DSSCB Bypass Framing Drift Strut Connector

This product is preferable to similar connectors because of a) easier installation, b) higher loads, c) lower installed cost, or a combination of these features.

The solution to accommodate building drift, the DSSCB, is used to support cold-formed steel bypass framing to the edge of a floor slab. The DSSCB also simplifies installation by allowing installers for panelized construction to install finished panels while working off the top of the slab without the need to predrill or preinstall anchors for each clip. It also eliminates the coordination difficulties associated with pre-anchorage of standard bypass clips. With prepunched slots and round holes, the DSSCB is a dual-function connector that can be used for slide-clip and fixed-clip applications.

Features:

- The clips come in lengths of 3½", 6" and 8".
- Prepunched slots provide a full 1" of both upward and downward deflection.
- Precision-manufactured shouldered screws, provided with DSSCB connectors, are designed to prevent overdriving and to ensure the clip functions properly.
- Works with ⅞" and 1⅝" strut channels as given in the accompanying figures. Common manufactured brands are Unistrut®, PHD and B-Line. Struts are not supplied by Simpson Strong-Tie.
- The maximum slide-clip standoff distance is 3⅛" for ⅞" struts, 3⅞" for 1⅝" struts and 2¼" for concrete inserts.
- Depending on the application and the designer's specifications, struts can be either mechanically anchored, welded or cast in place.
- Pre-engineered design solutions are provided for channel strut anchorage.
- Tabulated design values are based on assembly testing to mitigate risk for designers, engineers and architects.
- Optional pre-cast concrete inserts for flush mounting.
- Optional drift stopper, DSHS, for clip alignment flexibility (where drift not required).

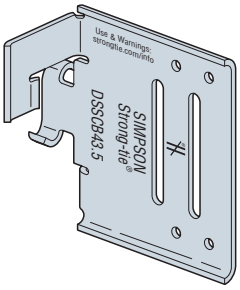
Material: DSSCB — 97 mil (12 ga.), 50 ksi;
DSHS — 97 mil (12 ga.), 33 ksi

Finish: Galvanized (G90)

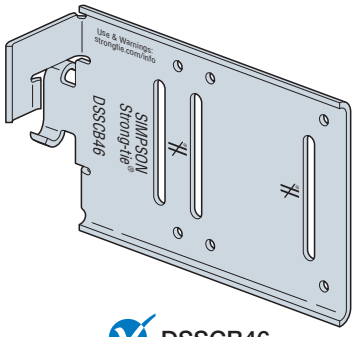
Codes: See p. 13 for Code Reference Key Chart.

Ordering Information:
The DSSCB43.5-KT25, DSSCB46-KT25 and DSSCB48-KT25 contain 25 connectors and enough shouldered screws for installation. The DSHS-R100 contains 100 connectors.

Note: Replacement #14 shouldered screws for DSSCB connectors are the XLSH78B1414-RP83.

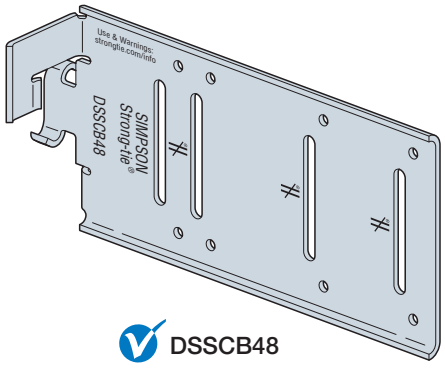


DSSCB43.5

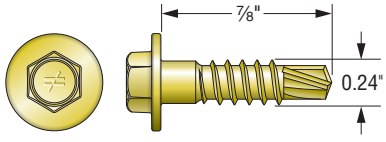


DSSCB46

US Patent Pending



DSSCB48

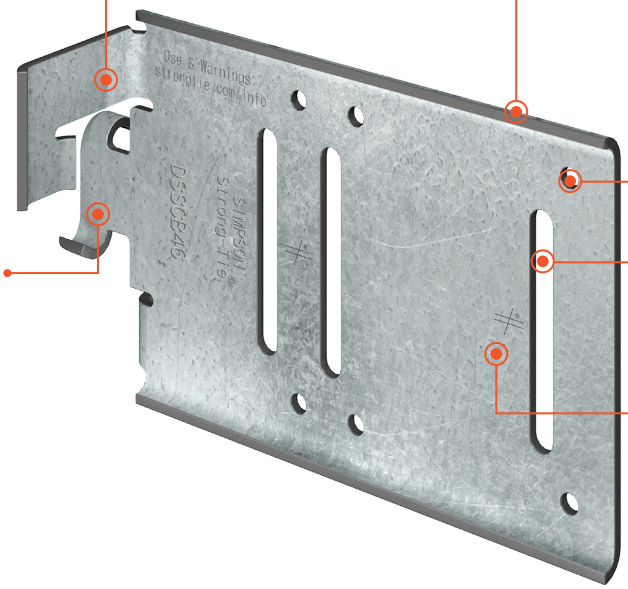


XLSH78B1414
#14 Shouldered Screw for Attachment to Stud Framing
(included)

DSSCB Bypass Framing Drift Strut Connector

Squaring flange
helps the clip stay square with the strut

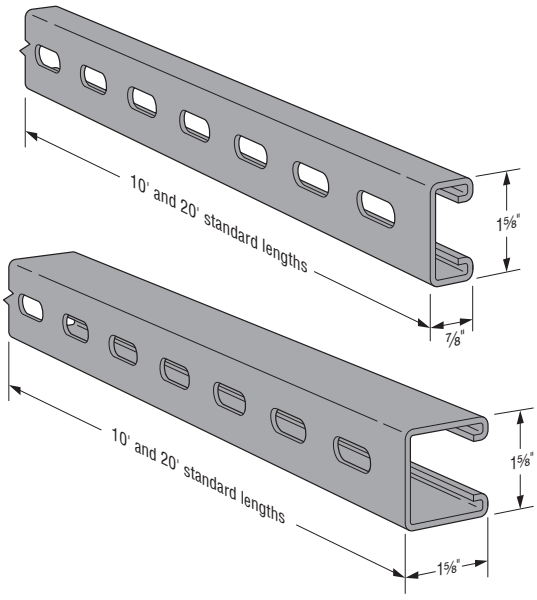
Unique formed insert
works with standard ⅞" and 1⅝"-deep, 12-gauge strut, minimizes friction, and allows an easy twist-in installation



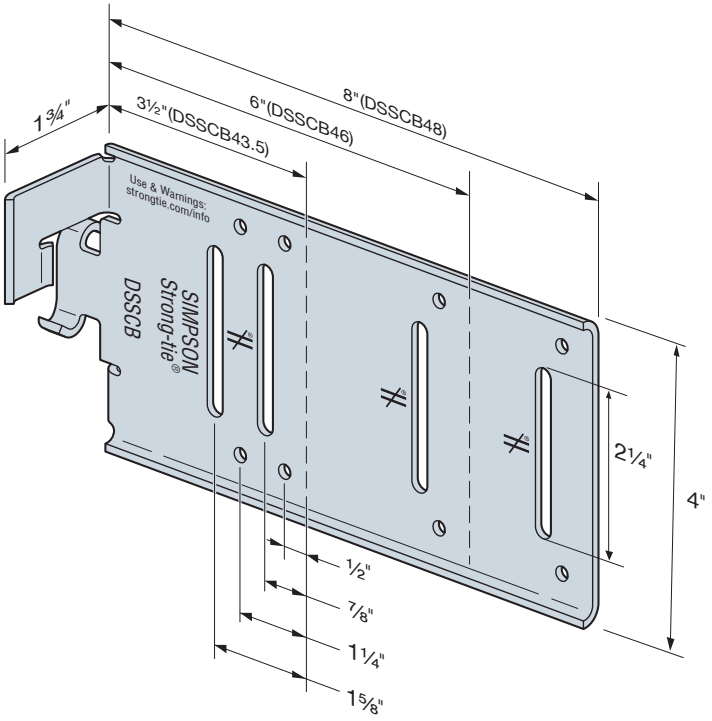
Stiffened edges and heavy 12-gauge construction
provide jobsite durability and superior tabulated loads

Dual-function clips
can be used for either deflection or fixed conditions

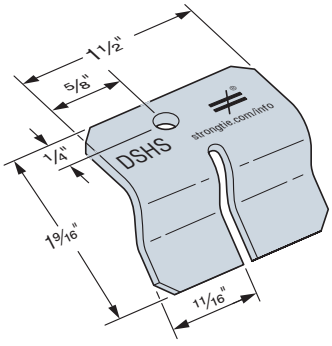
No-Equal® stamp
marks the center of the slots to help ensure correct shouldered-screw placement



The Simpson Strong-Tie® DSSCB works with 12-gauge standard strut channels (not sold by Simpson Strong-Tie). See p. 68 for strut requirements and p. 66 for concrete insert requirements. See p. 64 for model numbers and capacities.

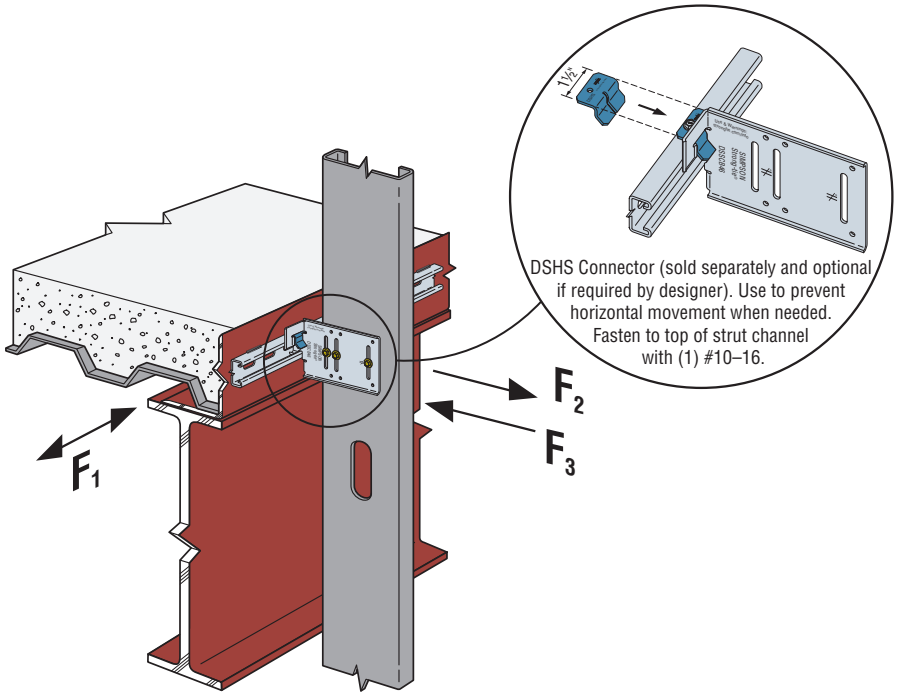


DSSCB Dimensions
US Patent Pending



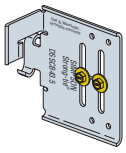
DSHS used to prevent horizontal sliding when needed
(sold separately)

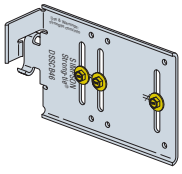
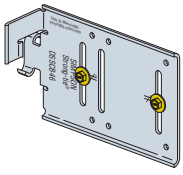
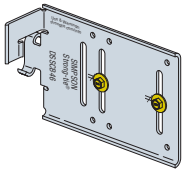
DSSCB Bypass Framing Drift Strut Connector

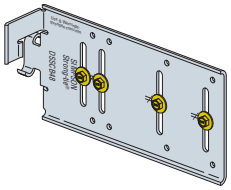
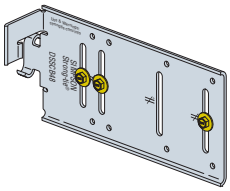
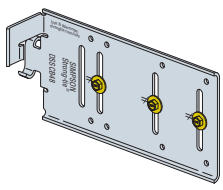


Typical DSSCB Installation
Slide-Clip Application

DSSCB Screw Patterns (Slide-Clip Applications)

Model	Pattern A
DSSCB43.5	

Model	Pattern B	Pattern C	Pattern D
DSSCB46			

Model	Pattern E	Pattern F	Pattern G
DSSCB48			

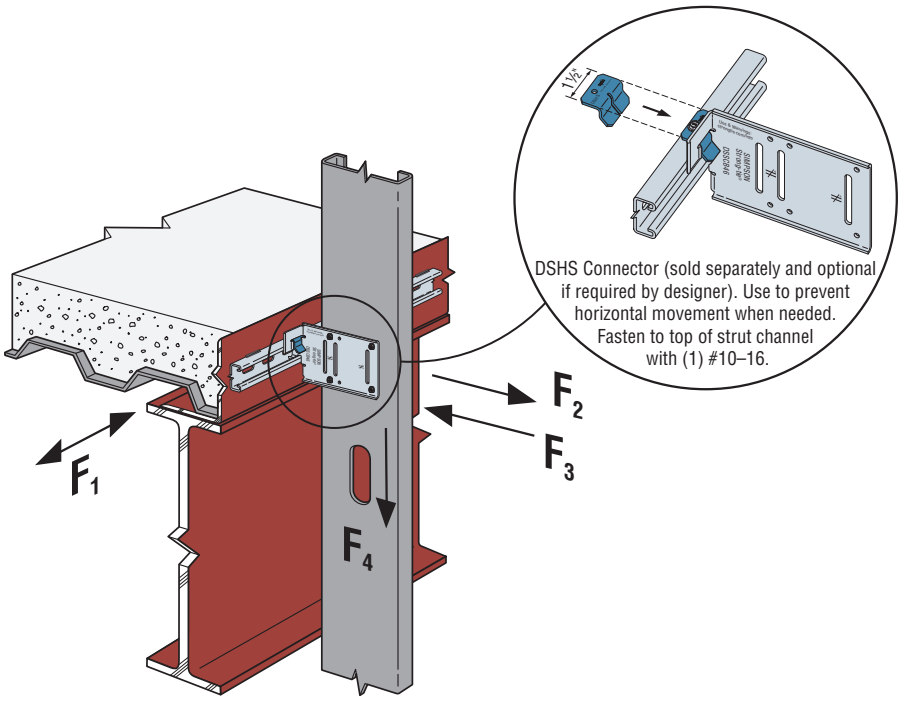
DSSCB Bypass Framing Drift Strut Connector

DSSCB Allowable Slide-Clip Connector Loads (lb.)

Model No.	Stud Thickness mil (ga.)	Fasteners to Stud		Allowable Load (lb.)			Code Ref.
		Screw Pattern	No. of #14 Shouldered Screws	F_1	F_2	F_3	
DSSCB43.5	33 (20)	A	2	105	515	570	IBC, LA
DSSCB46		B	3	105	765	855	
		C, D	2	105	515	570	
DSSCB48		E	4	105	765	1,135	
		F, G	3	105	765	855	
DSSCB43.5	43 (18)	A	2	155	785	875	
DSSCB46		B	3	155	1,175	1,310	
		C, D	2	155	785	875	
DSSCB48		E	4	155	1,175	1,745	
		F, G	3	155	1,175	1,310	
DSSCB43.5	54 (16)	A	2	225	1,075	1,250	
DSSCB46		B	3	225	1,475	1,875	
		C, D	2	225	1,075	1,190	
DSSCB48		E	4	225	1,475	2,560	
		F, G	3	225	1,475	1,820	
DSSCB43.5	68 (14) and 97 (12)	A	2	300	1,075	1,640	
DSSCB46		B	3	300	1,475	2,800	
		C, D	2	300	1,075	1,560	
DSSCB48		E	4	300	1,475	2,800	
		F, G	3	300	1,475	2,725	

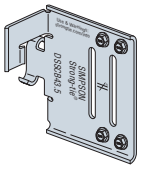
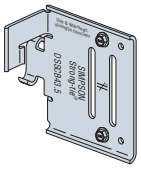
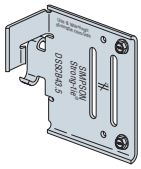
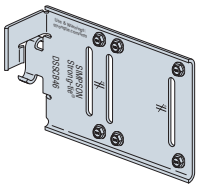
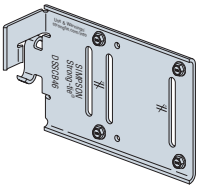
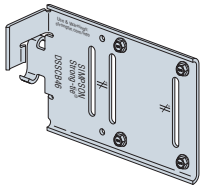
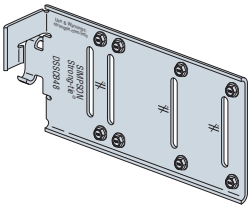
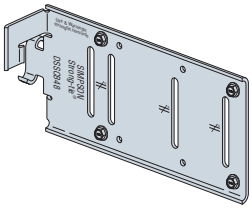
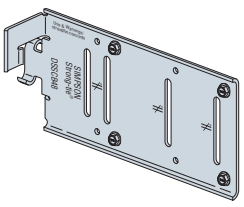
1. For additional important information, see General Information and Notes on p. 26.
2. DSSCB Allowable Slide-Clip Connector Loads are also limited by the Strut Channel Allowable Anchorage Loads to Steel table on p. 64, or Concrete Insert Allowable Anchorage Loads table on p. 65, or Strut Channel Allowable Anchorage Loads to CLT table on p. 69. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
3. See illustrations on p. 60 for shouldered screw fastener pattern placement to stud framing.
4. Tabulated F_1 loads are based on assembly tests with the load through the centerline of the stud. F_1 loads require DSHS connector with (1) #10 screw to strut.

DSSCB Bypass Framing Drift Strut Connector



Typical DSSCB Installation
Fixed-Clip Application

DSSCB Screw Patterns (Fixed-Clip Applications)

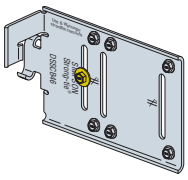
Model	Pattern H	Pattern I	Pattern J
DSSCB43.5			
Model	**Pattern K**	**Pattern L**	**Pattern M**
DSSCB46			
Model	**Pattern N**	**Pattern O**	**Pattern P**
DSSCB48			

DSSCB Bypass Framing Drift Strut Connector

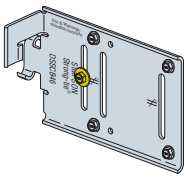
DSSCB Allowable Fixed-Clip Connector Loads (lb.)

Model No.	Stud Thickness mil (ga.)	Screw Pattern	No. of #10 Screws	Allowable Load (lb.)				Code Ref.
				F_1	F_2	F_3	F_4	
DSSCB43.5	33 (20)	H	4	220	705	705	345	IBC, LA
		I, J	2	185	355	355	175	
DSSCB46		K	6	220	1,060	1,060	355	
		L, M	4	185	705	705	350	
DSSCB48		N	8	220	1,060	1,060	545	
		O, P	4	185	705	705	505	
DSSCB43.5	43 (18)	H	4	265	1,050	1,050	450	
		I, J	2	240	525	525	230	
DSSCB46		K	6	285	1,125	1,580	460	
		L, M	4	240	1,050	1,050	455	
DSSCB48		N	8	285	1,145	1,580	710	
		O, P	4	240	1,050	1,050	660	
DSSCB43.5	54 (16)	H	4	330	1,410	2,070	1,025	
		I, J	2	300	1,070	1,035	515	
DSSCB46		K	6	360	1,410	3,105	1,050	
		L, M	4	300	1,410	2,135	1,040	
DSSCB48		N	8	360	1,440	3,105	1,145	
		O, P	4	300	1,420	2,135	1,070	
DSSCB43.5	68 (14) and 97 (12)	H	4	395	1,410	2,160	1,025	
		I, J	2	300	1,080	1,080	515	
DSSCB46		K	6	395	1,410	3,105	1,050	
		L, M	4	300	1,410	2,160	1,040	
DSSCB48		N	8	395	1,440	3,240	1,145	
		O, P	4	300	1,420	2,160	1,070	

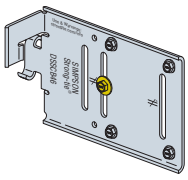
1. For additional important information, see General Information and Notes on p. 26.
2. DSSCB Allowable Fixed-Clip Connector Loads are also limited by the Strut Channel Allowable Anchorage Loads to Steel table on p. 64, or Concrete Insert Allowable Anchorage Loads table on p. 65, or Strut Channel Allowable Anchorage Loads to CLT table on p. 69. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
3. See illustrations on p. 62 for screw fastener pattern placement to stud framing.
4. Tabulated F_1 loads are based on assembly tests with the load through the centerline of the stud. F_1 loads require DSHS connector with (1) #10 screw to strut.
5. In-plane capacities (F_1) for DSSCB attached to 54 mil (16 ga.) stud can be increased to 455 lb. with the addition of a shoulder screw at first slot from bend line for screw pattern K and L and at middle slot for pattern M (reference patterns shown to the right). Failure mode for this condition is member, not fastener.



Screw pattern K with added shoulder screw per note 5



Screw pattern L with added shoulder screw per note 5



Screw pattern M with added shoulder screw per note 5

DSSCB Bypass Framing Drift Strut Connector

Strut Channel Allowable Anchorage Loads to Steel (lb.)

Strut Size (in.)	Models	Welded Anchorage Each Flange						#12–24 Screw Anchorage					Code Ref.
		Weld Spacing (in.)	Required Weld Length (in.)	F_1 (lb.)	F_2 (lb.)	F_3 (lb.)	F_4 (lb.)	Screw Spacing (in.)	F_1 (lb.)	F_2 (lb.)	F_3 (lb.)	F_4 (lb.)	
7/8	**Unistrut®** P3300 **PHD** 1201; 1202; 1211; 1212; 1221; 1222; 1241; 1242 **B-Line** B52; B52H1 7/8; B52SH; B52K06	4	1	775	1,800	2,710	3,200	4	755	1,535	2,710	1,650	IBC, LA
		6	1	775	1,200	2,710	2,135	6	755	1,040	2,710	1,155	
		8	1	775	900	2,710	1,600	8	755	800	2,710	865	
		10	1	775	720	2,710	1,280	—	—	—	—	—	
		12	1	775	600	2,710	1,065	—	—	—	—	—	
		16	1	775	450	2,710	800	—	—	—	—	—	
1 5/8	**Unistrut®** P1000; P1000HS; P1000T; P1000K0. **PHD** 1001; 1002; 1011; 1012; 1021; 1022; 1041; 1042 **B-Line** B22; B22H1 7/8; B22SH; B22K06	4	1	775	4,310	3,925	1,745	4	755	1,535	3,925	1,315	
		6	1	775	2,875	3,925	1,715	6	755	1,040	3,925	1,155	
		8	1	775	2,155	3,925	1,670	8	755	800	3,925	865	
		10	1	775	1,725	3,925	1,335	—	—	—	—	—	
		12	1	775	1,435	3,925	1,115	—	—	—	—	—	
		16	1	775	1,080	3,925	835	—	—	—	—	—	

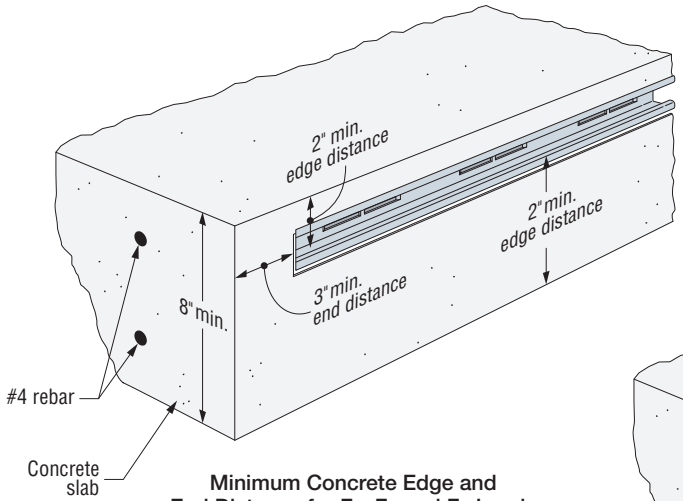
1. For additional important information, see General Information and Notes on p. 26.
2. Allowable anchorage loads are also limited by the DSSCB Connector Load tables on pp. 61 and 63. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
3. Allowable loads are based on 97 mil (12 ga.) thickness strut channel members with a minimum yield strength, F_y, of 33 ksi, tensile strength, F_u, of 45 ksi.
4. Allowable loads for self-drilling screws are based on installation in minimum 3/16"-thick structural steel with F_y = 36 ksi. Values listed above may be used where other thicknesses of steel are encountered provided that the fastener has equal or better tested values into thicker steel. It is the responsibility of the designer to select the proper length fasteners based on the steel thickness installation.
5. For screw fastener installation into steel backed by concrete, predrilling of both the steel and the concrete is suggested. For predrilling, use a maximum 3/16"-diameter drill bit. Screw to be installed through steel portion of channel strut (1.5 x screw diameter from punch-out) and centered vertically in web.
6. For any connector occuring within 2" of channel strut splice, load not to exceed — F_2 = 865 lb. and F_4 = 785 lb.
7. Maximum allowable load of strut can be increased at high concentrated loads by welding each flange 1" from the strut channel to support directly at clip location:
   • For 7/8" strut size — F_1 = 775 lb., F_2 = 1,800 lb., F_3 = 2,710 lb., F_4 = 3,200 lb.
   • For 1 5/8" strut size — F_1 = 775 lb., F_2 = 4,310 lb., F_3 = 3,925 lb., F_4 = 1,745 lb.
8. Required weld length is on each flange at spacing indicated.
9. Anchorage spacing cannot be greater than framing spacing.
10. Connector load to be located a minimum of 2" from end of strut channel.
11. Tabulated values for 1 5/8" x 7/8" strut may be used for 1 5/8" x 13/16" strut except F_2 welded anchorage values are limited to a maximum load of 1,615 lb. If 13/16" struts are pierced, a load modifier per note 12 is required. See p. 68 for all channel dimension requirements.
12. F_1, F_3 and F_4 have no load reductions for allowed piercings. F_2 has no load reductions for piercings, except for welded conditions as follows:
   • For 9/16" hole at 1 7/8" o.c., multiply by 0.9;
   • For 7/8" hole at 6" o.c., multiply by 0.9;
   • For slotted hole (1 1/8" x 9/16") at 2" o.c, multiply by 0.85.
   No load reductions are required for F_1, F_2 or F_3 load directions for allowed piercing. For images of allowed piercings reference p. 68.

DSSCB Bypass Framing Drift Strut Connector

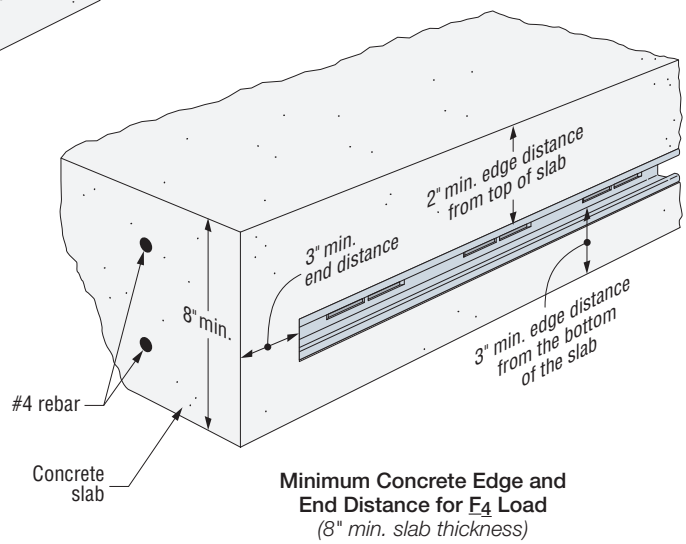
Concrete Insert Allowable Anchorage Loads (lb.)

Strut Size 1⅝" Wide x Depth (in.)	Minimum Edge Distance		Load Direction	Allowable Load (lb.)			
	Top of Slab (in.)	Bottom of Slab (in.)		Uncracked Concrete		Cracked Concrete	
				SDC A&B	SDC C–F	SDC A&B	SDC C–F
⅞ to 1⅜	2	2	In-plane (F_1)	2,955	2,590	2,070	1,815
⅞	2	2	Tension (F_2)	1,715	1,250	1,200	1,050
1⅜	2	2	Tension (F_2)	2,100	1,570	1,470	1,290
⅞ to 1⅜	2	2	Compression (F_3)	2,710	2,710	2,710	2,710
⅞ to 1⅜	2	6	Shear (F_4)	1,640	1,440	1,150	1,005
⅞ to 1⅜	2	3	Shear (F_4)	485	425	340	300

1. For additional DSSCB connector requirements and important technical information, visit **strongtie.com**.
2. The designer is responsible for concrete slab design. The minimum tested concrete slab thickness is 8". Minimum end distance and edge distances for concrete insert struts are shown in the illustrations.
3. Tabulated values are for concrete compressive strength f'_c = 4,000 psi minimum. For 3,000 psi or 3,500 psi, apply a load adjustment factor of 0.87 or 0.94, respectively.
4. Allowable anchorage loads with concrete insert are also limited by the DSSCB Connector Load tables on pp. 61 and 63. Use the minimum tabulated values from the connector and strut anchorage load table above as applicable.
5. Allowable loads are based on 97 mil (12 ga.) thickness strut channel members with a minimum yield strength, F_y, of 33 ksi, tensile strength, F_u, of 45 ksi. Strut size and dimensions are illustrated on p. 68. Other strut manufacturers with equivalent performance and dimensions may be used as approved by the designer.
6. Tabulated values are for connector load spacing at 16" minimum. Reduce load linearly for connector spacing less than 16". For example, shear connector load (F_4), with 2" edge distance from the top of slab at 12" spacing is 1,440 lb. * (12"/16") = 1,080 lb.
7. Tabulated values are for clips installed 6" minimum from the end of strut. See minimum end distances from strut to concrete in illustration below.
8. The load direction of shear (F_4) is toward the bottom of the slab for the tabulated capacities.
9. Shear load (F_4) may be linearly interpolated for strut embedded between 2" from the top to 3" from the bottom of the concrete slab as follows:
   - For an 8" concrete slab, shear load (F_4) may be linear interpolated for strut embedded between 2" from the top and 3" from the bottom of the slab.
   - For slabs thicker than 8", linear interpolate based on bottom concrete edge distance.
10. Allowable loads are based on testing in accordance with AC398 in the Simpson Strong-Tie's IAS-accredited test lab.

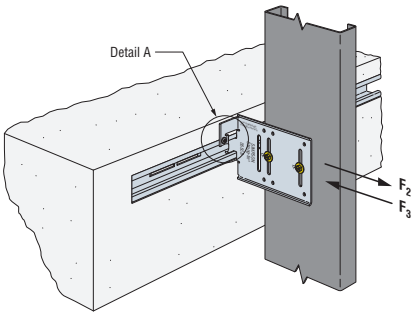


Minimum Concrete Edge and End Distance for F_1, F_2 and F_3 Loads
(8" min. slab thickness)

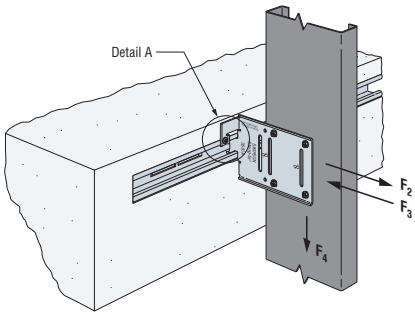


Minimum Concrete Edge and End Distance for F_4 Load
(8" min. slab thickness)

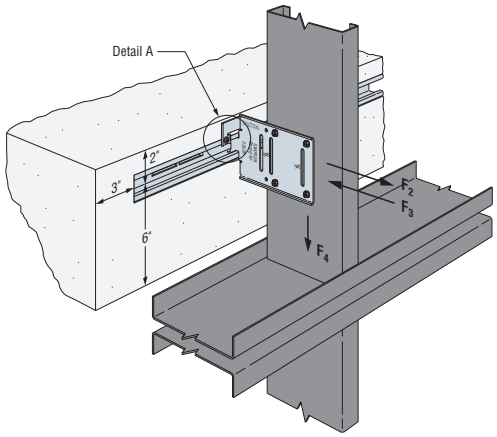
Concrete Insert Anchorages



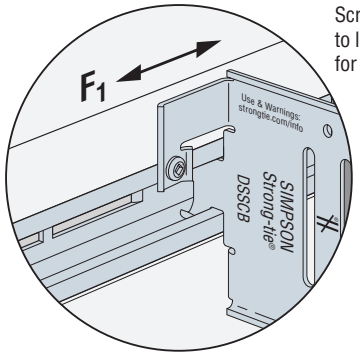
Slide Application



Fixed Application



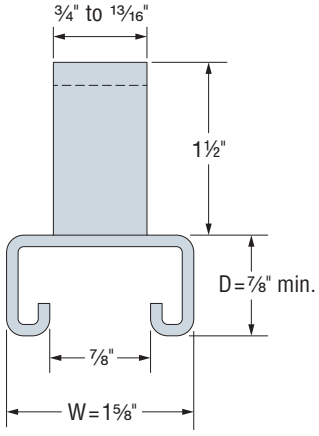
Fixed Application (Panelized)

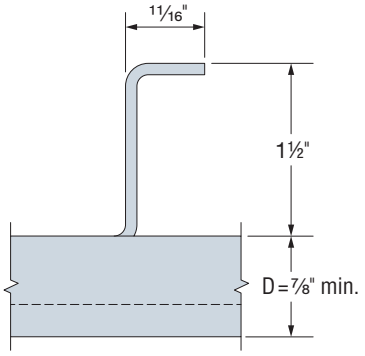


Screw (1) #10 screw to lip of channel for F_1 support

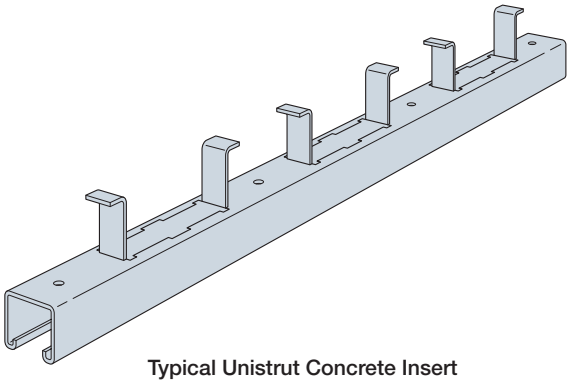
Detail A
(F_1 support required)
This detail meets or exceeds the published F_1 loads for this connector when installed with the DSHS drift stopper clip.

For horizontal drift connections where F_1 support is not required, do not fasten connector to strut.

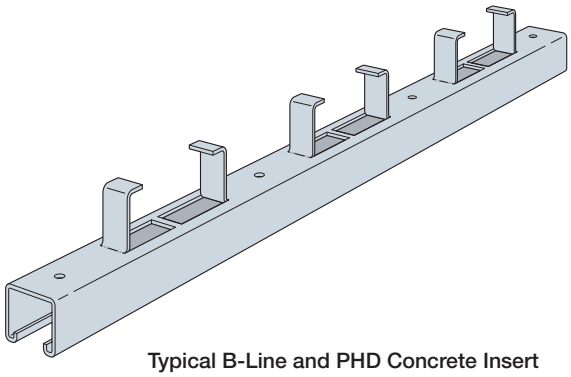




12 ga. 33 ksi Concrete Insert
(by others)



Typical Unistrut Concrete Insert

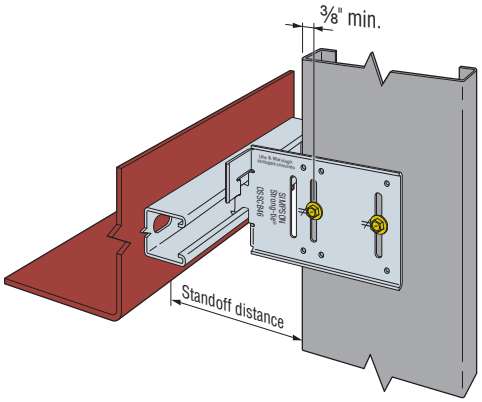


Typical B-Line and PHD Concrete Insert

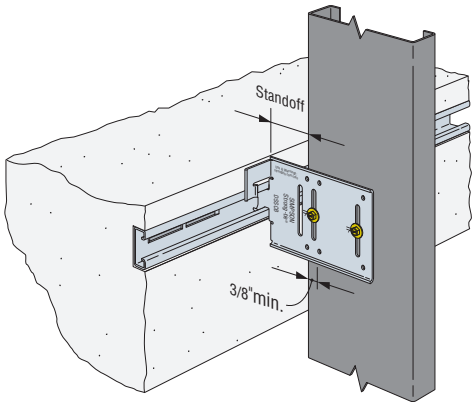
DSSCB Bypass Framing Drift Strut Connector

DSSCB Standoff Distances

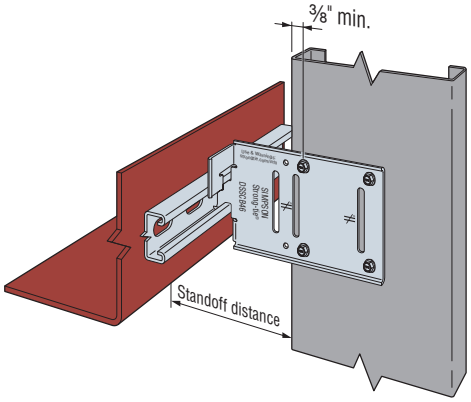
Model No.	Application	Screw Pattern	No. of Screws	7/8" Struts		1 5/8" Struts		Concrete Inserts	
				Min. Standoff (in.)	Max. Standoff (in.)	Min. Standoff (in.)	Max. Standoff (in.)	Min. Standoff (in.)	Max. Standoff (in.)
DSSCB43.5	Slide Clip	A	2	1	2 3/8	1 13/16	3 1/8	3/16	1 1/2
DSSCB46		B	3		2 3/8		3 1/8		1 1/2
		C	2		2 3/8		3 1/8		1 1/2
		D	2		3 1/8		3 7/8		2 1/4
DSSCB48		E	4		2 3/8		3 1/8		1 1/2
		F	3		2 3/8		3 1/8		1 1/2
		G	3		3 1/8		3 7/8		2 1/4
DSSCB43.5	Fixed Clip	H	4	1	2 3/4	1 13/16	3 1/2	3/16	1 7/8
		I	2		2 3/4		3 1/2		1 7/8
		J	2		3 1/2		4 1/4		2 5/8
DSSCB46		K	6		2 3/4		3 1/2		1 7/8
		L	4		2 3/4		3 1/2		1 7/8
		M	4		3 1/2		4 1/4		2 5/8
DSSCB48		N	8		2 3/4		3 1/2		1 7/8
		O	4		2 3/4		3 1/2		1 7/8
		P	4		3 1/2		4 1/4		2 5/8



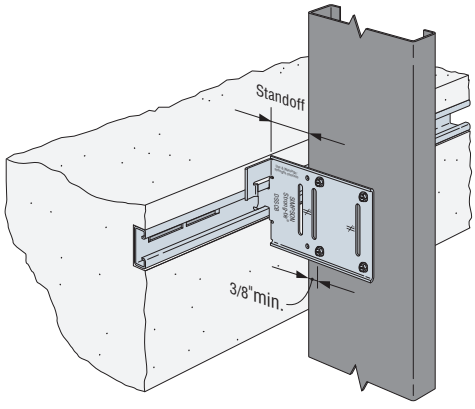
DSSCB Standoff Distance with 1 5/8" Strut (7/8" Strut Similar) and Minimum Fastener Edge Distance for Slide-Clip Application



DSSCB Standoff Distance with Concrete Insert and Minimum Fastener Edge Distance for Slide-Clip Application



DSSCB Standoff Distance with 7/8" Strut and Minimum Fastener Edge Distance for Fixed-Clip Application

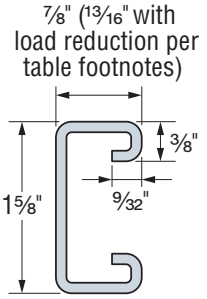


DSSCB Standoff Distance with Concrete Insert and Minimum Fastener Edge Distance for Fixed-Clip Application

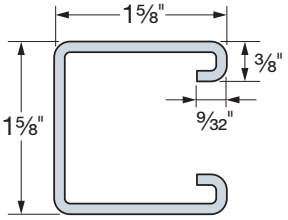
DSSCB Bypass Framing Drift Strut Connector

Strut Requirements

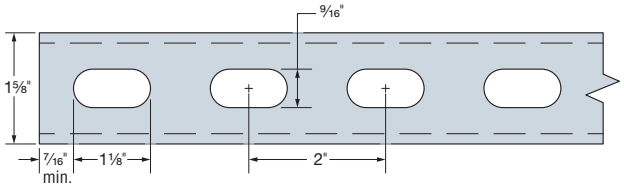
Struts must meet the strut channel dimensions, gauge, yield strength, and punch patterns shown in these requirements.



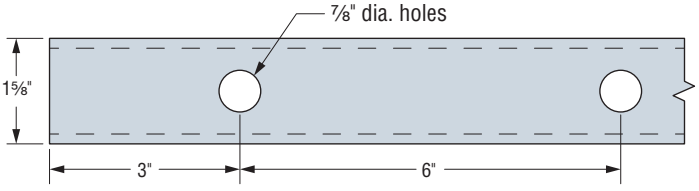
7/8" 12 ga. 33 ksi Strut Channel
(by others)



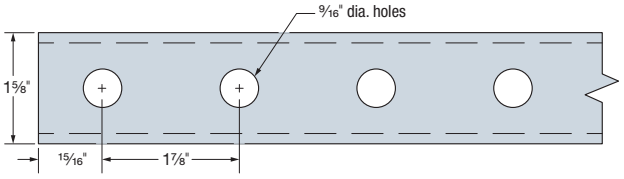
1 5/8" 12 ga. 33 ksi Strut Channel
(by others)



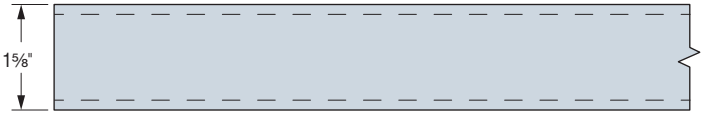
1 1/8" x 9/16" @ 2" o.c. Punchout Pattern



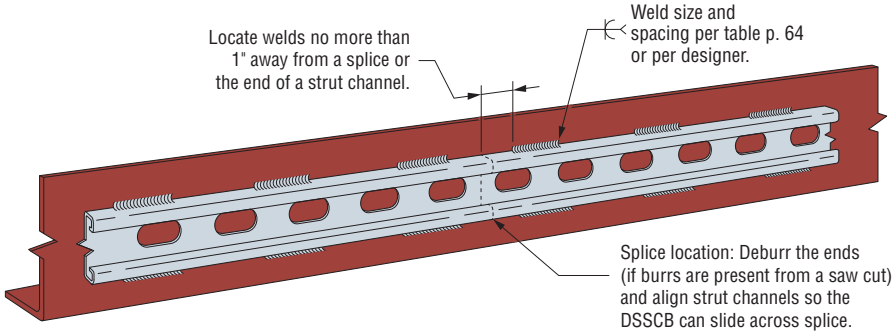
7/8" @ 6" o.c. Punchout Pattern



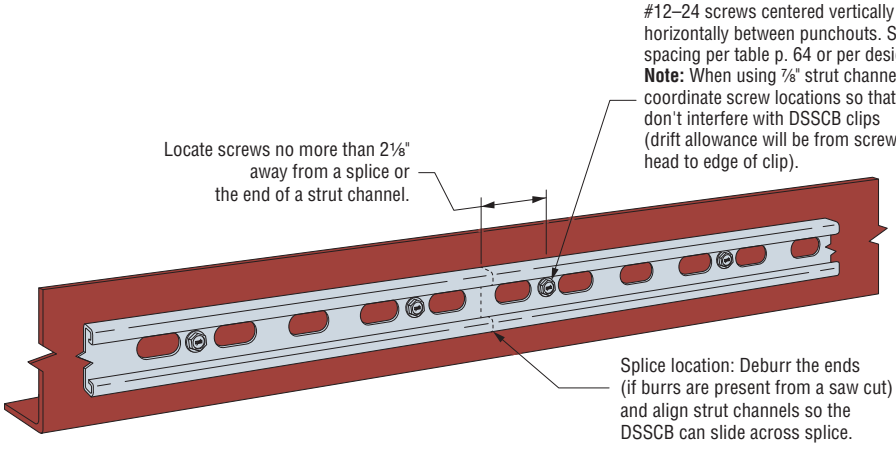
9/16" @ 1 7/8" o.c. Punchout Pattern



Unpunched Condition



Typical Strut Channel Anchorage with Welds



Typical Strut Channel Anchorage with Screws

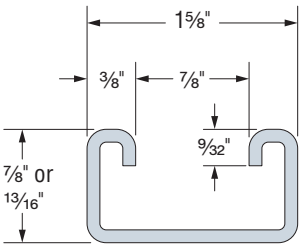
DSSCB Bypass Framing Drift Strut Connector

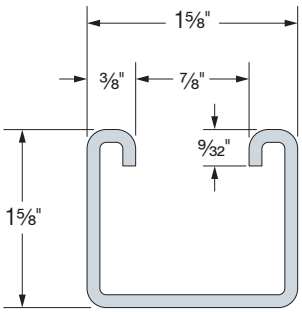
CLT Applications

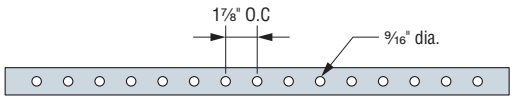
Strut Channel Allowable Anchorage Loads to CLT (lb.)

Strut Size 1⅝" Wide x Depth (in.)	SDHR31400 Screw Spacing (in.)	Allowable Load (lb.)			
		In-Plane F_1 (160)	Tension F_2 (160)	Compression F_3 (160)	Shear F_4 (100)
⅞	3¾	2,200	1,675	2,710	2,200
1⅝					1,215
⅞	5⅝	1,320	1,150	2,710	1,320
1⅝					1,215

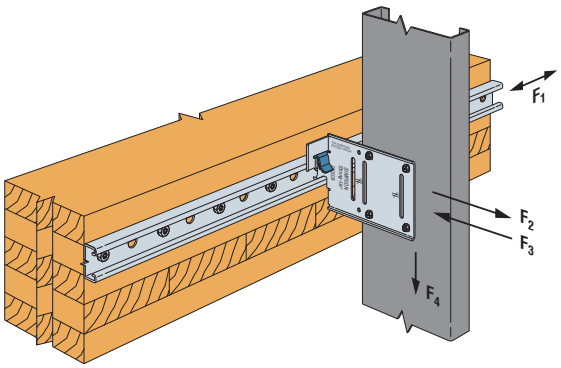
1. For additional DSSCB connector requirements and important technical information, visit **strongtie.com**.
2. The designer is responsible for CLT system design. Tabulated values are based on minimum 3-ply (4⅛") SPF CLT into side or end grain.
3. Tabulated values are based on Strong-Drive® SDHR31400 Combo-Head screw 0.472" diameter x 4" length. Minimum end distance, and edge distances for wood screws are shown in the illustrations.
4. Allowable anchorage loads in CLT are also limited by the DSSCB Connector Load tables on pp. 61 an 63. Use the minimum tabulated values from the connector and strut anchorage load table above as applicable.
5. Allowable loads are based on 97 mil (12 ga.) thickness strut channel members with a minimum yield strength, F_y, of 33 ksi, tensile strength, F_u, of 45 ksi. Strut size and dimensions are illustrated below. Other strut manufacturers with equivalent performance and dimensions may be used as approved by the designer.
6. Tabulated values are for connector spacing at 16" minimum. Reduce load linearly for connector spacing less than 16". For example, shear connector load (F_4) for ⅞" depth strut, with 3¾" screw spacing, allowable load at 12" connector spacing is 2,200 lb.* (12"/16") = 1,650 lb.
7. Tabulated values are for clips installed 6" minimum from the end of CLT.
8. Strut size 1⅝" width x ⅞" depth is limited to a horizontal fixed application due to DSSCB clip interference with SDHR screw head. Required coordination of screw head for installation.
9. Loads (160) have been increased for wind or earthquake loading, with no further increase allowed. Reduce where other loads govern.
10. Tabulated loads for ⅞" strut may be used for 13⁄16" strut, except F_2 load capacity reduced to 1,550 lb. and 1,035 lb. at 3¾" and 5⅝" spacing, respectively.



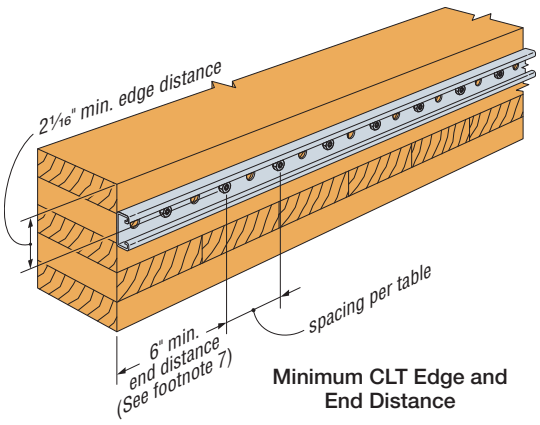




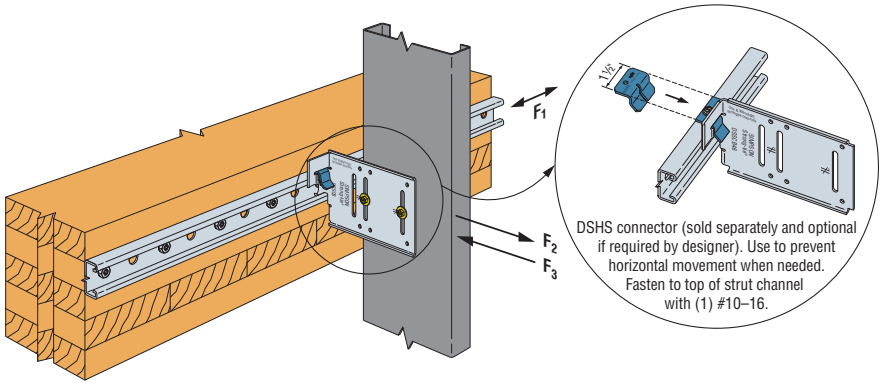
Unistrut: P3300HS, P1000HS
PHD: 1221-1222
Bline: B22H17/8
Other manufacturers that meet dimensions and thickness



Typical DSSCB Fixed Clip Installation



Minimum CLT Edge and End Distance



Typical DSSCB Slide Clip Installation