

**LSB** ®  
LiteSteelbeam



**Installers Guide for Residential Construction**  
*Builders will find all aspects of using LSB to be surprisingly easy*

**LITESteel**™  
technologies

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# Strength Meets Versatility

## A Structural Beam with the Strength of Steel and the Installation Ease of Wood



### Introduction

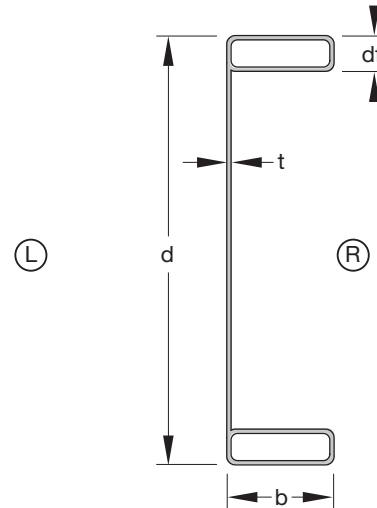
LiteSteel™ Beam (LSB®) from LiteSteel Technologies was developed in response to the demand for a light structural beam with the strength of steel but with the workability and ease of installation associated with wood products. When you weigh up the problems involved with hot rolled structural steel beams and engineered wood beams, LSB can provide significant time and installation cost advantages. The innovative, patented cold forming process gives LSB a unique profile with the torsional rigidity you would normally expect from hot rolled steel. It can be carried like a wood beam and can be cut, nailed, screwed, and drilled on site using the same tools you currently use. LSB is supplied with a G-60 or equivalent coating for superior corrosion protection.

### Working with LSB

LiteSteel beam is on average 40% lighter than hot rolled steel and engineered wood beams of equivalent performance. It is easier to lift and carry and can be hoisted without the need for a crane. Installing LSB does not require any new tools or radical building methods. You can install it and work with it like you would with a wood beam. Fit the recommended saw blades, drill bits, screws, and nails and installation is easy. Connections to wood components are simple using standard Simpson or USP wood construction connectors.

LSB can be used in place of other structural beams; wood or steel. Choosing LSB gives you an advantage for a number of load bearing applications including basement beams, garage beams, ridge beams, long span headers, floor and deck supports, and mezzanine flooring. The information in this Installers Guide for Residential Construction is meant to provide general advice and recommendations for working with LSB. For further information and technical support call us at **1-877-285-2607** or visit our web site [www.LiteSteelbeam.com](http://www.LiteSteelbeam.com).

## LiteSteel™ beam Sizes and Dimensions



LSB Product Code...

**1000LSB300-98**

Beam depth (nominal) in hundredths of an inch (eg, 1000=10 inches)

Beam shape code

Beam flange width (nominal) in hundredths of an inch

Steel material thickness in mils (thousandths of an inch)

### Beam Sizes

LSB Product Code	Dimensions				
	Weight	d Beam Depth	b Flange Width	df Flange Thickness	t Metal Thickness
	lb/ft	in	in	in	in
1400LSB350-134	13.07	13.8	3.50	1.18	0.134
1400LSB350-118	11.59	13.8	3.50	1.18	0.118
1400LSB350-98	9.73	13.8	3.50	1.18	0.098
1200LSB350-134	12.17	11.8	3.50	1.18	0.134
1200LSB350-118	10.80	11.8	3.50	1.18	0.118
1200LSB350-98	9.07	11.8	3.50	1.18	0.098
1000LSB300-118	8.97	9.8	2.95	0.98	0.118
1000LSB300-98	7.54	9.8	2.95	0.98	0.098
1000LSB300-79	6.09	9.8	2.95	0.98	0.079
800LSB250-98	5.96	7.9	2.36	0.79	0.098
800LSB250-79	4.82	7.9	2.36	0.79	0.079
800LSB250-59	3.67	7.9	2.36	0.79	0.059

US 50 ksi steel  
US Imperial

## Effective Section Properties and Design Flexural and Shear Strengths for LiteSteel™ beam

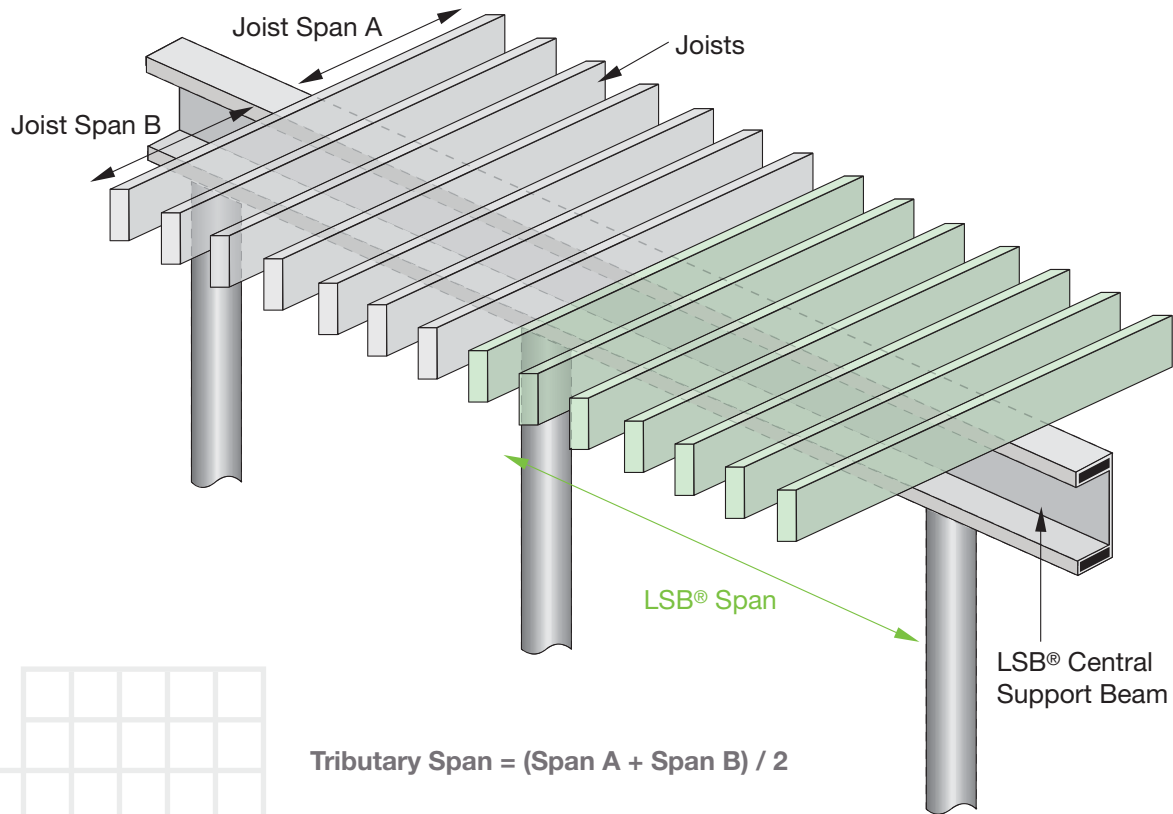
Effective Section Properties											
ID	Wt/ft	Yield Stress		Axial Compression		about x-axis		about y-axis			
		Flange	Web	Effective Area	Coord. of Centroid						
	lb	F <sub>yf</sub> ksi	F <sub>yw</sub> ksi	A <sub>e</sub> in <sup>2</sup>	X <sub>c</sub> in	I <sub>ex</sub> in <sup>4</sup>	S <sub>ex</sub> in <sup>3</sup>	I <sub>eyL</sub> in <sup>4</sup>	S <sub>eyL</sub> in <sup>3</sup>	I <sub>eyR</sub> in <sup>4</sup>	S <sub>eyR</sub> in <sup>3</sup>
1400LSB350-134	13.07	60.0	50.0	3.07	1.36	107.7	15.49	4.63	3.53	5.74	2.37
1400LSB350-118	11.59	60.0	50.0	2.66	1.40	94.5	13.37	4.31	3.19	5.17	2.13
1400LSB350-98	9.73	60.0	50.0	2.17	1.44	76.8	10.56	3.87	2.75	4.41	1.82
1200LSB350-134	12.17	60.0	50.0	3.05	1.37	75.2	12.73	4.27	3.23	5.45	2.32
1200LSB350-118	10.80	60.0	50.0	2.65	1.40	66.9	11.33	3.96	2.92	4.91	2.09
1200LSB350-98	9.07	60.0	50.0	2.16	1.44	54.6	9.00	3.53	2.51	4.19	1.79
1000LSB300-118	8.97	60.0	50.0	2.28	1.14	38.5	7.83	2.19	1.99	2.84	1.43
1000LSB300-98	7.54	60.0	50.0	1.85	1.18	32.5	6.61	1.96	1.71	2.43	1.23
1000LSB300-79	6.09	60.0	50.0	1.44	1.22	25.3	4.96	1.71	1.43	2.00	1.02
800LSB250-98	5.96	60.0	50.0	1.53	0.91	16.4	4.16	0.92	1.05	1.20	0.76
800LSB250-79	4.82	60.0	50.0	1.19	0.94	13.3	3.38	0.80	0.88	1.00	0.63
800LSB250-59	3.67	60.0	50.0	0.86	0.98	9.6	2.34	0.67	0.69	0.78	0.49

US 50 ksi steel  
US Imperial

Design Flexural and Shear Strengths						
ID	Wt/ft	Design Flexural Strengths			Design Shear Strengths	
	lb	Φ <sub>b</sub> M <sub>nxo</sub> kip ft	Φ <sub>b</sub> M <sub>nyL</sub> kip ft	Φ <sub>b</sub> M <sub>nyR</sub> kip ft	Φ <sub>v</sub> V <sub>nx</sub> kip	Φ <sub>v</sub> V <sub>ny</sub> kip
1400LSB350-134	13.07	73.6	9.5	11.2	28.7	56.4
1400LSB350-118	11.59	63.5	9.0	10.1	19.9	50.4
1400LSB350-98	9.73	50.1	8.3	8.7	11.5	42.7
1200LSB350-134	12.17	60.5	8.8	11.0	28.7	56.4
1200LSB350-118	10.80	53.8	8.3	9.9	22.3	50.4
1200LSB350-98	9.07	42.7	7.6	8.5	14.0	42.7
1000LSB300-118	8.97	37.2	5.3	6.8	22.3	41.5
1000LSB300-98	7.54	31.4	4.9	5.8	15.5	35.3
1000LSB300-79	6.09	23.6	4.4	4.8	8.6	28.8
800LSB250-98	5.96	19.7	2.8	3.6	15.5	27.4
800LSB250-79	4.82	16.1	2.5	3.0	9.9	22.5
800LSB250-59	3.67	11.1	2.2	2.3	4.6	17.3

US 50 ksi steel  
US Imperial

## LSB® Span Table, Central Beam Supporting 1 Floor



### Continuous Beam—One Story Loading

Nominal Beam Depth (inches)	Nominal Flange Width (inches)	Metal Thickness (thousandths of an inch)	LSB Weight per foot of Length (pounds)	ID	LSB Beam Span, Feet								
					Center Beam Supporting One Floor								
					Tributary Span, Feet								
8	10	12	14	16	18	20	22	24					
14	3.5	134	13.07	1400LSB350-134	27.5	25.5	24.0	22.8	21.8	21.0	20.3	19.6	19.1
14	3.5	118	11.59	1400LSB350-118	26.3	24.4	23.0	21.9	20.9	20.1	19.4	17.8	16.3
14	3.5	98	9.73	1400LSB350-98	24.6	22.7	18.9	16.2	14.2	12.6	11.3	10.3	9.4
12	3.5	134	12.17	1200LSB350-134	24.4	22.7	21.3	20.3	19.4	18.6	18.0	17.4	16.9
12	3.5	118	10.80	1200LSB350-118	23.5	21.8	20.5	19.5	18.6	17.9	17.3	16.8	16.3
12	3.5	98	9.07	1200LSB350-98	21.9	20.4	19.2	18.2	17.2	15.3	13.8	12.5	11.5
10	3.0	118	8.97	1000LSB300-118	19.5	18.1	17.1	16.2	15.5	14.9	14.4	13.9	13.5
10	3.0	98	7.54	1000LSB300-98	18.5	17.1	16.1	15.3	14.6	14.1	13.6	13.2	12.7
10	3.0	79	6.09	1000LSB300-79	17.0	15.8	14.2	12.1	10.6	9.4	8.5	7.7	7.1
8	2.5	98	5.96	800LSB250-98	14.7	13.6	12.8	12.2	11.7	11.2	10.8	10.5	10.2
8	2.5	79	4.82	800LSB250-79	13.7	12.7	12.0	11.4	10.9	10.5	9.7	8.9	8.1
8	2.5	59	3.67	800LSB250-59	11.3	9.1	7.5	6.5	5.7	5.0	4.5	4.1	3.8

#### Notes:

Deflection Limit: L/360 for live loads and L/240 for total loads

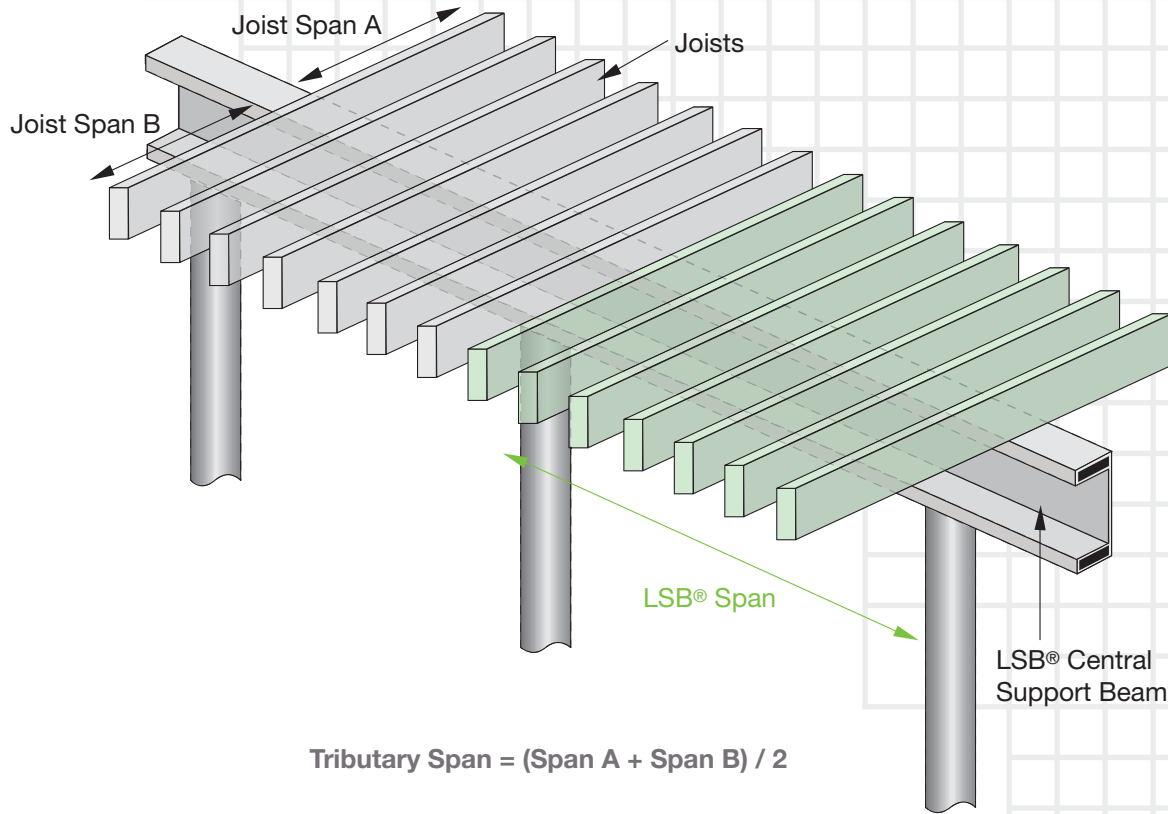
Web stiffeners are required at supports, otherwise web crippling shall be checked

LSB is assumed to have full lateral support. If no lateral restraint, distortional buckling shall be checked

Floor live load is 40 psf

Floor dead load is 15 psf

## LSB® Span Table, Central Beam Supporting 2 Floors (second floor not shown)



### Continuous Beam—Two Story Loading

Nominal Beam Depth (inches)	Nominal Flange Width (inches)	Metal Thickness (thousandths of an inch)	LSB Weight per foot of Length (pounds)	ID	LSB Beam Span, Feet								
					Center Beam Supporting Two Floors								
					Tributary Span, Feet								
					8	10	12	14	16	18	20	22	24
14	3.5	134	13.07	1400LSB350-134	21.8	20.3	19.1	18.1	17.1	15.7	14.1	12.8	11.8
14	3.5	118	11.59	1400LSB350-118	20.9	19.4	16.3	14.0	12.2	10.9	9.8	8.9	8.2
14	3.5	98	9.73	1400LSB350-98	14.2	11.3	9.4	8.1	7.1	6.3	5.7	5.2	4.7
12	3.5	134	12.17	1200LSB350-134	19.4	18.0	16.9	16.1	15.4	14.6	13.9	12.8	11.8
12	3.5	118	10.80	1200LSB350-118	18.6	17.3	16.3	15.5	13.7	12.2	11.0	10.0	9.1
12	3.5	98	9.07	1200LSB350-98	17.2	13.8	11.5	9.8	8.6	7.6	6.9	6.3	5.7
10	3.0	118	8.97	1000LSB300-118	15.5	14.4	13.5	12.9	12.2	11.5	10.9	10.0	9.1
10	3.0	98	7.54	1000LSB300-98	14.6	13.6	12.7	10.9	9.5	8.5	7.6	6.9	6.3
10	3.0	79	6.09	1000LSB300-79	10.6	8.5	7.1	6.1	5.3	4.7	4.2	3.9	3.5
8	2.5	98	5.96	800LSB250-98	11.7	10.8	10.2	9.5	8.9	8.4	7.6	6.9	6.3
8	2.5	79	4.82	800LSB250-79	10.9	9.7	8.1	7.0	6.1	5.4	4.9	4.4	4.1
8	2.5	59	3.67	800LSB250-59	5.7	4.5	3.8	3.2	2.8	2.5	2.3	2.1	1.9

**Notes:**

Deflection Limit: L/360 for live loads and L/240 for total loads

Web stiffeners are required at supports, otherwise web crippling shall be checked

LSB is assumed to have full lateral support. If no lateral restraint, distortional buckling shall be checked

Floor live loads—first floor 40 psf; second floor 40 psf

Floor dead loads—first floor 15 psf; second floor 15 psf

# LSB® Load Tables

## Live Load Deflection L/360

Beam Size	Total Load (lbs/ft) Most Restrictive Simple Beam or Continuous Span											
	Total Load = 75%LL + 25%DL											
	Deflection = < Live Load/360						Deflection = < Total Load/240					
	Beam Span, Feet											
	4	6	8	10	12	14	16	18	20	24	28	32
1400LSB350-134	7649	5099	3824	3059	2550	2023	1549	1088	793	459	289	194
1400LSB350-118	5291	3527	2645	2116	1764	1512	1323	967	705	408	257	172
1400LSB350-98	3031	2020	1515	1212	1010	866	758	673	583	338	213	142
1200LSB350-134	7649	5099	3824	3059	2287	1627	1090	765	558	323	203	136
1200LSB350-118	5940	3960	2970	2376	1980	1421	952	668	487	282	178	119
1200LSB350-98	3689	2460	1845	1476	1230	1054	797	560	408	236	149	100
1000LSB300-118	5940	3960	2970	1958	1281	807	541	380	277	160	101	68
1000LSB300-98	4097	2731	2049	1632	1096	690	462	325	237	137	86	58
1000LSB300-79	2339	1559	1170	936	780	522	350	246	179	104	65	44
800LSB250-98	4097	2731	1647	956	553	348	233	164	119	69	44	
800LSB250-79	2662	1775	1331	775	449	282	189	133	97	56		
800LSB250-59	1218	812	609	487	334	210	141	99	72	42		

**Notes:**

Deflection Limit: L/360 for live loads and L/240 for total loads

Web stiffeners are required at supports, otherwise web crippling shall be checked.

LSB is assumed to have full lateral support. If no lateral restraint, distortional buckling shall be checked.

## Live Load Deflection L/480

Beam Size	Total Load (lbs/ft) Most Restrictive Simple Beam or Continuous Span											
	Total Load = 75%LL + 25%DL											
	Deflection = < Live Load/480						Deflection = < Total Load/240					
	Beam Span, Feet											
	4	6	8	10	12	14	16	18	20	24	28	32
1400LSB350-134	7649	5099	3824	3059	2550	1734	1162	816	595	344	217	145
1400LSB350-118	5291	3527	2645	2116	1764	1512	1033	725	529	306	193	129
1400LSB350-98	3031	2020	1515	1212	1010	866	758	600	438	253	159	107
1200LSB350-134	7649	5099	3824	3059	1937	1220	817	574	418	242	153	102
1200LSB350-118	5940	3960	2970	2376	1692	1066	714	501	365	212	133	89
1200LSB350-98	3689	2460	1845	1476	1230	892	598	420	306	177	111	75
1000LSB300-118	5940	3960	2970	1661	961	605	405	285	208	120	76	51
1000LSB300-98	4097	2731	2049	1420	822	518	347	244	178	103	65	43
1000LSB300-79	2339	1559	1170	936	622	392	262	184	134	78	49	
800LSB250-98	4097	2731	1400	717	415	261	175	123	90	52		
800LSB250-79	2662	1775	1135	581	336	212	142	100	73			
800LSB250-59	1218	812	609	433	250	158	106	74	54			

**Notes:**

Deflection Limit: L/480 for live loads and L/240 for total loads

Web stiffeners are required at supports, otherwise web crippling shall be checked.

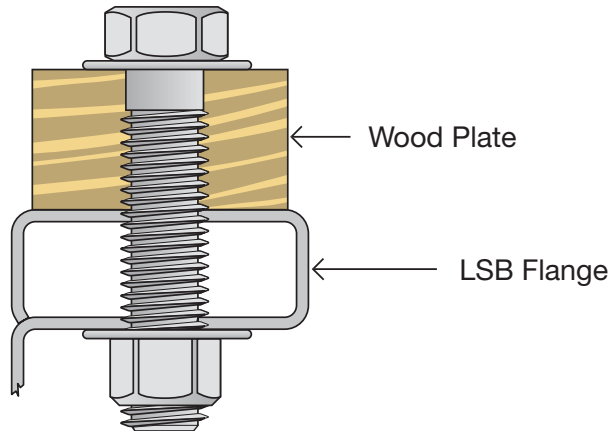
LSB is assumed to have full lateral support. If no lateral restraint, distortional buckling shall be checked.



## 2 x 4 Wood Plate Connection to LSB® Flange

The most efficient way to work with the LSB is to do as much preparation as possible while it is still on the ground before lifting it into place. Fit the nailing plate to the LSB before lifting the beam into place.

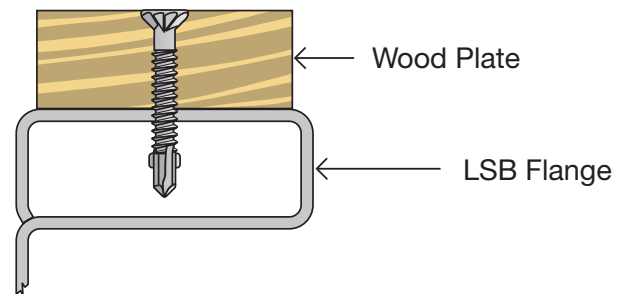
### 2 x 4 Plates Bolted



#### Wood plates can be bolted to LSB

- Clamp 2 x 4 wood plate to flange of LSB.
- Drill a 9/16" diameter hole through the wood plate and the LSB flange at each bolt location.
- Bolt wood plate to LSB flange with 1/2" bolts. A washer is required under both the head and the nut of the bolt.

### 2 x 4 Plates Screwed



#### Self-drilling screws (SDS) can be used to fix wood plates to LSB

- Clamp wood plate to LSB.
- Connect the wood plate to the LSB using screws.
- Winged SDS, counter-sunk SDS and hex head SDS can be used. Minimum of three full threads should protrude through the steel. The tip of the screw should not touch the second flange. Drill speed of 2500 rpm is typically required for drilling SDS screw types.
- Nailer plate connections should be roughly every two feet on center.

## Quick Tips

When pre-drilling wood plate, ensure the hole through the wood is clear of burrs and larger than the diameter of the screw.

Firm, consistent pressure and speed is required.

Quality of screws vary widely. Test screws on an off-cut of LSB prior to use to ensure they are suitable.

Screw selection is important. The screw drill point requires a drill and tap capacity that must be greater than the material thickness (t). The length of the drill point and three threads must be less than the flange void height ( $df - 2xt$ ). Refer to the table on page 4 for values of  $df$  and  $t$  for each LSB size. The length of the screw must be long enough that the drill point and three threads protrude through the first skin of the LSB flange, however not so long that the drill point hits the second skin of the LSB flange.

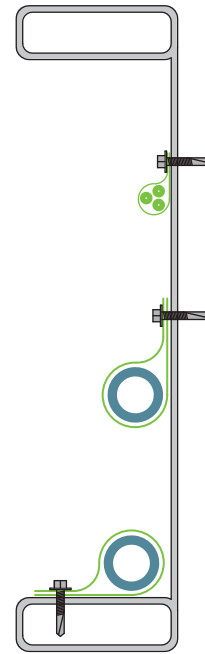
## Attaching Services to LSB®

Electrical and mechanical services can be attached to LSB.

Common wiring and tube clamps can be fixed directly to the LSB flange or web using self-drilling screws, rivets or bolts. The C profile of LSB provides a convenient space for running pipes and wiring.

When fixing metal pipe to LSB, check material compatibility of the tube with galvanized steel and provide isolation where required. In particular, copper products should never be in contact with galvanized steel.

#10-16 x 3/4" self-drilling screws with #3 drill point are suitable for fixing COL0X07Z1 KMC clamps.

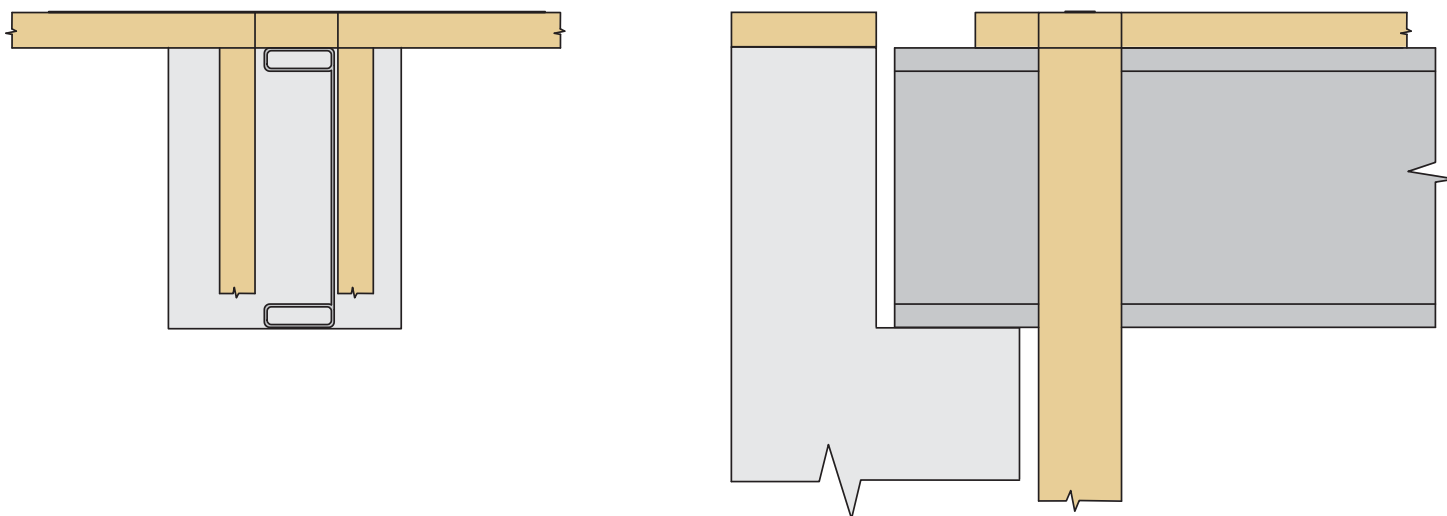


*Services can be concealed within the LSB profile*

## Wall Connections

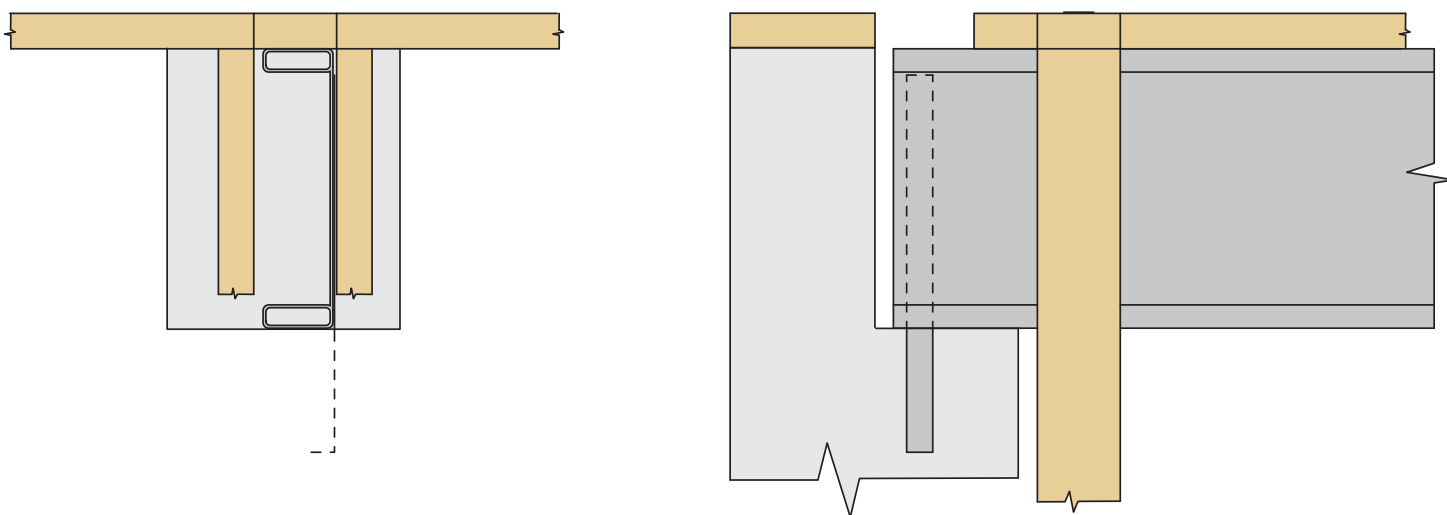
### LSB® to Pocket in Concrete Wall

- 2 x 4" wood top plate fixed with #12-24 x 2-1/4" winged self-drilling screws (Buildex® Part Number 1092000) to LSB top plate.
- Simpson LSTA21 across wood top plate to mudsill/wall frame.
- Moisture barrier may be required per local code.



### LSB to Pocket in Concrete Wall with Uplift Resistance

- Simpson Heta16 with 10058P3 Drivall self-drilling screws.
- 2 x 4" wood top plate fixed with #12-24 x 2-1/4" winged self-drilling screws to LSB top plate.
- Simpson LSTA21 across wood top plate to mudsill/wall frame.
- Moisture barrier may be required per local code.

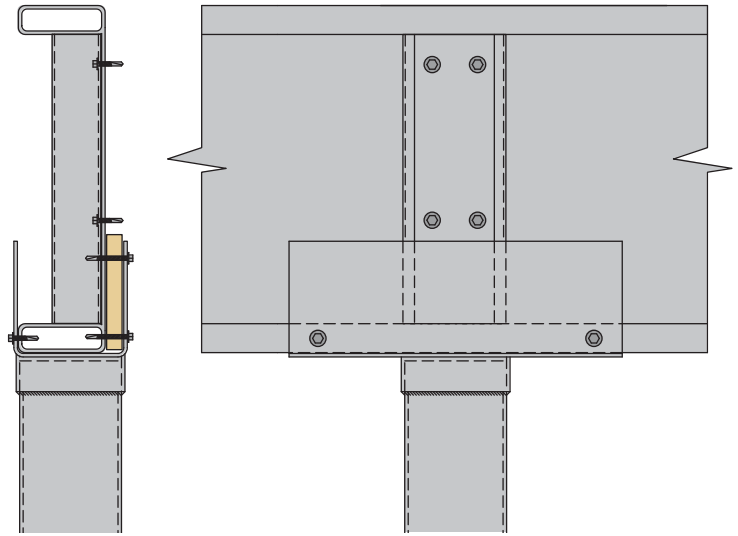


## Column Connections

### LSB® to Lally Column

- Simpson LCC3.5 welded to the column with an 1/8" fillet weld around the entire pipe.
- Wood packer between LCC3.5 leg and LSB web.
- 2-#12-14 x 3/4" hex head self-drilling screws (Buildex® Part Number 1092000) with #3 drill points to toe of LSB flange.
- 2-#12-24 x 2-1/4" Phillips head wing-tipped self-drilling screws with #4 drill points to heel of LSB flange, pre-drill LCC with 7/32" HSS drill bit.
- 2-#12-24 x 2-1/4" Phillips head wing-tipped self-drilling screws with #4 drill points to LSB web, pre-drill LCC with 7/32" HSS drill bit.

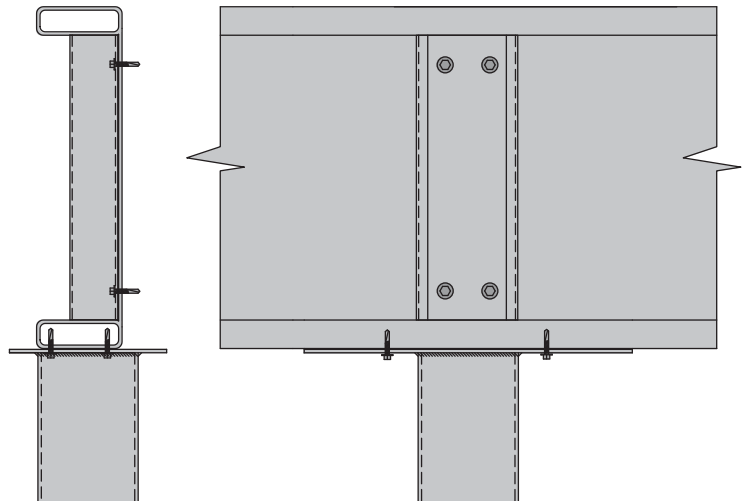
Use web stiffener at all supports and point loads unless web crippling is checked. Check local code requirements.



### LSB to Dixie Column

- 4-#12-14 x 3/4" hex head self-drilling screws with #3 drill points to toe of LSB flange.

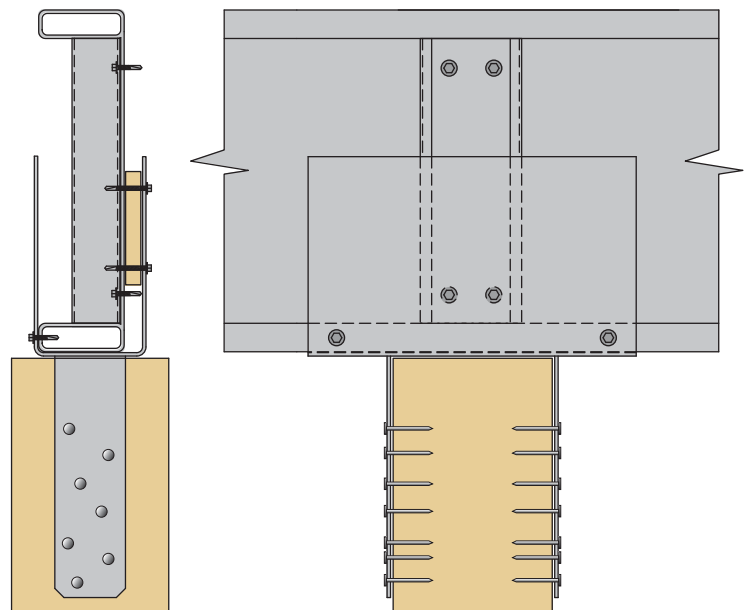
Use web stiffener at all supports and point loads unless web crippling is checked. Check local code requirements.



### LSB to Wood Column

- Simpson CCQ3 or CCQ4 column cap (CCQ3 for 8" and 10" deep LSB, CCQ4 for 12" and 14" deep LSB).
- Wood packer between CCQ leg and LSB web.
- 2-#12-14 x 3/4" hex head self-drilling screws with #3 drill points to toe of LSB flange
- 4-#12-14 x 2-1/4" Phillips head wing-tipped self-drilling screws with #4 drill points to LSB web.

Use web stiffener at all supports and point loads unless web crippling is checked. Check local code requirements.



## Other Typical Connections Using LSB®

LSB does not require special connectors. Simpson Strong-Tie, USP and others manufacture a wide range of code approved construction connectors suitable for use with LSB.

Standard commercially available joist hangers are ideal for attaching joists in line with the LSB bearer beam.



*Example shows attaching 2x10 dimensional lumber joists to a 10" LSB using Simpson LB210 hangers. The hangers are attached to the LSB with #10 self-drilling screws.*



*Example of attaching a 12" I joist to a 10" LSB using Simpson ITS2.564/11.88 flange mounted hangers. The hangers are attached to the LSB with #10 self-drilling screws.*



*Example of attaching 18" trusses to a 10" LSB using Simpson THA422 flange mounted and U410 face mounted hangers. The hangers are attached to the LSB with #10 self-drilling screws.*



*LSB is attached to an elevated concrete pier using Simpson S/HDU hold-downs and 5/8" bolts.*

## Cutting LSB®

LSB can be cut on site using a range of steel-suitable saws.

### Preferred Saw Options

- Professional grade handheld circular saws with ferrous metal cutting blades are commonly used for LSB, i.e. a carbide tipped steel cutting blade.
- Professional grade handheld circular saws designed for steel cutting, i.e. Twinner Twincut 1445S, Makita 4131 or equivalent.
- Abrasive cut-off saws and drop saws with a friction disc can also be used.
- Reciprocating saws – including battery operated.
- Angle grinders are good for detailed work, however safety precautions need to be followed.



*Handheld circular saw*

**Saw blades that work well in circular saws:**

**Diablo Steel Demon D0748F, Makita A-9382, Makita A-93815, Dewalt DW8056, Lenox titanium carbide tipped steel cutting 7-1/4" blade**

## Quick Tips

Use a cold galvanized paint for touching up cut LSB ends.

Use a clean, sharp blade. Always clamp LSB prior to cutting.

Where saw cannot cut full depth, cut web side first and turn over to cut through flanges.

Set the saw cutting depth 1/4" more than depth of the section being cut.

Allow saw to reach full speed before cutting.

Ensure the rated speed for selected blades match speed rating of the saw.

## Screwing LSB®

LSB is suitable for screwed connections, especially for use with brackets used in floor systems and elsewhere. The connections are strong, but also quick and easy to install.

Best results are obtained with commercial screw guns operating between 2000 and 2500 rpm.

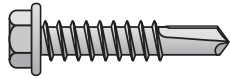



*Floor sheath screw fixed to LSB*



*Connector screw fixed to LSB*

### Preferred Screws

Self Drilling/Self Tapping	LSB	Screw Size	Typical Drill Point	
<b>Metal to Metal Hex Washer Hex</b> 	800LSB250-59	#10	#3	
	800LSB250-79	#10	#3	
	800LSB250-98	#12	#3	
	1000LSB300-79	#10	#3	
	1000LSB300-98	#12	#3	
	1000LSB300-118	#12	#3	
	<b>Wood to Metal Phillips Flat Head Winged</b> 	1200LSB350-98	#12	#3
		1200LSB350-118	#12	#3
		1200LSB350-134	#12	#4-1/2
		1400LSB350-98	#12	#3
1400LSB350-118		#12	#3	
1400LSB350-134	#12	#4-1/2		

## Drilling LSB®

### Process for Drilling

#### Step 1

In a safe working location (i.e. at ground level), locate the bolt holes and cover hole location with cutting compound (oil).

#### Step 2

Drill the pilot hole.

#### Step 3

Drill the required hole (i.e. 9/16" for 1/2" bolts).

#### Step 4

Lift the beam into its location and install the bolts with nuts and washers.

Washers are required under both bolt head and nut. Plate washers are required when bolting through the LSB flange.

In most cases only two 1/2" bolts will be required for LSB connections in residential construction. For connecting back-to-back LSB, follow guidelines provided on page 21.

It is standard practice for connecting plates and cleats to be connected to the "back" of the LSB web, but cleats can also be bolted to the "inside" face of the web between the flanges as shown.



*Drilling holes through LSB is easy*



*Simple bolted cleat*



*Simple bolted cleat*



## Bolting LSB®

For standard residential applications 1/2" bolts are generally suitable. 9/16" diameter holes are required in the LSB for 1/2" bolts.

### Preferred Options:

- Step drill, i.e. Irwin #4 Unibit step drill or equivalent.
- Tungsten carbide tipped hole saws.
- Tungsten carbide tipped multi-purpose drill bits. Pilot holes need to be drilled with standard 1/4" high-speed drill bits.
- Standard twist high-speed drill bits.



*Joining two sizes of LSB using an angle iron connection*



*LSB joists bolted to web of LSB bearer*



*LSB bolted to SHS post*

## Quick Tips

When bolting through LSB flange, avoid damage to the flange by inserting a plate washer against the flange.

Use Irwin #4T Unibit to make faster and cleaner holes, and save the wear and tear on standard drill bits.

## Fastening 23/32 Wood Floor Sheath Using Pins

LSB can be pinned using readily available hardened 'twist' pins and a pneumatic pin gun.

Some brands of pins and guns perform better than other pins and guns of similar rating and size, hence builders should always test pin and gun for size and penetration prior to construction.

Typically a minimum of 3/8" of the pin should protrude through the steel into the flange of the LSB.

For standard pneumatic pin guns, ensure the minimum is above 100 psi.

With high pressure pin guns, the pins penetrate both skins of the flange for the lighter gauge LSB.



*Floor sheath pinned to LSB*

### Pin Selection Guide for Fastening 23/32 Floor Sheath to LSB Beams

ID	Steel thickness mils	Tool			
		Max CN-650M	Max HN120	Powers C4	Aerosmith HN120
1400LSB350-134	134	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1400LSB350-118	118	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1400LSB350-98	98	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1200LSB350-134	134	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1200LSB350-118	118	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1200LSB350-98	98	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1000LSB300-118	118	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1000LSB300-98	98	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
1000LSB300-79	79	FAP32V5	CAP50W4-H	3.7x50	5384HP
800LSB250-98	98	FAP32V9-HT	CAP38W4-H	3.7x38	5384HP
800LSB250-79	79	FAP32V5	CAP50W4-H	3.7x50	5384HP
800LSB250-59	59	FAP32V5	CAP50W4-H	3.7x50	5384HP

## Welding LSB®

LSB can be readily welded using appropriate arc welding processes. Welding consumables suitable for LSB are:

- Manual Metal Arc Welding Stick Electrodes (E60XX electrodes).
- Gas Metal Arc Welding (ER70S-X wire consumables).
- Flux Cored Arc Welding (E71T-1M-H8 wire consumables).
- Limit weld size to LSB thickness

### Manual Metal Arc Welding (MMAW)–“Stick”

- 0.10” diameter electrodes are preferred.
- Use low power setting (60 to 70 amps).
- AWS A5.1: E6013 electrodes will give a smooth weld with no visible porosity. Suitable electrodes include Lincoln Fleetweld 37 and ESAB Sureweld 6013-LV; confirm suitability with the electrode manufacturer.
- Excessive heat should be avoided. Do not over-weld.
- Keep arc length short to avoid burn-through and undercut.



*Welded LSB Fascia*



*Welding LSB*

### Gas Metal Arc Welding (GMAW)–“Mig”

- 0.035” diameter wire is recommended.
- Wire feed speed of approximately 180 ipm at 90 Amps and 15V.
- A hand piece lead of 20° with the wire pointing in the direction of travel will reduce porosity and nozzle clogging.
- Argon with 15 to 20% CO<sub>2</sub> reduces spatter and improves weld appearance.
- AWS A5.18: ER70S-4 welding wires are recommended. Lincoln Murematic S4+, Lincoln Super Arc® L-54 and ESAB Spoolarc 85 are suitable wires; confirm the feed speed, amperage, voltage, and gas mix with the wire manufacturer.

## Quick Tips

Welding may cause discoloration of the LSB coating.

Excessive welding may distort the LSB.

LSB can usually be welded using the same consumables commonly used for welding 50 ksi steel.

If the weld will be exposed to moisture, touch up the weld area with cold galvanized paint.

Speed of welding should be a little slower than for uncoated steel of the same thickness.

Use an anti-spatter spray prior to welding to assist cleaning up. Make sure the spatter release is not sprayed into the welded joint.

All welds should have any slag removed by chipping followed by wire brushing to clean the adjacent area.

## Painting LSB®

### Painting Guidelines

For aesthetic applications or more corrosive environments, LSB can be painted. For best results the surface should be prepared with a galvanized metal primer.

#### When applying a painted finish to LSB:

- Degrease the galvanized coat with methylated spirits. Wipe the beam clean after solvent washing.
- Prepare the surface with a galvanized metal primer.
- Carefully read the Paint Manufacturer's "Instructions for Use". Check to ensure the paint is suitable for use on galvanized steel and is suitable for the exposure category.
- Paint the LSB in accordance with the Paint Manufacturer's recommendations and instructions.

### Painting Conditions

Painting should be carried out on warm, dry days without heavy frost or dews.

In hot weather, avoid painting surfaces exposed to direct sunlight as this may result in patchiness or blistering of the paint.



*Painted LSB fascia*



*Painted LSB on exposed framing*



*Painted LSB with wood infill*

## Using LSB® Back-to-Back

### LSB Back-to-Back for Added Strength

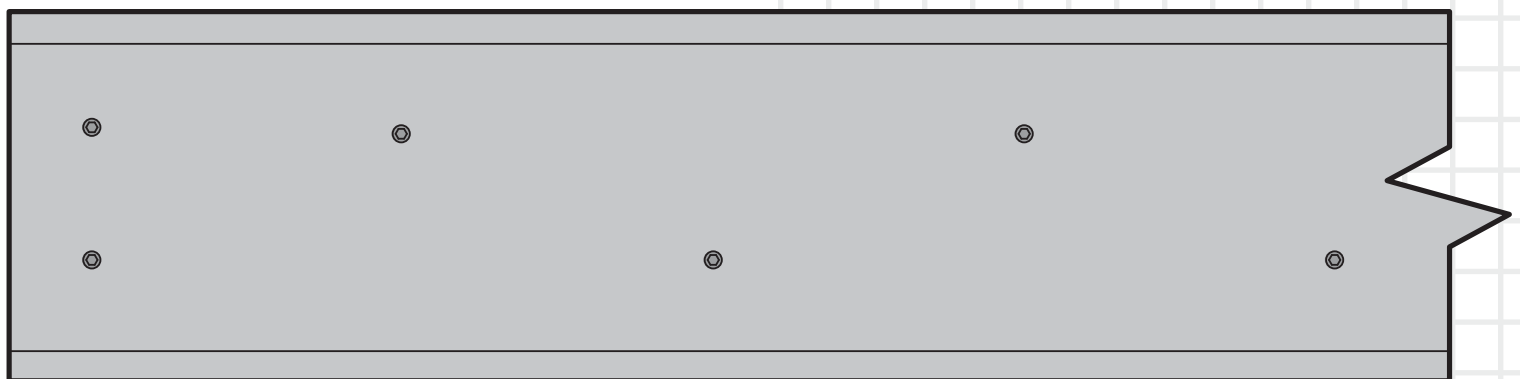
LSB is generally used as a single beam or girder. They may also be used in the back-to-back configuration. Reasons for using LSB back-to-back include:

- Need for greater carrying capacity or greater span than from a single LSB
- In remodeling and other applications that need to use shallowest beam
- Need for beams of lightest weight to facilitate movement on-site

### Assembling LSB Back-to-Back

When using LSB back-to-back, they should be fastened together:

- Using two 1/2" bolts at six foot intervals  
...or
- Using #12 Teks 4 self-taping screws, staggered at one foot intervals, and two screws at the ends evenly spaced



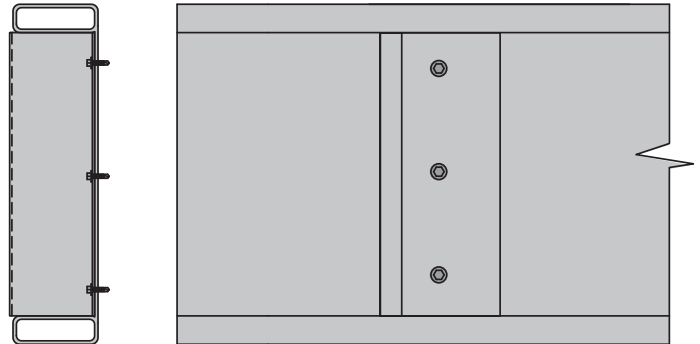
## Using Stiffeners

LSB beams often require a web stiffener at supports and at point load locations. Stiffeners should be used unless a design professional determines they are not required. For concentrated point loads exceeding 10,000 pounds consult a design professional.

The stiffener can be a half section of LSB, a pair of wood studs, or a steel stud. The stiffener should fit snugly between the LSB beam flanges.

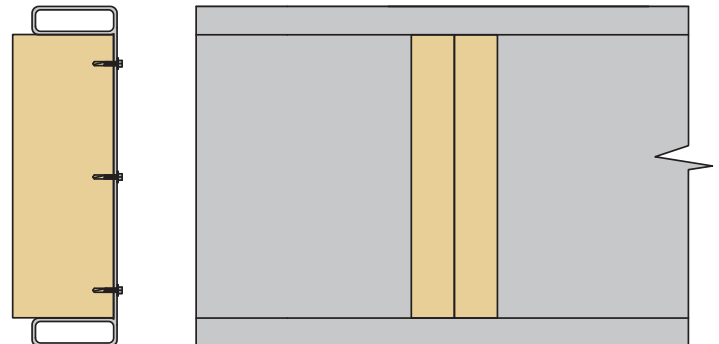
### Option 1: Half LSB Section

- Section of LSB of same flange depth, cut in half longitudinally, and cut to length to fit tight between the LSB flanges.
- 3-#12-24 x 1-1/2" hex head Tekes® screws with #5 drill point (Buildex part number 1070000)



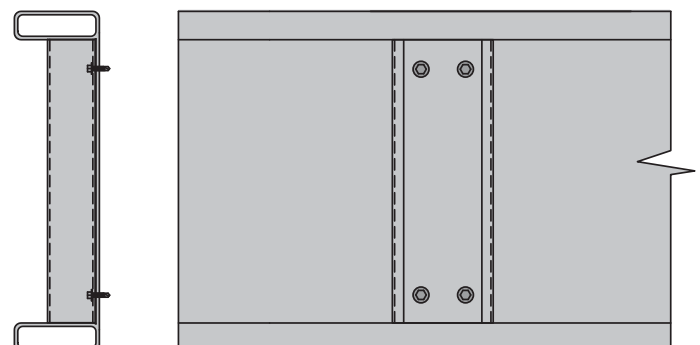
### Option 2: 2-2 x 4 Wood Studs

- 2-2 x 4" SPF #2 wood studs, cut to length to fit tight between the LSB flanges. 2" nominal face of wood studs is against LSB beam web.
- 3-#12 gauge wood screws each stud. Pre-drill 7/32" holes for screws through LSB web.



### Option 3: 350S162-54 Steel Stud

- 350S162-54 steel stud, cut to length to fit tight between the LSB flanges. Web of steel stud is against LSB beam web.
- 4-#12-14 x 1-1/4" hex head Tekes® screws with #2 drill point (Buildex® part number 1120000)





## Connections

This document does not express warranties in regard to connections. Design and structural loads must be determined by an appropriately qualified design professional. Connector suitability must be determined by the connector manufacturer.

## Material Compatibility, Storage, and Handling

For information on material compatibility, storage, and handling contact LiteSteel Technologies America LLC.

## Contact Us for Technical Support

For further information, technical support or comments on LSB call 877-285-2607.

E-mail: [sales@litesteelbeam.com](mailto:sales@litesteelbeam.com)

[www.LiteSteelbeam.com](http://www.LiteSteelbeam.com)

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