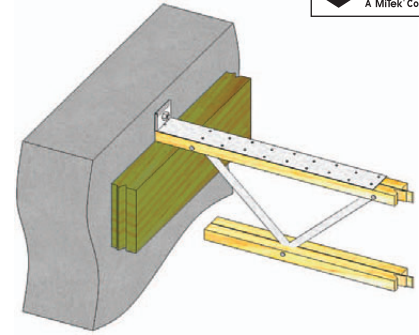


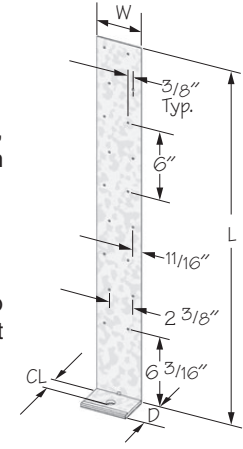
**HTT series** – Secures multi-ply studs or posts to mudsills or foundation. Nail fastening makes for a convenient connection to studs or posts in cramped retrofit installations.

**LTS series** – The LTS19 is designed for nail-on installation to 2x joists or studs, and the LTS20B provides a nail or bolt fastening option. The LTS20B will accommodate wood I-Joists if 10d x 1 1/2" nails are used instead of the specified 16d nails.

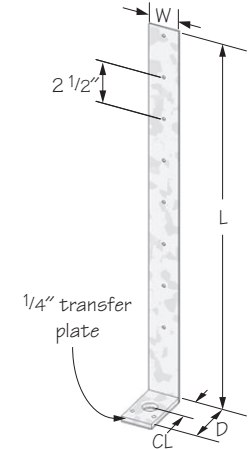
**LTTI31** – An open web joist tension tie designed for use with masonry or concrete construction.



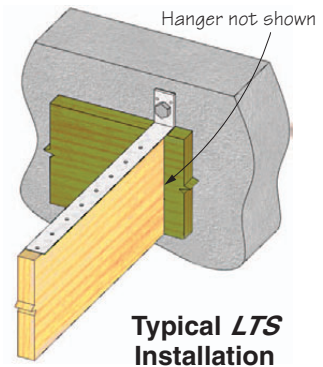
**Typical LTTI31 installation**



**LTTI31**



**LTS19**

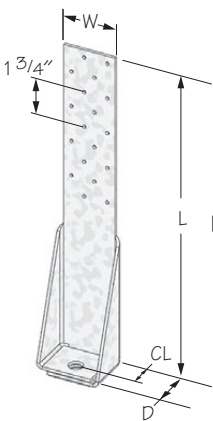


**Typical LTS Installation**

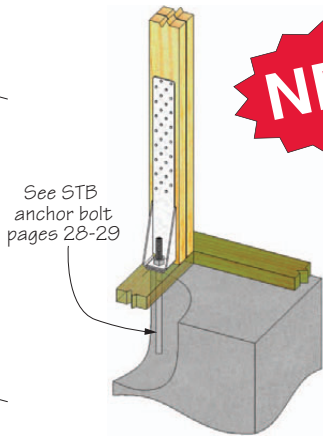
- Materials:** See chart  
**Finish:** G90 galvanizing  
**Codes:** ER-0200, NER 608

**Installation:**

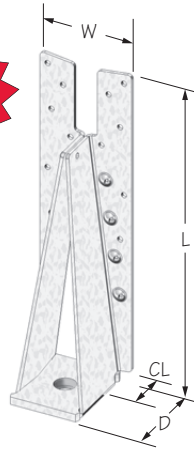
- Use all specified fasteners. See Product Notes, page 11.
- Use all specified fasteners to attach the strap portion of the connector to the side of stud, post, joist, purlin, or beam. Secure the base to the concrete or masonry wall with specified anchor bolt. A design professional shall specify the type, length, and embedment of the anchor bolt. No washers required.
- **LTTI31** and **LTS** connectors must be mounted flush to the surface of the mudsill.
- Allowable loads are based on either nail or bolt fastening; nail and bolt values cannot be combined.
- Washers are not required on transfer plates that fit over the anchor bolt.
- Tighten anchor bolt nuts finger tight snug to base plus, 1/3 to 1/2 additional turns with a wrench. To prevent loosening of the anchor nut during critical loading, use a locking nut or tighten a second nut over the first to lock nuts in place.



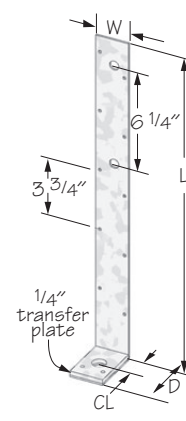
**HTT16**  
**HTT22 similar**



**Typical HTT22 installation**



**HTT4**  
**HTT5 similar**



**LTS20B**

USP Stock No. <sup>7</sup>	Ref. No.	Steel Gauge		Dimensions				Nail Spacing	Fastener Schedule			Allowable Tension Loads (Lbs.) <sup>1</sup>		Code Ref.		
		Strap	Plate	W	L	D	CL		Anchor Bolts <sup>4</sup>	Strap <sup>2,3</sup>		DF-L / SP				
										Qty	Dia.	Qty	Type		160%	Δ (in) <sup>6,8</sup>
HTT4	HTT4	12	---	3	10-7/16	2-3/4	1-3/8	1-3/4	1	5/8	18	10d x 1-1/2	2715	0.095	20	
												10d	3295	0.098		
												16d x 2-1/2	4465	0.143		
HTT5	HTT5	12	---	3	13-15/16	2-3/4	1-3/8	1-3/4	1	5/8	28	10d x 1-1/2	3225	0.088	20	
												10d	4745	0.122		
												16d x 2-1/2	5430	0.141		
HTT16	---	10	---	2-1/2	15-5/8	2	1-3/8	1-3/4	1	5/8	18	10d	3250	0.125	L8	
												16d	4290	0.099		
HTT22	---	10	---	2-1/2	21-1/2	2	1-3/8	1-3/4	1	5/8	32	10d	5370	0.125	L8	
												16d				
LTTI31	LTTI31	18	3	3-3/4	31	2-5/8	1-3/8	3	1	5/8	18	10d x 1-1/2	2805	0.175	20	
LTS19	LTT19	16	3	1-3/4	22-1/4	3	1-1/2	2-1/2	1	3/4	8	10d	1205	0.132		
												10	10d x 1-1/2	1100		0.128
LTS20B	LTT20B	12	3	2	20	3	1-1/2	3-3/4	1	3/4	10	16d	1105	0.128	20	
												2	1/2	1175		0.128

1) Allowable loads have been increased 60% for wind or seismic loads; no further increase shall be permitted.  
 2) Minimum nail embedment shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.  
 Bolts require a minimum length of 1-1/2" in vertical member for the listed loads.  
 3) 16d sinkers may be substituted for the specified 10d common nails with no load reduction.  
 4) The designer must specify anchor bolt type, length and embedment depth.  
 5) Deflections are derived from static, monotonic load tests of devices connected to DF-L wood members with specified fasteners.  
 6) HTT holdowns raised off of the sill plate may have higher deflection values.  
 7) LTTI and LTS holdowns shall be installed tight to the sill plate.