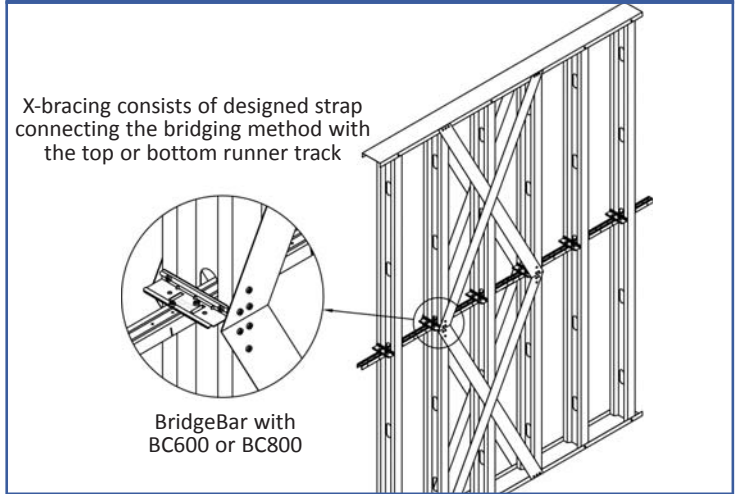
Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BuckleBridge®



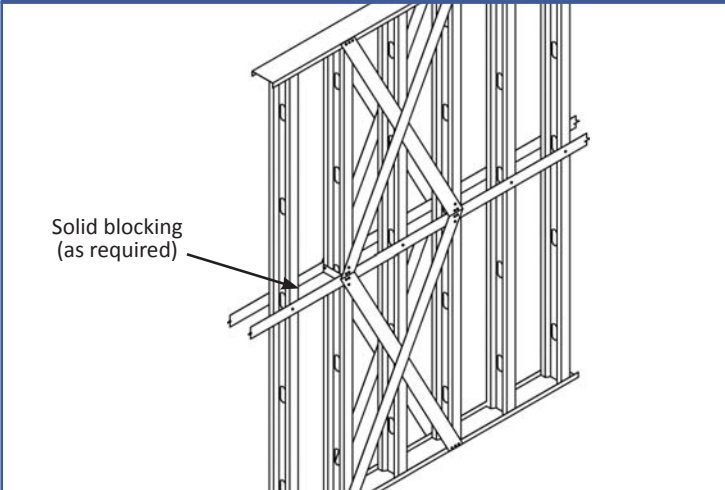
Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BuckleBridge



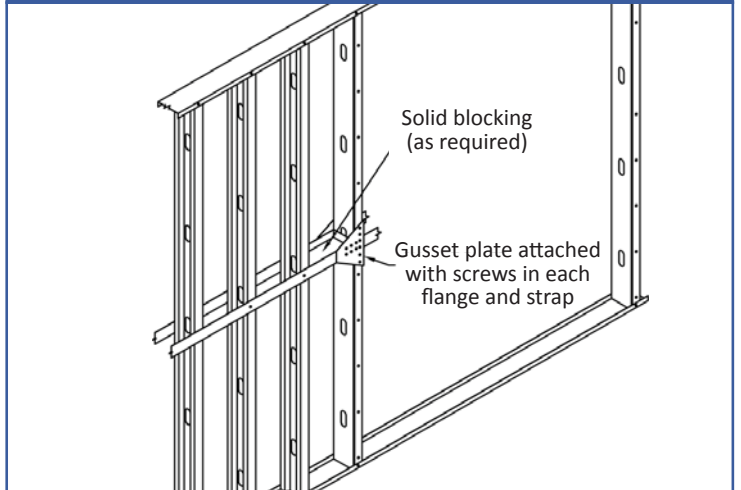
Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BridgeBar 150 with BC600/BC800



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



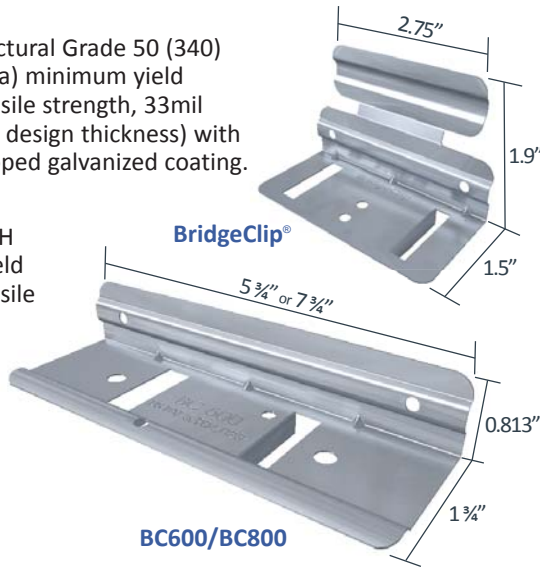
BridgeClip®

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.



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.

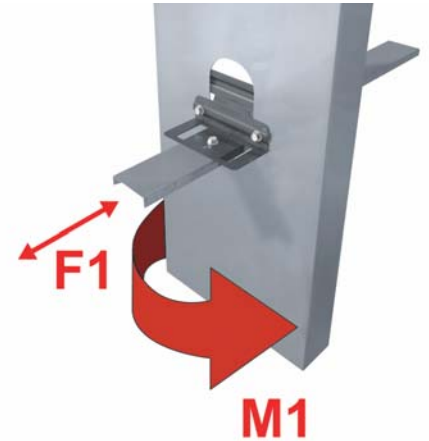
Nomenclature

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

Example: 6" Stud

Designate: BC600

Load Direction



BridgeBar®

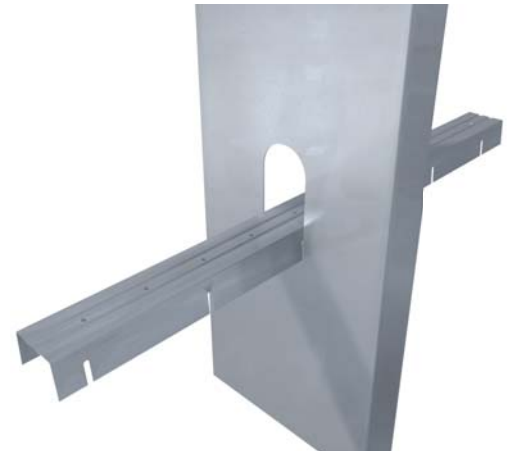
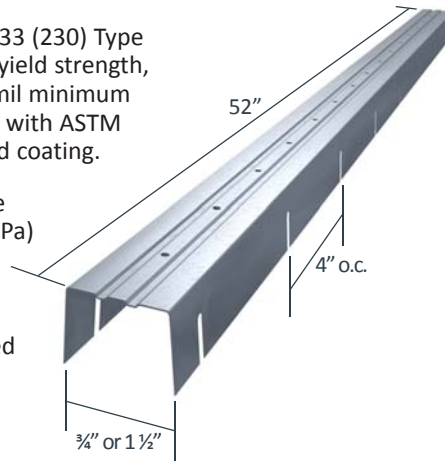
Bridging Channel



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

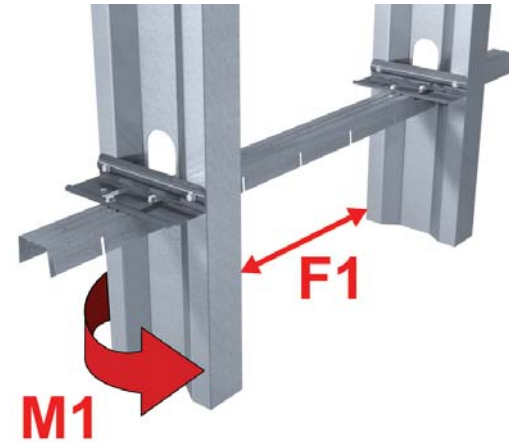
Section	Minimum Thickness (in)	Design Thickness (in)	Yield Strength (ksi)	Effective Section Properties ⁽¹⁾						Effective Section Properties and Allowable Loads ^{(2), (3), (4)}							
				Area	I _x	S _x	R _x	I _y	R _y	S _{xe}	M _a (X-axis)	12" o.c.		16" o.c.		24" o.c.	
												A _e	P _a	A _e	P _a	A _e	P _a
(in ²)	(in ⁴)	(in ³)	(in)	(in ⁴)	(in)	(in ³)	(in-kips (ft-lb))	(in ²)	(lbs)	(in ²)	(lbs)	(in ²)	(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.

¹ Gross section properties are calculated based on the minimum dimensions of the cross section.
² Effective section properties and allowable loads for BridgeBar are calculated based on AISI S100-2007 Specification.
³ Effective section modulus (S_{xe}) is calculated based on the minimum dimensions of the cross section.
⁴ Effective area (A_e) and allowable axial load (P_a) are calculated based on the average dimensions of the cross section.

Load Direction



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

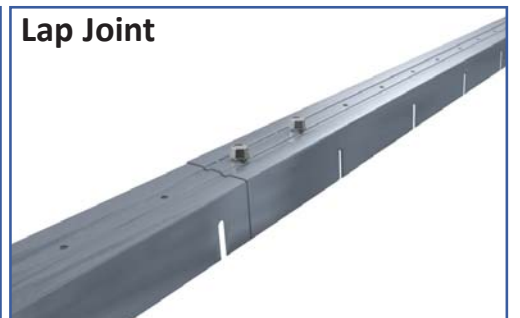
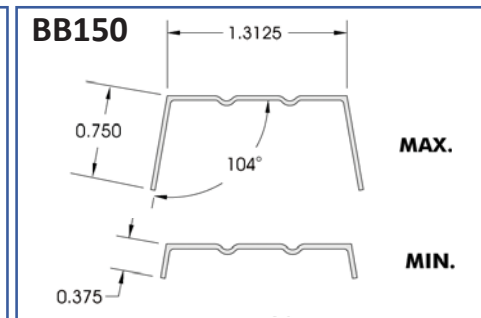
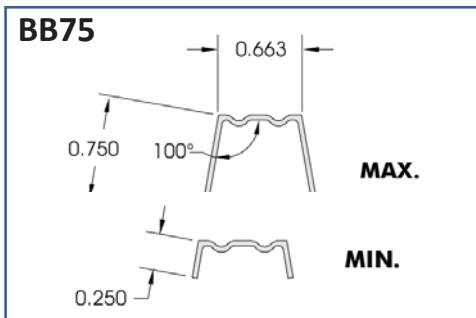
BridgeBar is available in 3/4" and 1 1/2" widths. Designations are BB75 and BB150.

Example: Stud with 3/4" knockout
Designate: BB75

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.

Cross Sections

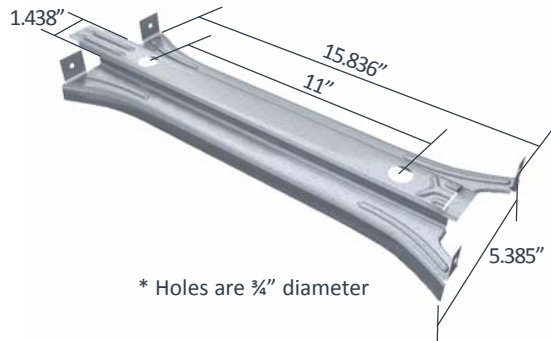


BuckleBridge®

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.

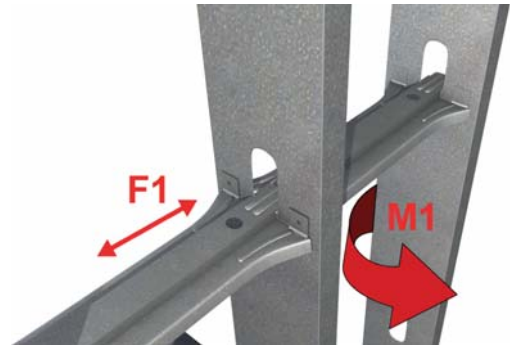


US Patents #7,596,921, #7,836,657 & #8,205,402

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.

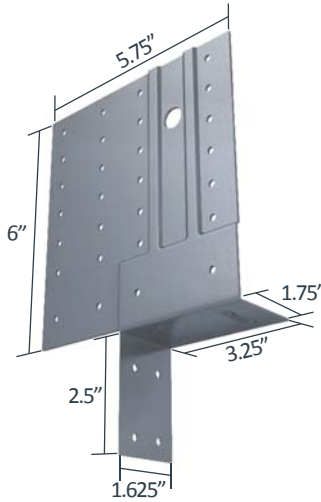
StiffClip® HE

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): 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.



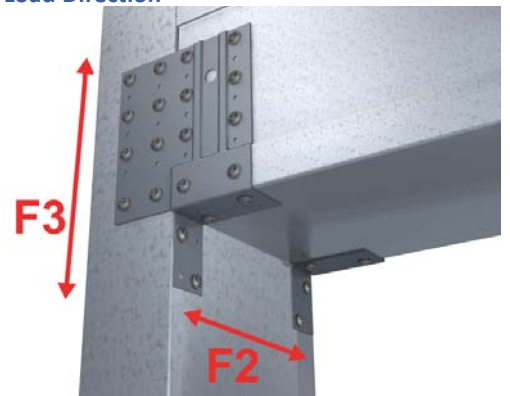
US Patent #7,634,889

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/28 #10 screws
33 (20)	33	536	708	873	1,090	1,239	1,340	536	708	873	1,090	1,239
33 (20)	50	774	1,021	1,259	1,573	1,787	1,933	774	1,021	1,259	1,573	1,787
43 (18)	33	797	1,052	1,297	1,620	1,841	1,991	797	1,052	1,297	1,620	1,841
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
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
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
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
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
Max Allowable Clip Load		1,518	2,004	2,470	3,066	3,066	3,066	2,012	2,656	3,274	4,090	4,648

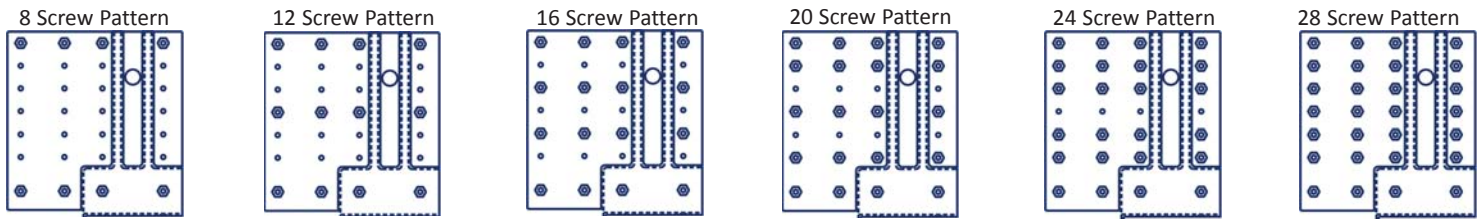
StiffClip® HE Recommended Allowable Load for a Single Clip (lbs): F2							
Stud		HE(L)			HE(H)		
Thickness Mils (ga)	Yield Strength (ksi)	w/4 #10 screws	w/6 #10 screws	w/8 #10 screws	w/4 #10 screws	w/6 #10 screws	w/8 #10 screws
33 (20)	33	199	299	399	199	299	399
33 (20)	50	287	431	575	287	431	575
43 (18)	33	296	444	592	296	444	592
43 (18)	50	428	627	627	428	641	855
54 (16)	33	417	625	627	417	625	833
54 (16)	50	564	627	627	601	902	1,088
68 (14)	50	564	627	627	747	1,088	1,088
97 (12)	50	564	627	627	747	1,088	1,088
Max Allowable Clip Load		564	627	627	747	1,088	1,088

Load Direction

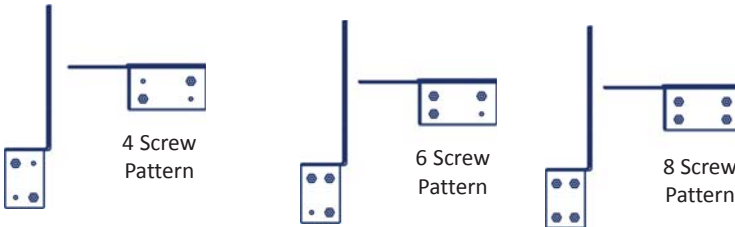


- Notes:**
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.
 - Attachment to stud is made with screws symmetrically placed. All guide 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 members.
- * Refer to screw patterns on the following page.

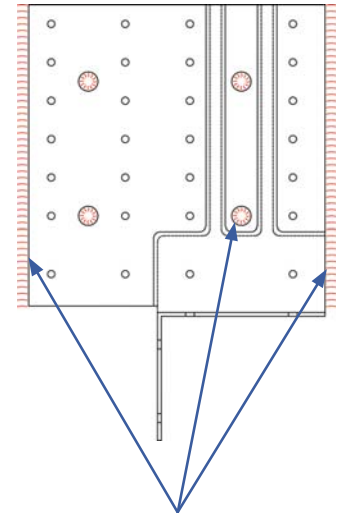
Screw Patterns for F3 Load Tables



Screw Patterns for F2 Load Tables



Weld Diagram



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

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

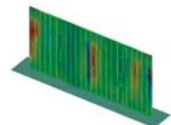
Notes:

- Welded values do not apply to 43mil (18ga) StiffClip HE.
- HE(H) with welds around the perimeter of four .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) is 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.

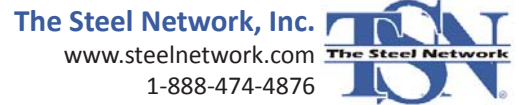


StiffClip HE Series
Blast and Seismic Design data
www.steelnetwork.com

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

StiffClip® LB

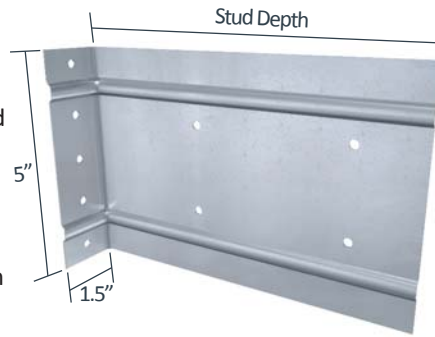
Spandrel Wall Bypass



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

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

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

Nomenclature

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

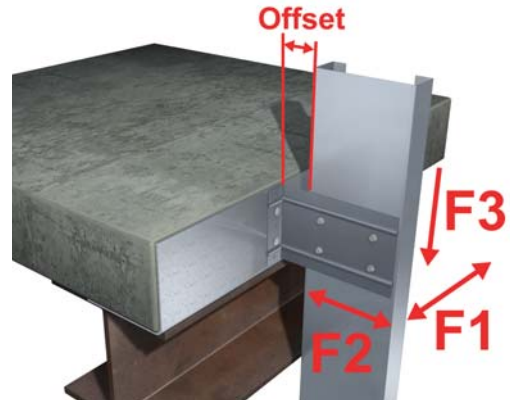
Example: 6" stud depth
Designate: StiffClip® LB600

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

Notes:

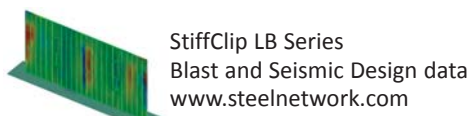
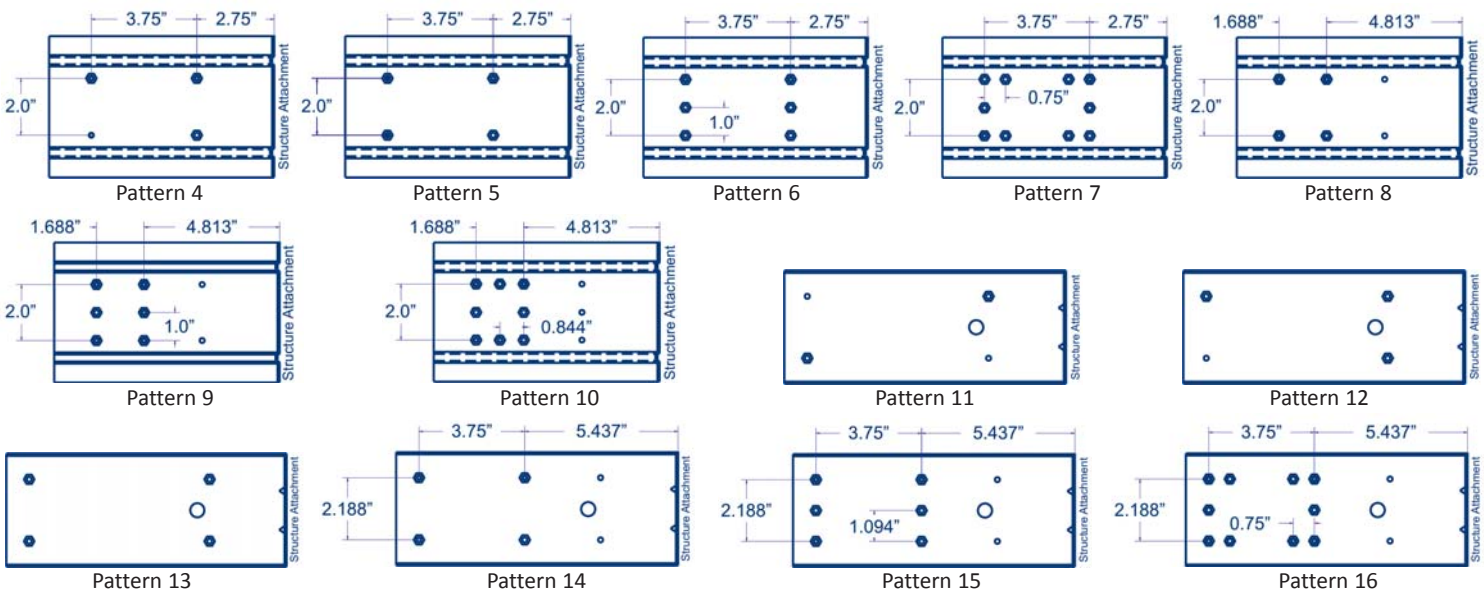
- Allowable load tables incorporate eccentric loading of fasteners. Values with a welded connection may increase.
- StiffClip LB resists horizontal and vertical loads.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.
- Design loads consider loads on the clip and #12 screw fasteners to the stud web.
- Strengthening ribs are present in 3-5/8", 6", and 8" sizes. StiffClip LB's 10" and 12" sizes contain 1/2" return lips on the top and bottom of the leg attaching to the stud for increased stiffness.

Load Direction



Screw Patterns

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



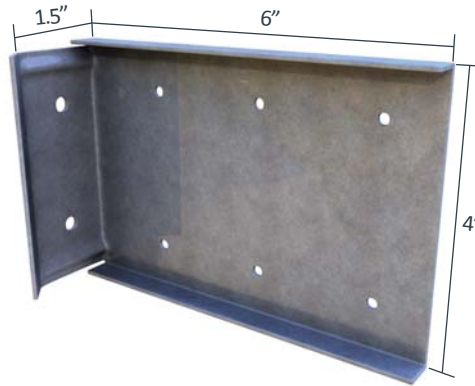
** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

StiffClip® LB-HD

Spandrel Wall Bypass for Seismic Conditions

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.



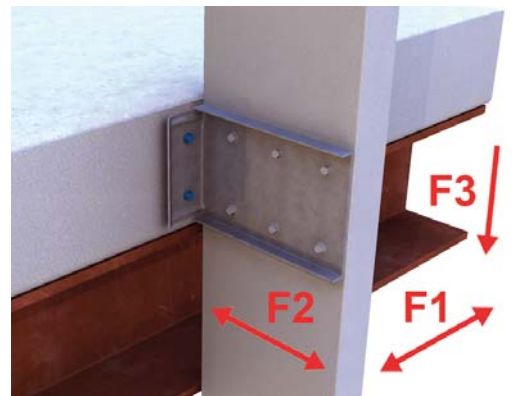
StiffClip LB-HD Allowable Loads

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 ¹ #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
Maximum Allowable Clip Load		857	1,130	1,130	1,130	1,966	1,966	1,966

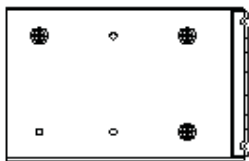
Note:

- Fasten within ¼" from the angle heel (centerline of the 1 ½" leg) to minimize eccentric load transfer.
 - Guide holes for stud connection are 0.172" diameter for #12 screws. Guide holes for structure connection are 0.257" diameter for (2) ¼" 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.
- ¹ Only two screws near clip support are considered effective.

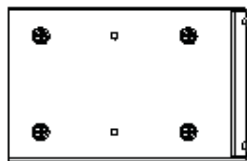
Load Direction



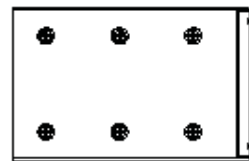
Screw Patterns



3 Screw Pattern



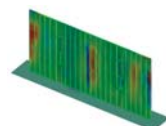
4 Screw Pattern



6 Screw Pattern

Nomenclature

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

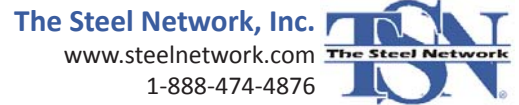


StiffClip LB-HD Series
 Blast and Seismic Design data
 www.steelnetwork.com

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VertiClip® Splice

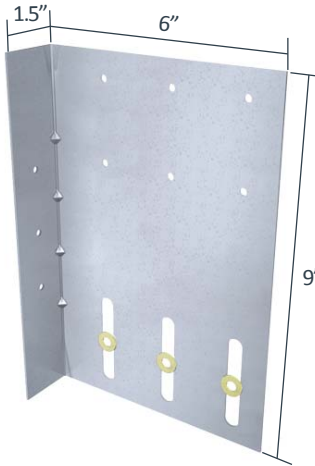
Multi-Stud Bypass



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

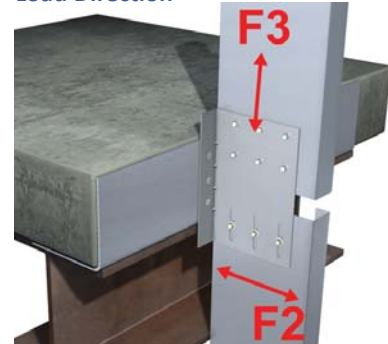
VertiClip Splice Allowable Loads

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
Maximum Allowable Clip Load		1,328	1,328	1,328	1,328	1,328	2,432	2,432	2,432

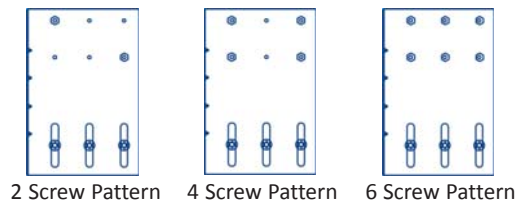
Notes:

- Fasten within 3/4" from the angle heel centerline of the 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.

Load Direction



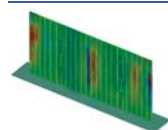
Screw Patterns



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.

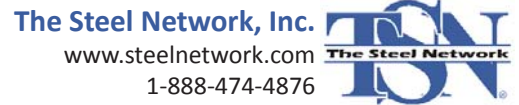


VertiClip Splice Series
Blast and Seismic Design data
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StiffClip® CL

Floor Tie



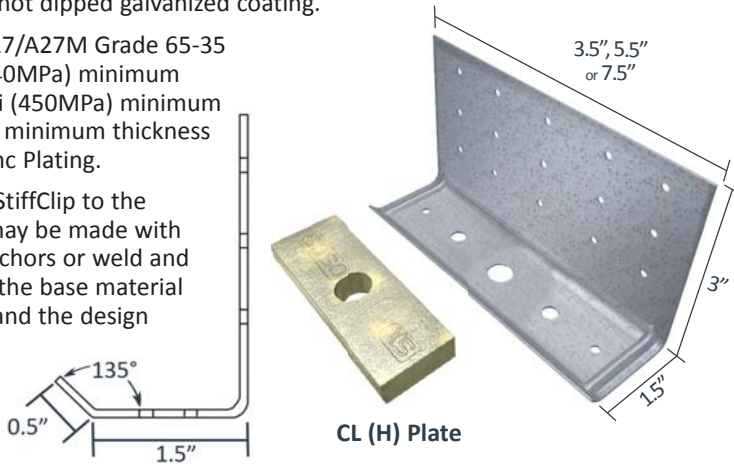
Material Composition

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, 1/2" 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.



US Patent #7,533,508

StiffClip CL Allowable Loads

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

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

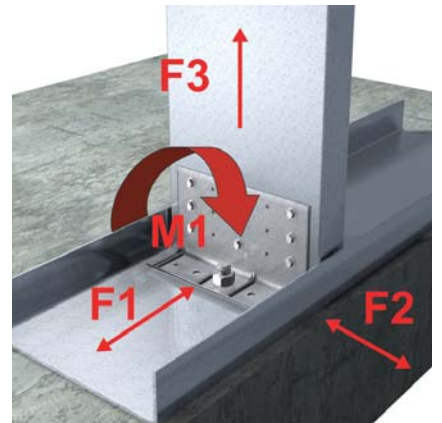
****StiffClip CL Allowable Load tables and important notes continued on next page.**

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

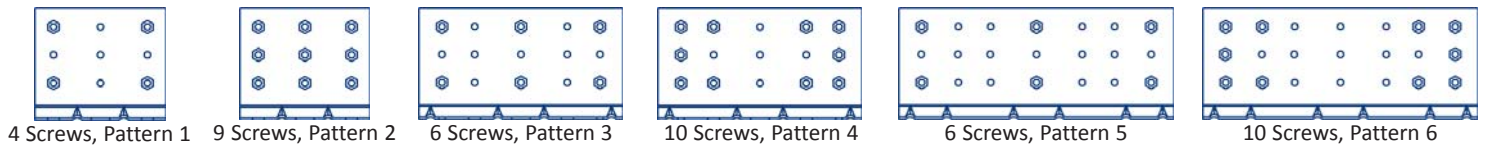
Notes:

- 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), 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 1/2" leg (shown on page 1).

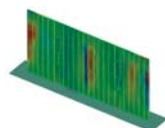
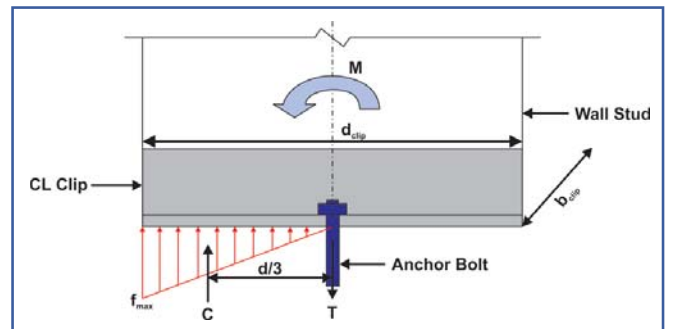
Example: 6" stud, uplift load of 650lbs

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.

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



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

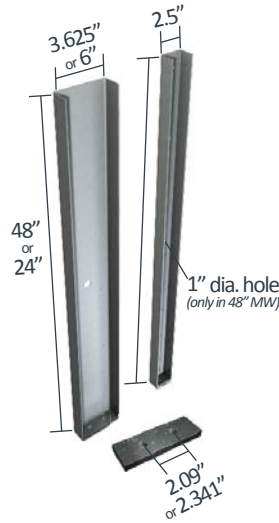
MidWall™

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

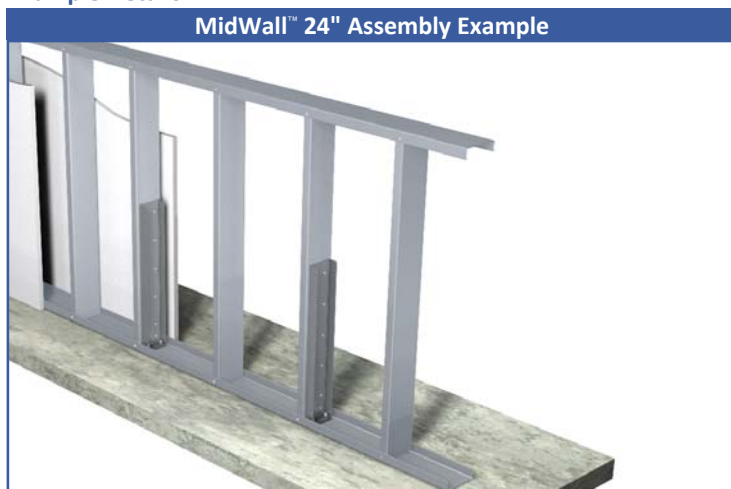
- Notes**
- MidWall is designed to support out-of-plane loading in cantilevered partial wall systems that are unsupported at the top track.
 - Out-of-plane loads are transferred to the floor system through plate nested in the flanges of the member with two 3/8" diameter fasteners (or one ½" diameter 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:

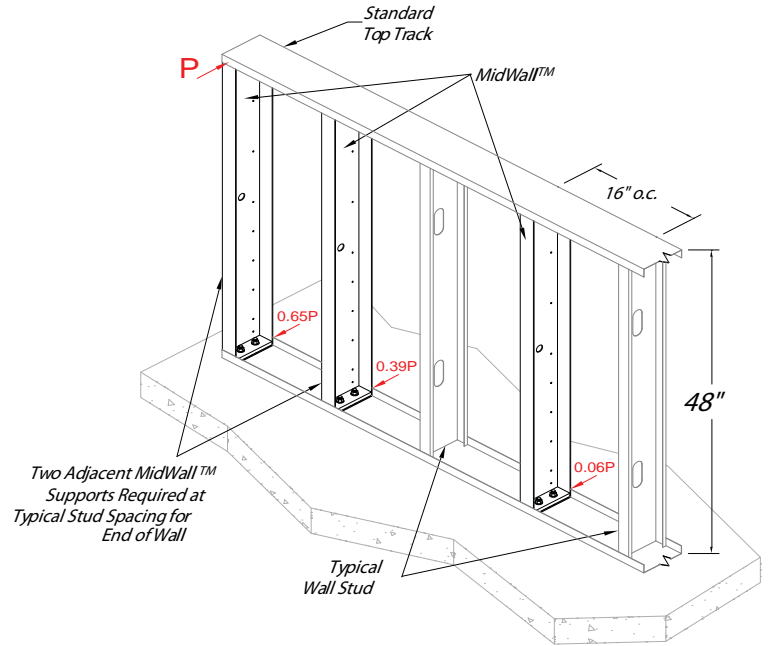
- 50 lb/ft applied in any direction at the top of wall
- 200 lbs applied in any direction at any point at the top of the wall

Parapets & Ribbon Windows:

- Design Wind Pressure

Interior Half Walls:

- Design internal pressure



Design Procedure

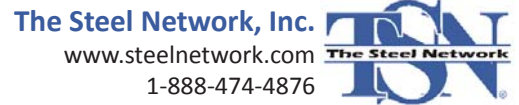
The top track spanning between MidWall members acts as a load distribution member capable of distributing localized loads to multiple MidWall members. It is recommended to design the track in these applications. Refer to the diagram above for an example of the distribution of the point load, P, to adjacent 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™ 1/2" Anchorage Options (4,000 psi minimum concrete strength)
500	1/2" Wedge-Bolt, 2" Embed. (Powers); 1/2" Carbon Steel HUS-H Screw Anchor Mechanical, 2" Embed. (Hilti)
1,000	1/2" Wedge-Bolt, 2 1/2" Embed. (Powers); 1/2" Carbon Steel Kwik Bolt 3 Expansion Anchor, 2 1/4" Embed. (Hilti) 1/2" Trubolt Wedge, 2 1/4" Embed. (Red Head)
1,500	1/2" Carbon and Stainless Steel Power-Bolt, 2 1/2" Embed. (Powers) 1/2" Carbon Steel Kwik Bolt 3 Expansion Anchor, 3 1/2" Embed. (Hilti)

Max Applied Tension in One Anchor (lbs)	362/600 MidWall™ 3/8" Anchorage Options (4,000 psi minimum concrete strength)
1,500	3/8" Wedge-Bolt, 3" Embed. (Powers); 3/8" Carbon Steel Kwik Bolt 3 Expansion Anchor, 3 1/2" Embed. (Hilti)
2,000	3/8" Wedge-Bolt, 3 1/2" Embed. (Powers); 3/8" HAS-E Standard (ISO 898 Class 5.8) w/ HIT-HY 150 MAX Adhesive, 3 3/8" Embed. (Hilti); 3/8" ASTM A307 Threaded Rod w/ A7 Adhesive, 3 3/8" Embed. (Red Head)
2,500	3/8" Wedge-Bolt, 3 1/2" Embed. (Powers); 3/8" HAS-E Standard (ISO 898 Class 5.8) w/ HIT-HY 150 MAX Adhesive, 3 3/8" Embed. (Hilti); 3/8" ASTM A193 GR. B7 Threaded Rod w/ A7 Adhesive, 3 3/8" Embed. (Red Head)
3,000	3/8" HAS SS (AISI 304/316 SS) w/ HIT-HY 150 MAX Adhesive, 3 3/8" Embed. (Hilti)

StiffClip® TD

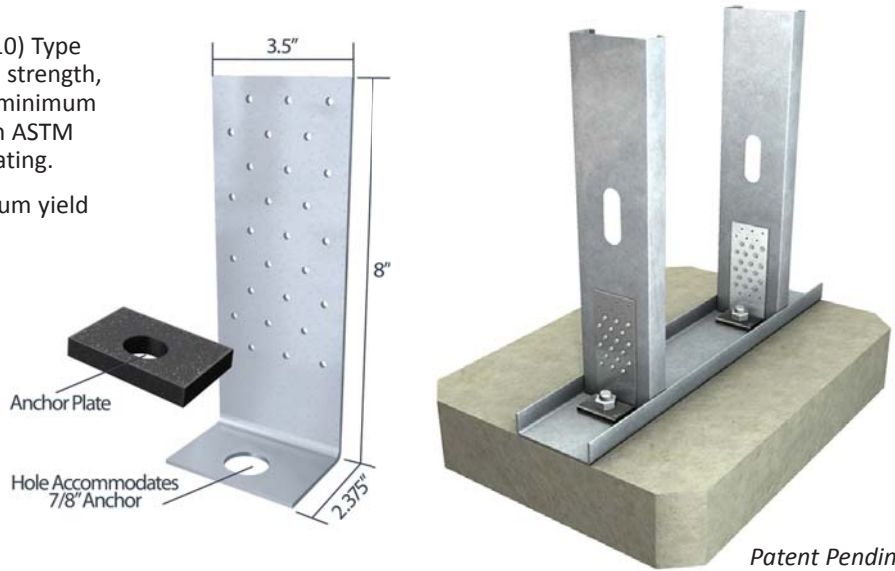
Uplift Connector



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.



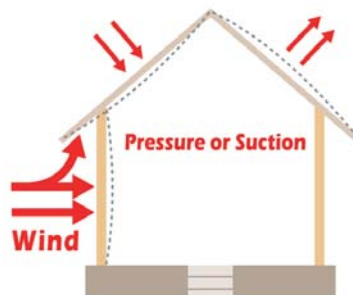
StiffClip TD Allowable Loads

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	10,718	10,718

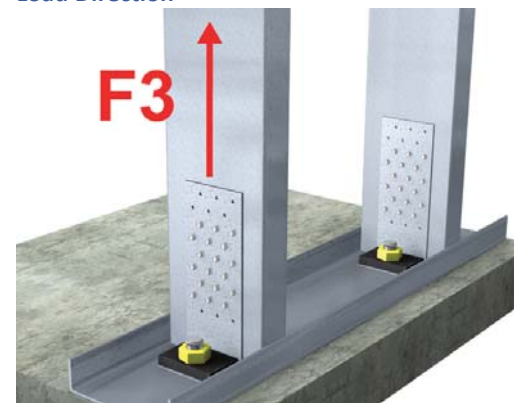
StiffClip® TD, Recommended Allowable Load for Wood Framing (lbs): F3						
Fastener Type	Douglas Fir / Southern Pine			Spruce Pine-Fir / Hem-Fir		
	Quantity of Fasteners			Quantity of Fasteners		
	12	18	27	12	18	27
10d	2,846	4,268	6,403	2,465	3,698	5,547
16d	3,279	4,919	7,378	2,838	4,257	6,386
#12 Wood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

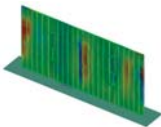
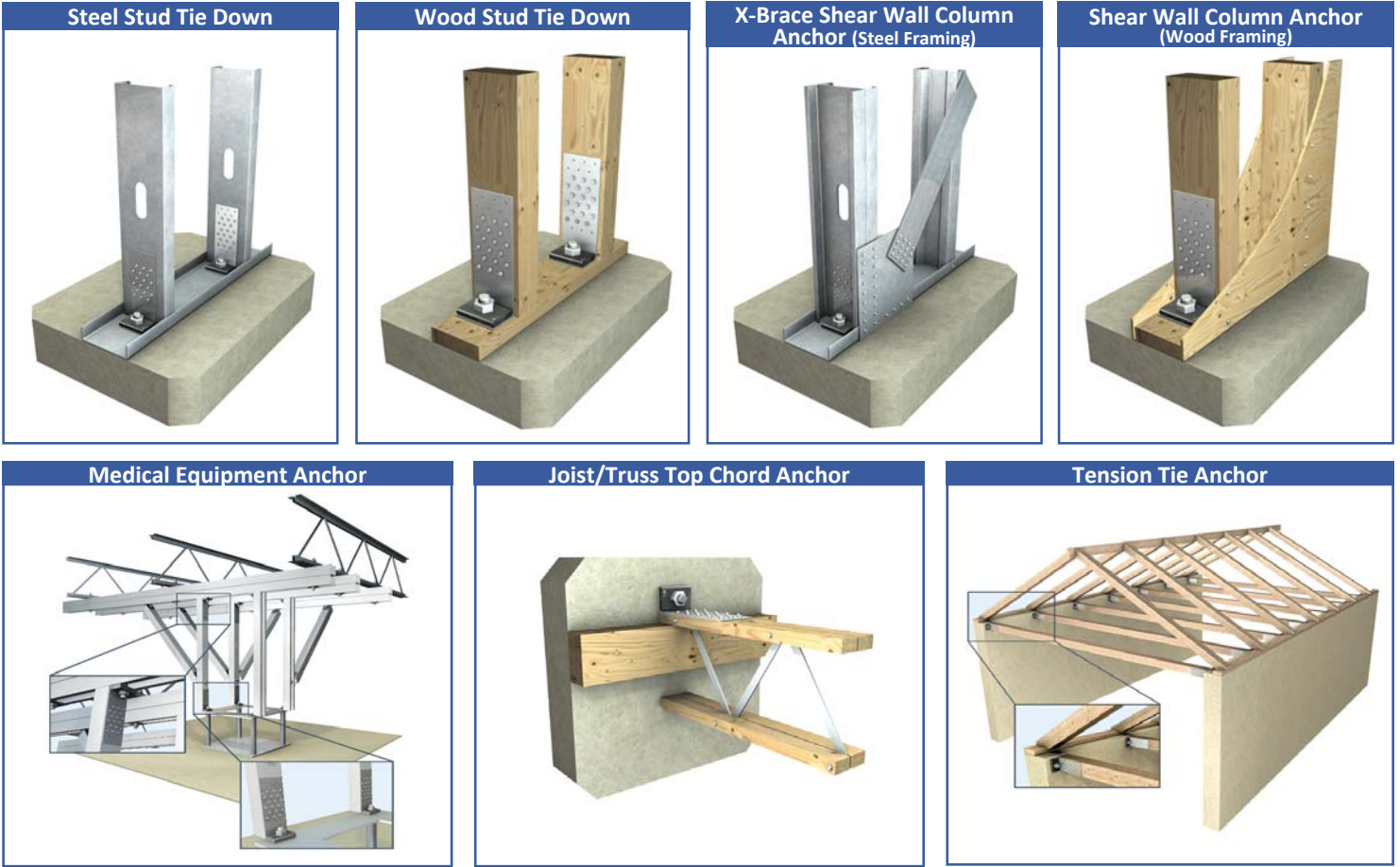


Nomenclature

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
www.steelnetwork.com

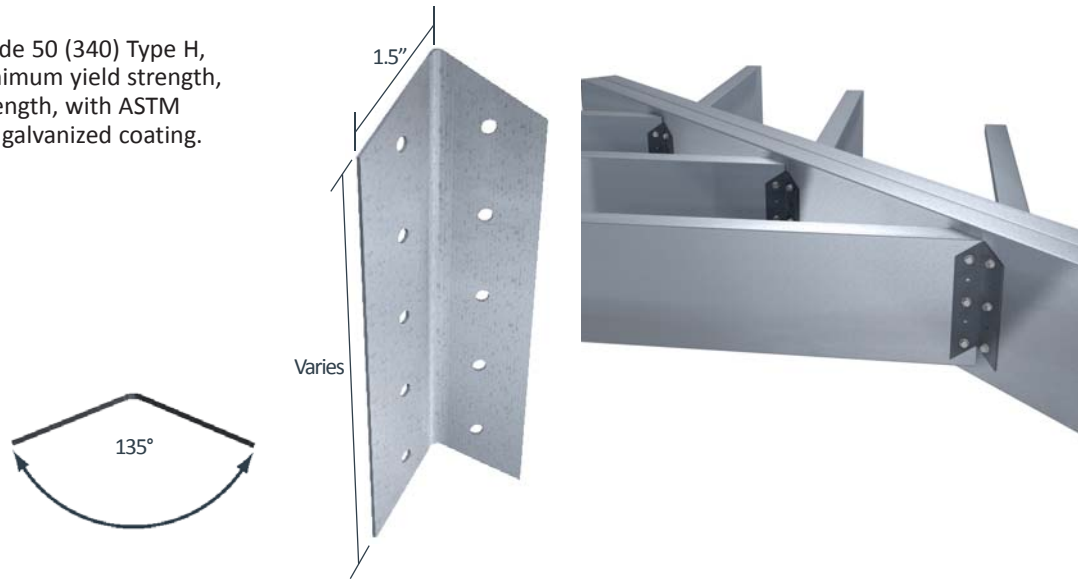
** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

StiffClip® 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
Max Allowable Clip Load		1,606	2,302	3,639	3,960	4,488	4,779	

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
Max Allowable Clip Load		3,776		4,560		4,560		4,560	

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

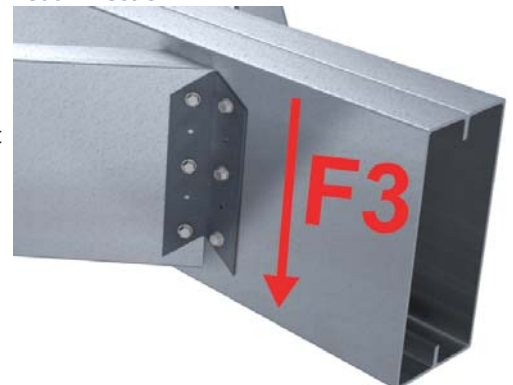
StiffClip HC is designated by multiplying joist depth by 100, then listing material thickness.

Example: 6” stud depth, 68mil steel thickness

Designate: StiffClip® HC600-68

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

Load Direction

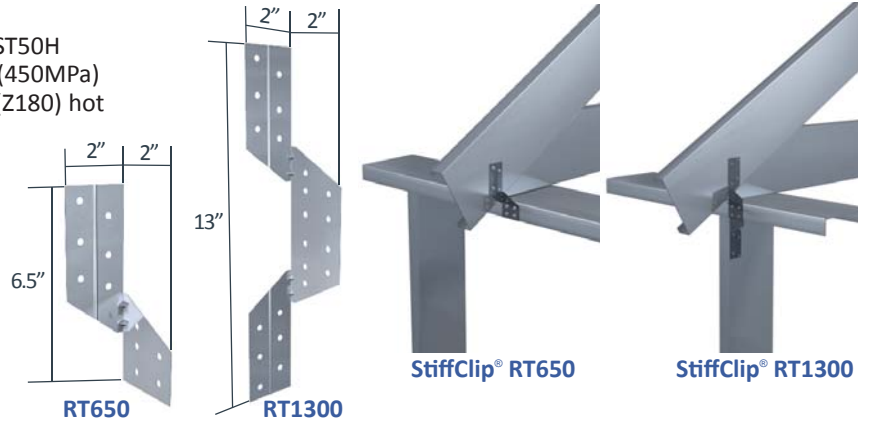


StiffClip® RT

Roof Tie

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.



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	

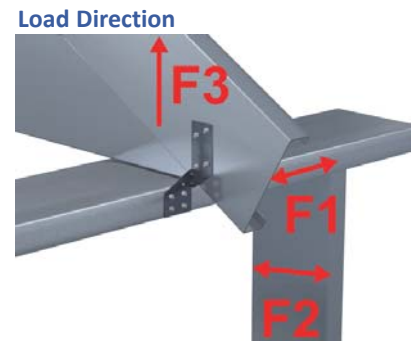
StiffClip® RT, Recommended Allowable Load (lbs): F2										
Stud		RT650-33	RT650-33 & RT1300-33		RT650-43	RT650-43 & RT1300-43		RT650-54	RT650-54 & RT1300-54	
Thickness Mils (ga)	Yield Strength (ksi)	w/5 #12 Screws in Short Leg	w/2 #12 Screws	w/4 #12 Screws	w/5 #12 Screws in Short Leg	w/2 #12 Screws	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
Maximum Allowable Clip Load		453		537		1,024	

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.



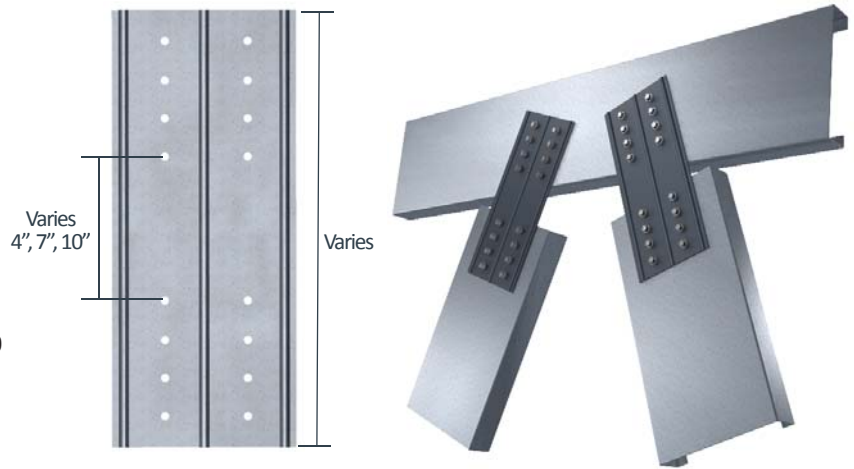
StiffClip® WC

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
Max Allowable Clip Load		1,300*				5,275*				737**				

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
Max Allowable Clip Load		7,774**				1,005**					10,601**				

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.

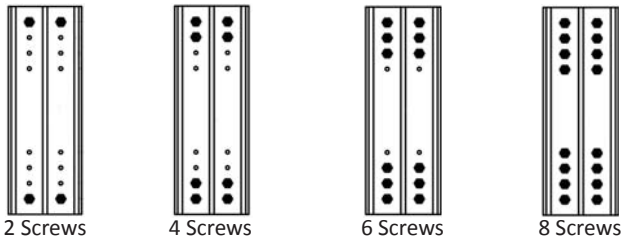
Load Direction



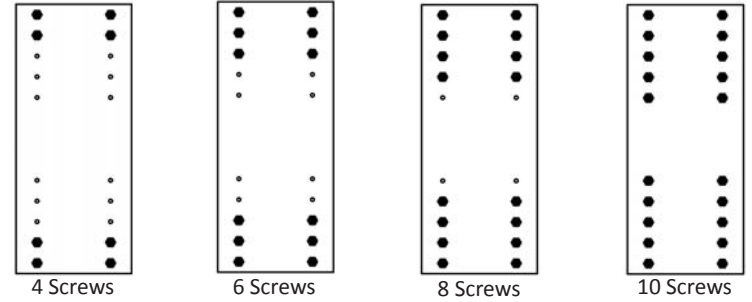
***StiffClip WC Screw Patterns are shown on next page.

Screw Patterns

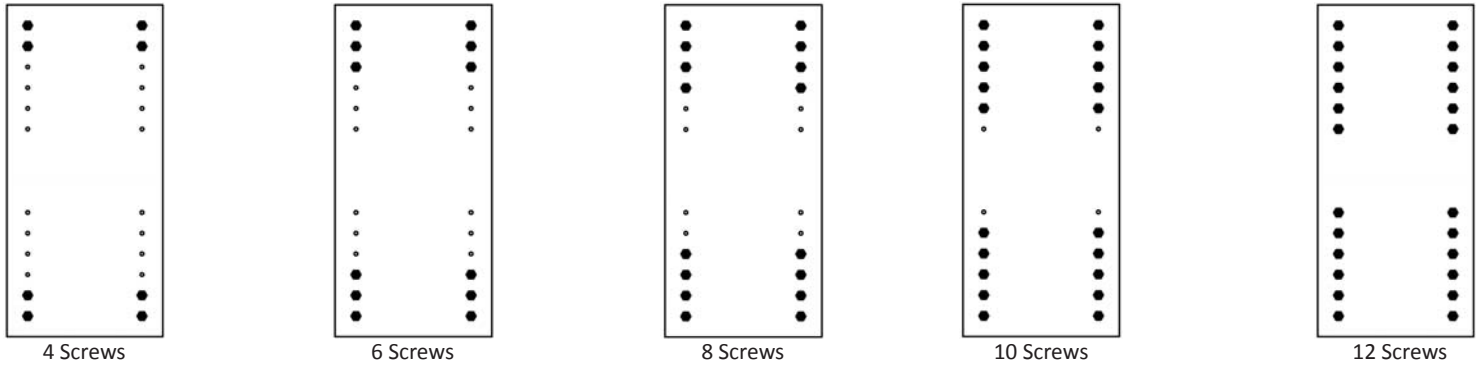
WC350-XX



WC550-XX



WC750-XX



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

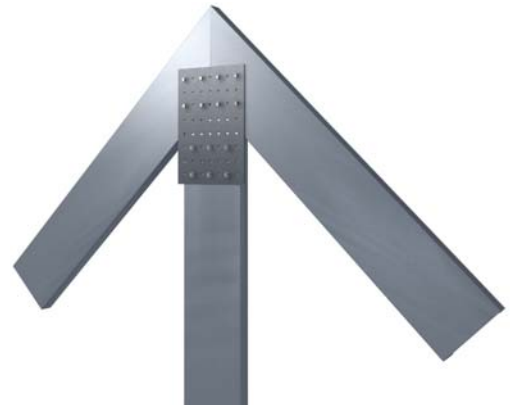


StiffClip® PL

Truss Plate Connector

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.

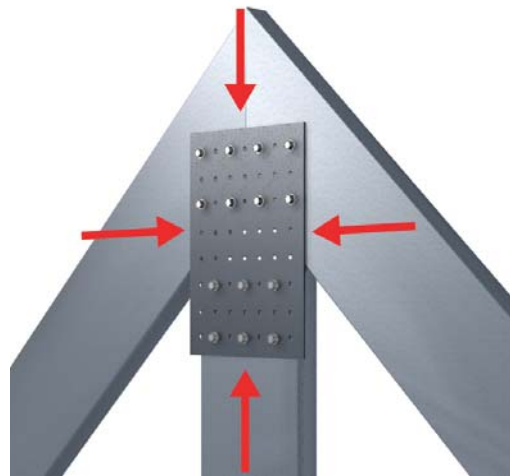
Example: 10" wide x 24" long with 68 mil thickness

Designate: StiffClip® PL10x24-68

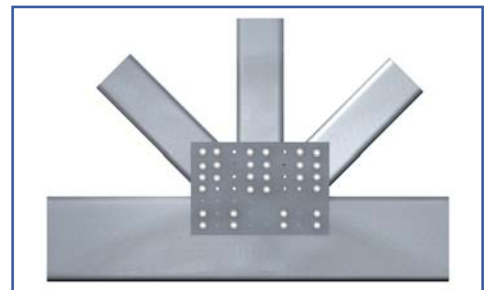
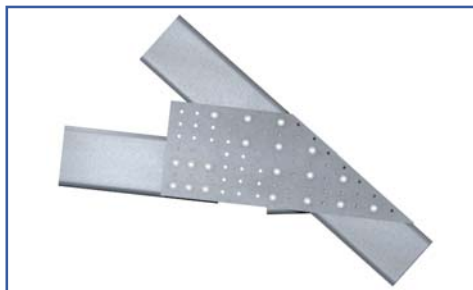
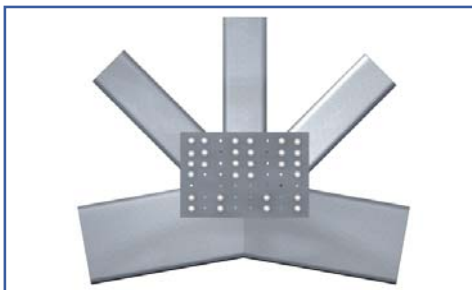
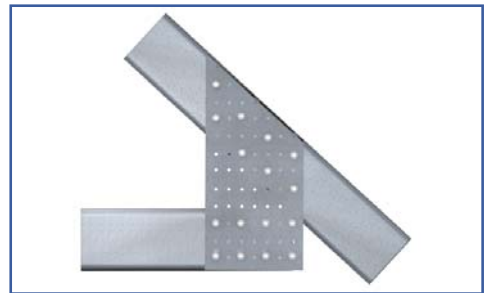
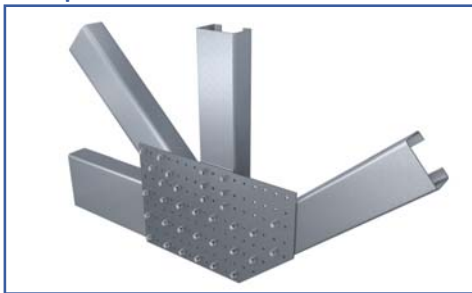
* Clip sizes vary within each application

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

Load Direction



Example Details

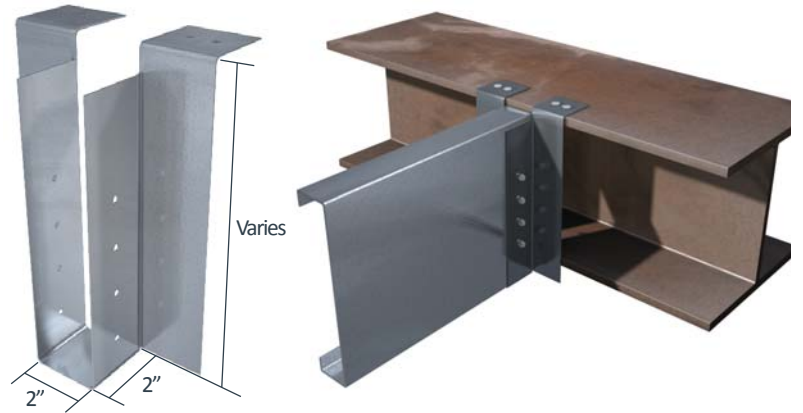


StiffClip® JH

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.



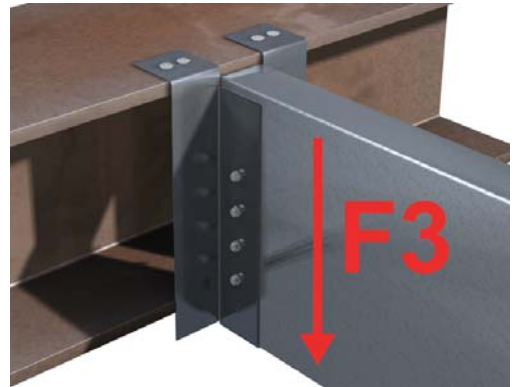
StiffClip JH Allowable Loads

StiffClip® JH Recommended Allowable Load (lbs): F3											
Joist		JH362/JH400- 43	JH362/JH400-68	JH600-43	JH600-68	JH800-43	JH800-68	JH1000-68	JH1000-97	JH1200-68	JH1200-97
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	w/3 #12 screws	w/4 #12 screws	w/4 #12 screws	w/5 #12 screws	w/5 #12 screws
33 (20)	33	1,024	1,024	638	638	474	474	N/A	N/A	N/A	N/A
33 (20)	50	1,102	1,102	644	644	478	478	N/A	N/A	N/A	N/A
43 (18)	33	1,739	1,739	1,416	1,416	1,051	1,051	836	836	N/A	N/A
43 (18)	50	2,038	2,141	1,433	1,433	1,060	1,060	842	842	N/A	N/A
54 (16)	33	2,038	2,341	2,038	2,575	2,038	2,091	1,661	1,661	1,377	1,377
54 (16)	50	2,038	2,575	2,038	2,575	2,038	2,091	1,661	1,661	1,377	1,377
68 (14)	50	2,038	2,575	2,038	2,575	2,038	2,575	2,575	3,345	2,575	2,771
97 (12)	50	2,038	2,575	2,038	2,575	2,038	2,575	2,575	4,167	2,575	4,167
118 (10)	50	2,038	2,575	2,038	2,575	2,038	2,575	2,575	4,167	2,575	4,167
Max Allowable Clip Load		2,038	2,575	2,038	2,575	2,038	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.

Load Direction



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

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

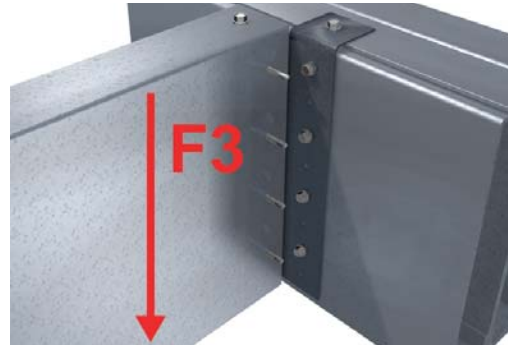
StiffClip® JC Recommended Allowable Load (lbs): F3											
Joist		JC362/400-43	JC362/400-68	JC600-68		JC800-43		JC800-68		JC1000-68	
Thickness Mils (ga)	Yield Strength (ksi)	w/3 #12 screws	w/3 #12 screws	w/3 #12 screws	w/5 #12 screws	w/4 #12 screws	w/7 #12 screws	w/4 #12 screws	w/7 #12 screws	w/5 #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
Max Allowable Clip Load		1,606	2,302	3,639		3,960		4,488		4,779	

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
Max Allowable Clip Load		3,776		6,670		6,670		6,670	

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.

Load Direction



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 technical sheet for load tables)

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

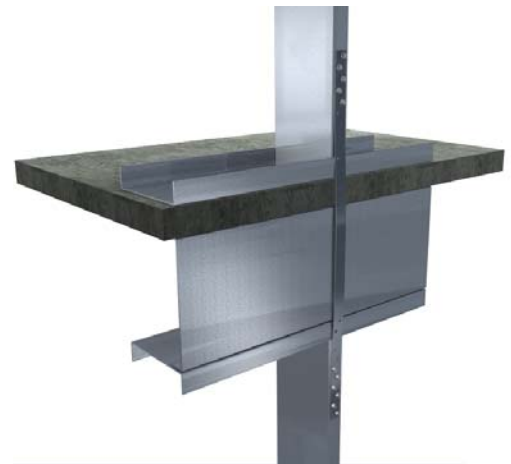
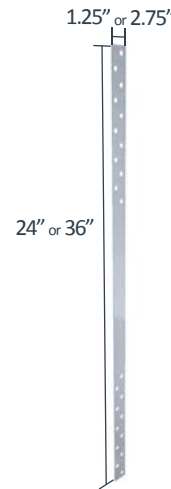
Designate: StiffClip® JC600-68

StiffClip® FS

Floor Strap

Material Composition

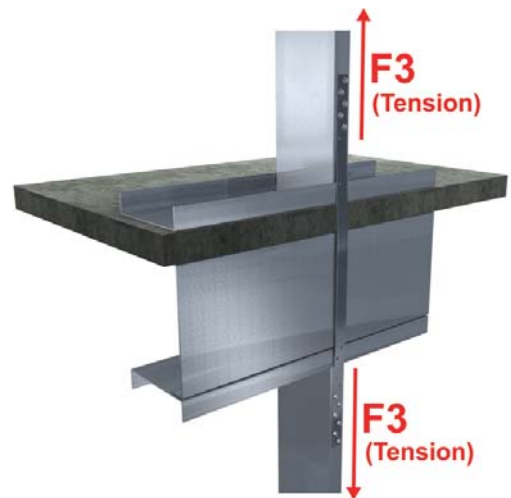
ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.



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.

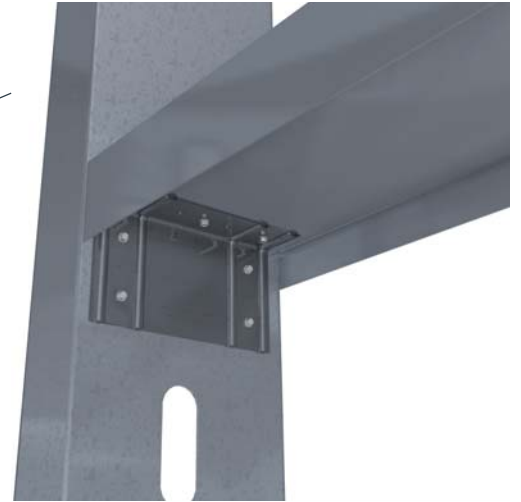
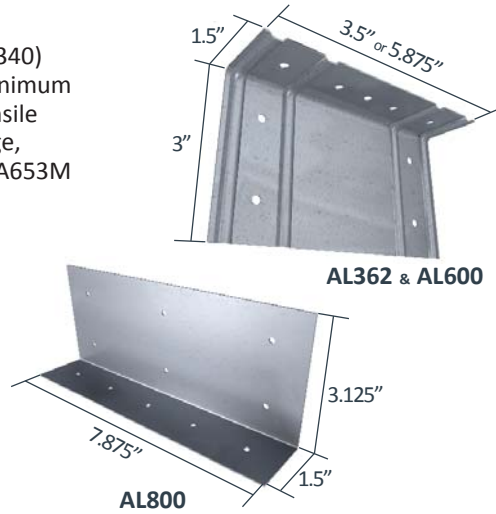
**StiffClip FS are typically made to order per project specifications.

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.

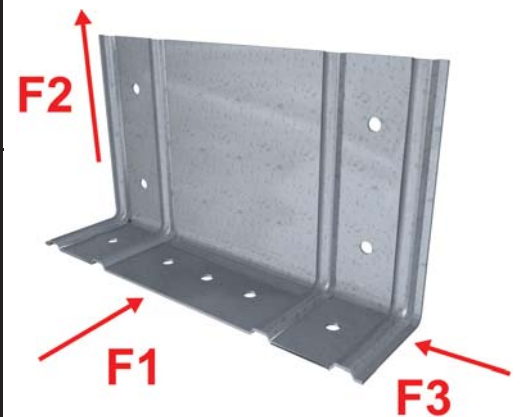


StiffClip AL Allowable Loads

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

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

Load Direction

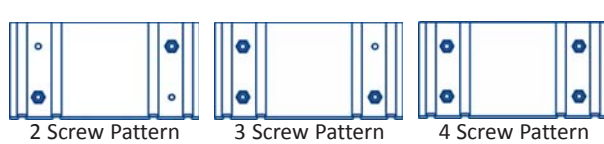


****Important notes for StiffClip AL Allowable Load tables continued on next page.**

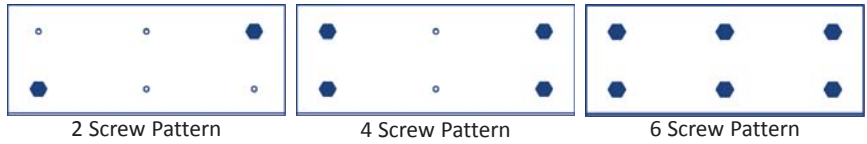
- Notes:**
- Allowable load tables incorporate eccentric loading of fasteners attached 3/4" from the heel of the clip. Values with welded connection may increase.
 - The attachment of the 1.5" leg of StiffClip AL is dependent on the allowable loads of the fasteners, and is to be designed by others.
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

Screw Patterns

AL362/600



AL800



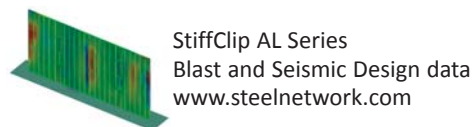
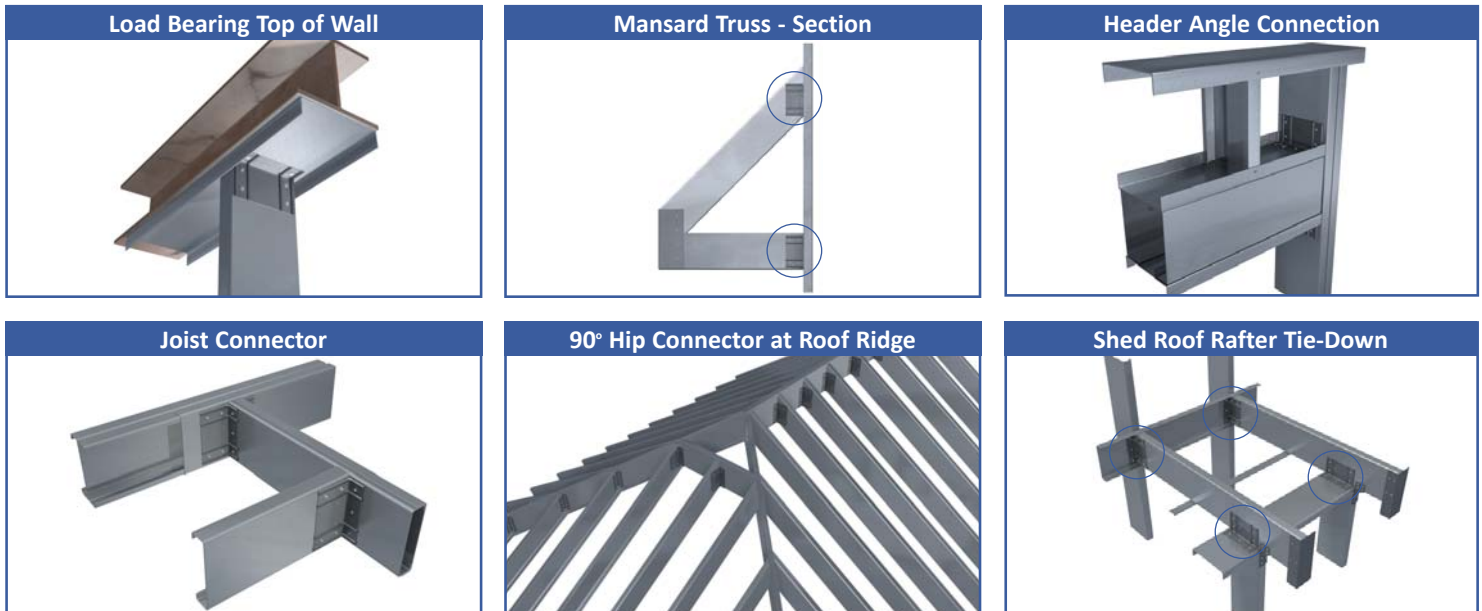
Nomenclature

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

Example: 6" stud depth
Designate: StiffClip® AL600

* The AL362 fits 3 5/8" and 4" member depths
 ** Stiffening ribs are not present in the AL800.

Example Details



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

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 LRFD design strength, nominal strength and ultimate strength tables for each connector manufactured which can be used in special seismic and blast design and are compatible with the acceptable increased material strength.

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

VertiClip® Series (lbs)					DriftClip® & DriftTrak® Series (lbs)					
Clip	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength	Clip	Load Direction	Fastener Pattern	LRFD Design Strength	Nominal Strength	Ultimate Strength
SL362	F1	397	441	721	DSL362	F2	1	1,467	1,630	2,317
	F2	1,696	1,885	2,680			2	916	1,018	1,663
SL400	F1	318	353	600	DSL600-12	F2	1	2,980	3,311	4,707
	F2	1,817	2,019	3,074			2	2,788	3,098	4,405
SL600	F1	588	653	1,068	DSL600-15	F2	1	3,045	3,383	4,811
	F2	2,691	2,990	4,251	DSL600-15'	F2	2	3,045	3,383	5,008
SL800	F1	579	643	1,052	DSL800	F2	1	186	207	317
	F2	2,994	3,327	4,730			2	85	94	141
SL1000	F1	664	738	1,206	DSL1200	F2	1	286	317	481
	F2	2,521	2,801	4,266			2	399	443	869
SL1200	F1	611	679	1,110	DSL1500	F2	1	318	354	578
SLD150	F2	82	91	139			2	293	326	858
SLD250	F2	254	282	430	DSL362	F2	1	796	884	1,320
SLD362/400	F2	575	639	973			2	397	441	720
SLD600	F2	648	720	1,302	DSL600	F2	1	1,242	1,380	2,254
SLD800	F2	1,091	1,212	1,844			2	1,840	2,044	3,051
SLB362	F1	364	405	661	DSL800	F2	1	1,666	1,851	3,023
	F2	2,563	2,848	4,381	DSL800'	F2	2	1,666	1,851	4,122
SLB600	F1	364	405	661	DTSL	F2	8" Fastener Spacing - Pattern 1	1001	1,112	1,807
	F2	2,563	2,848	4,381			8" Fastener Spacing - Pattern 2	770	856	1,303
SLB800	F1	357	397	604			16" Fastener Spacing - Pattern 1	1,338	1,487	2,264
	F2	2,563	2,848	4,381			16" Fastener Spacing - Pattern 2	774	860	1,309
SLB1000	F2	2,266	2,517	4,112			DTSLB	F2	8" Fastener Spacing - Patterns 1 & 2	1,292
SLB1200	F2	2,266	2,517	4,112	16" Fastener Spacing - Pattern 1 & 2	1,206			1,340	2,040
SLBxxx-10, -12	F2	2,266	2,517	4,112						
SLB600-HD, (2) ¼" Screws	F1	374	416	679						
SLB600-HD, (1) ½" 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	F1	2,282	2,402	3,861						
	F2	3,888	4,092	6,578						

Notes:

- 'LRFD strength limited by fastener pattern 1.
- Strength values provided are those of the clip only. 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).

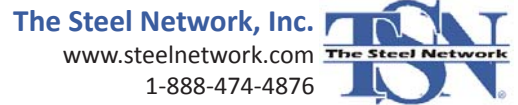
Visit www.steelnetwork.com/Site/TechnicalNotes to view the full technical note on Blast and Seismic Design.

StiffClip® Series (lbs or in-lbs)					StiffClip® Series (lbs or in-lbs)				
Clip	Load Direction	LRFD Design Strength	Nominal Strength	Ultimate Strength	Clip	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
	F1	1,465	1,627	2,658		F3	11,925	13,250	18,839
				M1 (in-lbs)		17,834	19,815	32,425	
LB1200	F2	2,270	2,522	4,120	TD	F3	17,149	19,055	20,863
	F3	3,041	3,379	5,146					
	F1	1,465	1,627	2,658					
LB600-HD, (2) ½" 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	2,005	2,227	3,392					
	F3	4,901	5,446	8,293					
HE(H)-68	F2	3,478	3,864	5,885					
	F3	8,880	9,867	15,026					

- Notes:**
- Strength values provided are those of the clip only. 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).

StiffClip® LS

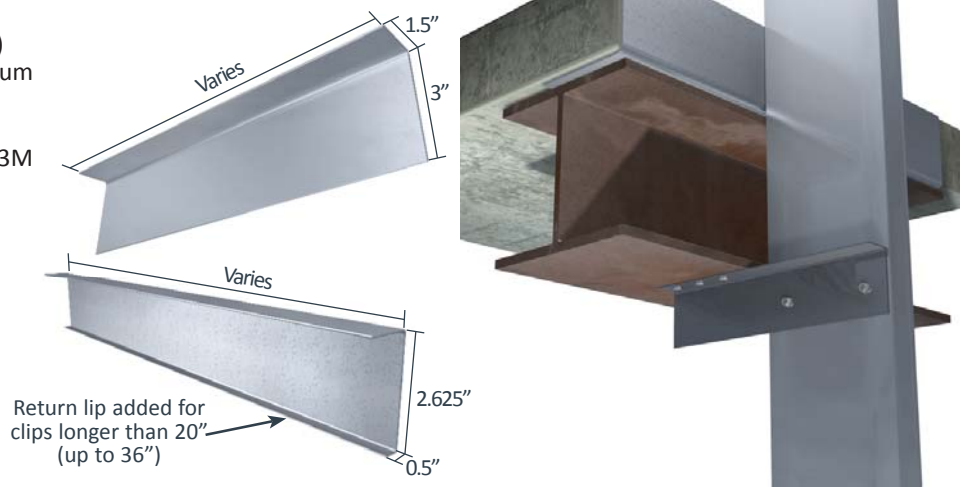
Spandrel/Multi-Purpose



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 ²)	I _x (in ⁴)	I _y (in ⁴)	R _x (in)*	R _y (in)**	S _x (in ³)	S _y (in ³)
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_x = Radius of Gyration about x-x axis

** R_y = Radius of Gyration about y-y axis

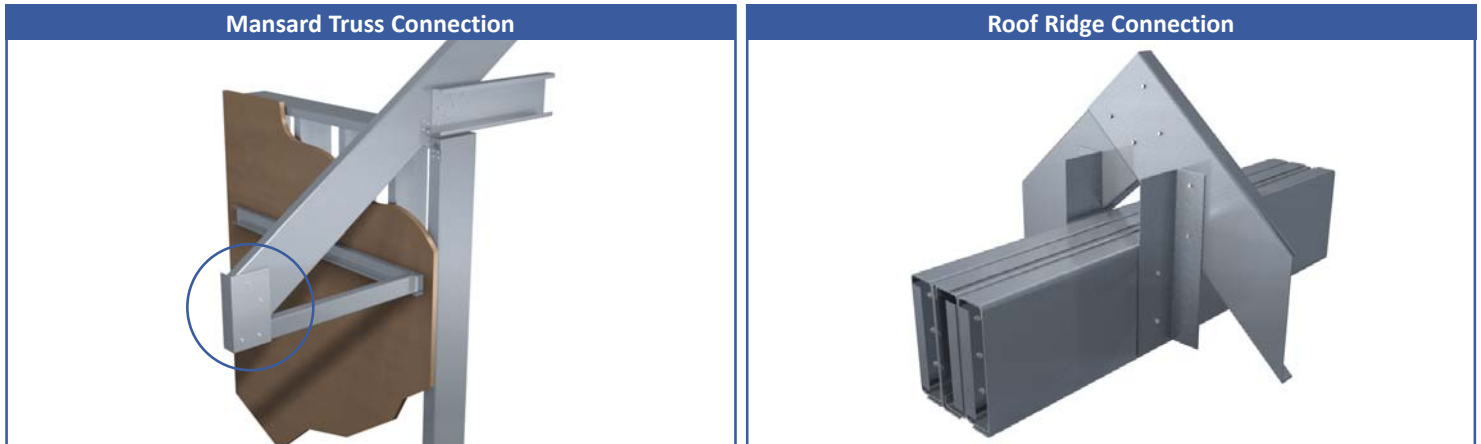
Nomenclature

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

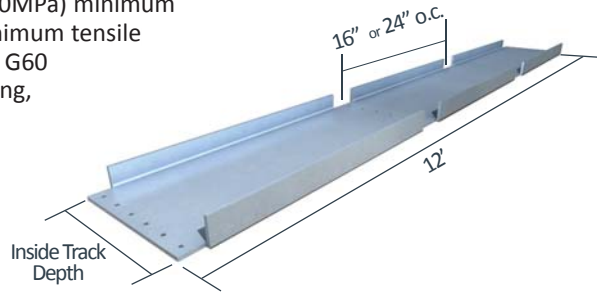


NotchTrak® NT

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

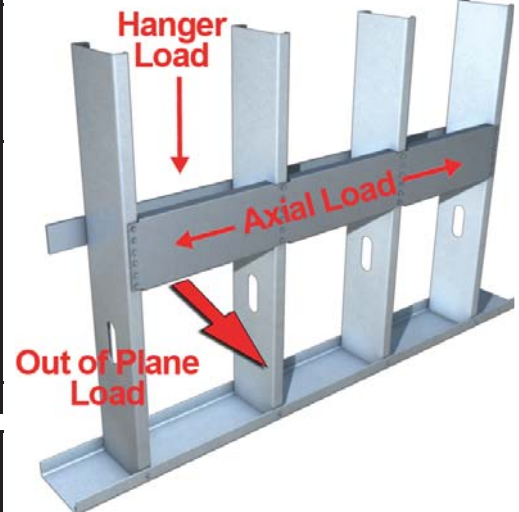
NotchTrak NT Allowable Loads

Stud		NotchTrak® NT, Recommended Allowable Load (lbs): Hanger											
Thickness Mills (ga)	Yield Strength (ksi)	16" o.c. stud spacing						24" o.c. stud spacing					
		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
Max Allowable Member Load		1,377	1,030	2,728	2,039	5,350	4,087	1,377	1,030	2,728	2,039	4,135	4,087

Stud		NotchTrak® NT, Recommended Allowable Load (lbs): Axial					
Thickness Mills (ga)	Yield Strength (ksi)	16" & 24" o.c. stud spacing					
		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
Max Allowable Member Load		1,529	2,064	3,022	4,080	5,521	7,441

Stud		NotchTrak® NT, Recommended Allowable Out of Plane Load (lbs): Lateral					
Thickness Mills (ga)	Yield Strength (ksi)	6" w/7 #12 Screws & 8" w/10 #12 Screws					
		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
Max Allowable Member Load		73	155	324	48	104	216

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.

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	Jx10 ³	C _w	R _o	X _o	m	β	A _e (Full)	I _x ¹	S _x	M _{xa}	V _a
	(in ²)	(in ²)	(in ⁴)	(in ³)	(in)	(in ⁴)	(in)	(in ⁴)	(in ⁶)	(in)	(in)	(in)		(in ²)	(in ⁴)	(in ³)	(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

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

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 - 16oc
(Inside Track Dimension) (NotchTrak) (Leg) (Thickness) (Notch Spacing)

* Special lengths available by request.

Example Details



¹ Use NotchTrak in conjunction with flat strap and blocking where applicable

² Design screw connection of track to stud for actual design load

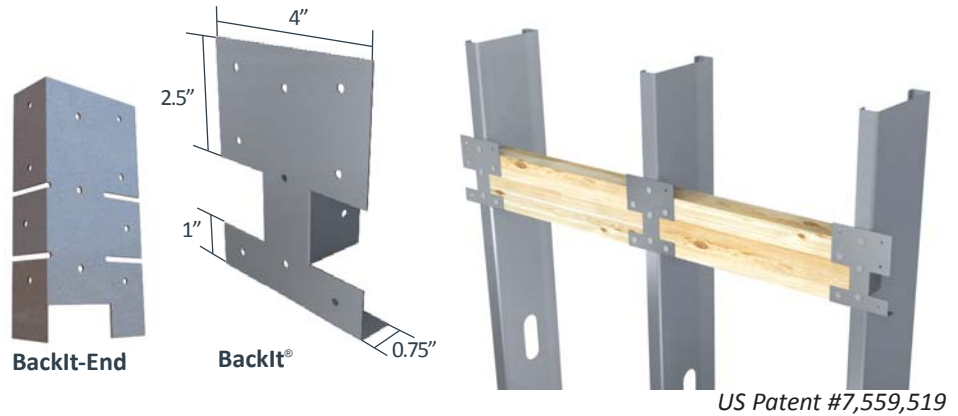
BackIt®

Rigid Wall Backing



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	Stiffness
						w/3 #12 screws	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	
Maximum Allowable Clip Load		391		1,388		967	

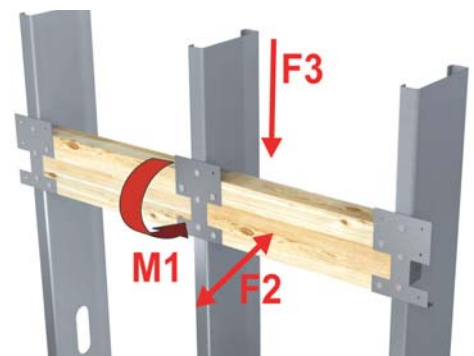
Notes:

- 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.

Load Direction



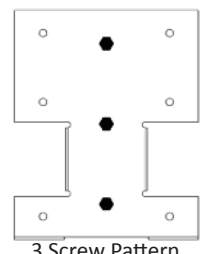
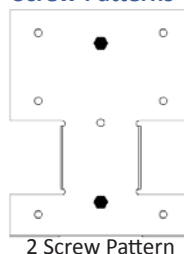
Nomenclature

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

Screw Patterns

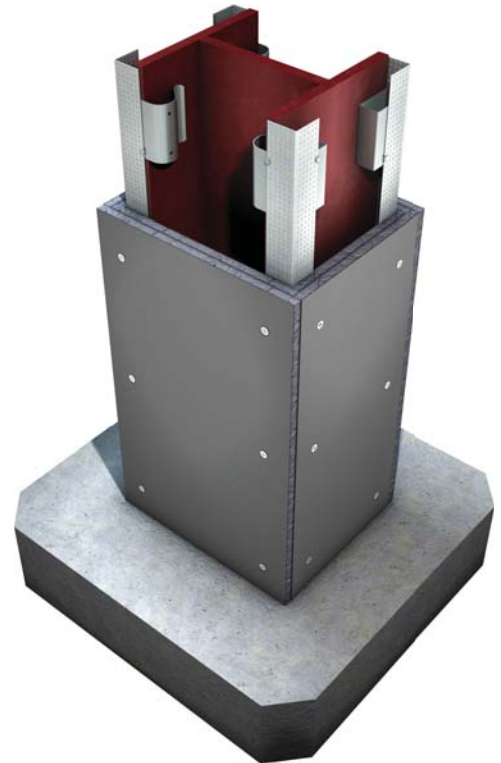
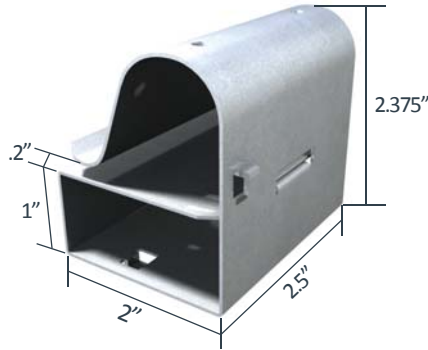


GripClip®

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.

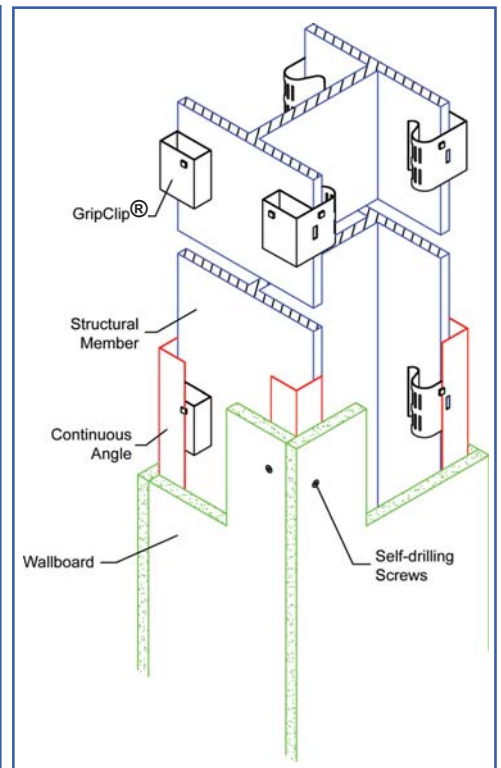
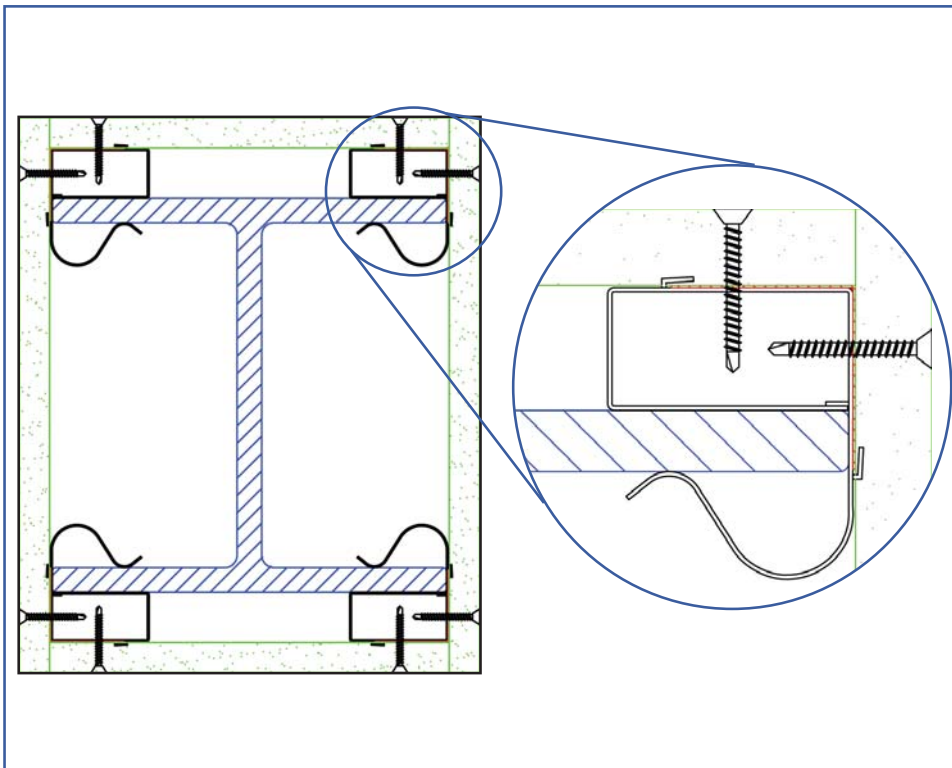


Patent # 8,132,383

Nomenclature

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

Example Details

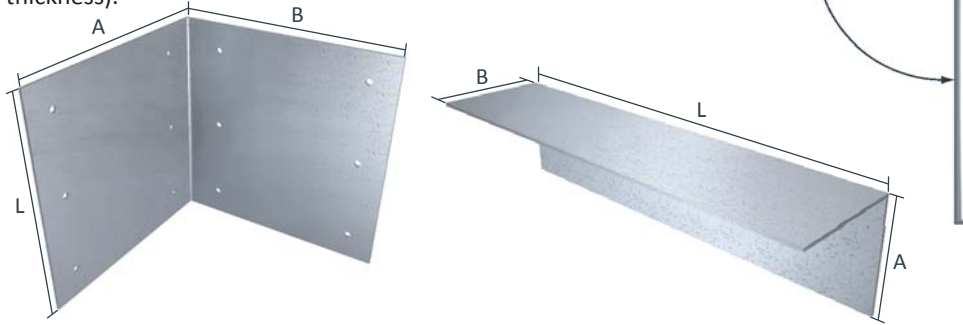


Custom Connectors & Clip Angles

Specialized Products For All Applications

Material Composition

ASTM A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating. Available in 54mil minimum thickness (16 gauge, 0.0566" design thickness) or 68mil minimum thickness (14 gauge, 0.0713" 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

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 3/4", 54 mil material
Designate: L3x3x5.75-54

- * Special product drawing is required for all non-standard products.
- ** Common stocked angles come pre-punched for easy installation, though holes are not required.

Example Details



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


VertiTrack® 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.



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".

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

Terms, Conditions & Limited Warranty

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

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This Warranty is expressly in lieu of all other warranties, expressed or implied, including any warranties of merchantability or fitness for a particular purpose, all such other warranties being hereby expressly excluded.

Patented Technology

VertiClip®, VertiTrack®, BridgeClip®, BridgeBar®, BuckleBridge®, StiffClip®, DriftClip®, DriftTrak®, DriftCorner®, GripClip®, JamStud®, MidWall®, StiffWall®, SigmaStud®, CircleTrak®, PrimeWall™, NotchTrak®, and BackIt® are trademarked products, and are patented or patent-pending technologies of TSN. Patent numbers are: #5,904,023; #5,467,566; #5,906,080; #6,701,689; and #6,892,504. Numerous TSN design configurations are patented and/or patent pending and are protected under US and International patent laws.

Contact Information

North Carolina Location
The Steel Network, Inc.
2012 T W Alexander Drive
PO Box 13887
Durham, NC 27709
Phone: (919) 845-1025
Fax: (888) 474-4877



Nevada Location
The Steel Network, Inc.
1650 Helm Drive
Suite 1000 - 1200
Las Vegas, NV 89119
Phone: (702) 643-4330
Fax: (702) 643-4331

Web Site: www.steelnetwork.com
E-mail: support@steelnetwork.com

Toll Free Nationwide Phone
(888) 474-4876

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