

# ALLOWABLE STRESS INCREASE DESIGN VALUES



There have been recent changes in design codes which affect the published design loads in our catalogs. Specifically many states have recently adopted the *2000 International Building Code (IBC)* referencing the load combinations of ASCE 7-98, *Minimum Design Loads for Buildings and Other Structures*. In some cases, the IBC does not allow you to take the traditional one-third increase in steel capacity when resisting load combinations including wind and seismic loads (IBC 1605.3.1.1). This is briefly described in our *Full Line Catalog 2005*, USP979-051, on page 10.

The 2000 IBC gives the engineer two options for load combinations:

- Basic Load Combinations (1605.3.1)
- Alternate Load Combinations (1605.3.2)

**Basic Load Combinations** are based on ASCE 7 which does not allow the designer to increase material strengths (allowable stress), except for wood. Instead, it allows the designer to multiply the combined effect of two or more transient loads by 0.75 and add to the effect of the dead load. In other words, instead of multiplying the allowable stress by 4/3, the loads are multiplied by 3/4. This decrease in load accounts for the reduced probability that two or more loads, other than dead loads, acting concurrently will each attain its maximum value at the same time.

The code however, does allow for the load duration factor which increases the allowable wood stress. This wood allowable stress increase is contained in the National Design Specification (NDS) for Wood Construction, referenced by the national building codes. In the NDS, the load duration factor,  $C_D$ , for wind and seismic loads is 1.6 or 160%. Please note that some national and local codes (UBC for example) have maintained the former NDS code provision limiting the load duration factor to 1.33 or 133%.

**Alternate Load Combinations** permit the designer to increase allowable stresses for both steel and wood where permitted by the material section of the 2000 IBC code or referenced standard. At the same time, however, the designer must increase the calculated wind load by a factor of 1.3.

## Changes to Allowable Stress Increase in IBC and other Model Building Codes

In the 2003 IBC, a change was made to the requirements of the steel stress increases. The steel stress increase is not allowed except for loading cases including multiple transient loads. As all model building codes are frequently changing, the following table shows which building codes do and do not allow a one-third-stress increase on steel.

Code	Steel Stress Increase Allowed		Code Section
	Basic Load Combinations	Alternate Load Combinations	
ASCE 7-98	No	-- --	2.4.3
ASCE 7-02	No	-- --	2.4.1
2000 IBC	No	Yes	1605.3.1, 1605.3.2
2003 IBC	No	No <sup>1</sup>	1605.3.1.1, 1605.3.2
1997 UBC	No	Yes	1612.3.1, 1612.3.2

<sup>1)</sup> Increase is permitted with multiple transient loads (North American Specification for the Design of Cold-Formed Steel Structural Members, 2001 Edition, NASPEC)

**Load Capacities** of our products are generally determined in accordance with ASTM D1761. From this, the allowable load for a normal duration shall be the lowest value as determined by one of the following methods:

- The lowest ultimate tested load divided by three
- Lowest tested load producing 1/8" deflection
- Calculated capacity

**Note:** When determining the calculated capacity *USP Structural Connectors®* looks at both the capacity of the steel connector and the capacity of the connections to the wood members.

**Removing the increase on allowable steel stresses** has affected the capacity of some products; including many of our strap tie and strap-type anchors. The values published in our *2005 Full Line Catalog* reflects these reduced capacities. To match the lower capacity of the connector, the number of nails required has been reduced in many cases. No additional reduction is necessary. Consult the *Full Line Catalog 2005* for General Notes, Warranty Information, and Installation Instructions.

Recognizing that some jurisdictions reference model building codes that do allow an increase in steel stress we have prepared this technical bulletin. The tables on the following pages contain extra shaded rows of values where a decrease in allowable stress controls the published value. Unshaded rows represent products with an allowed stress increase on the steel calculations, or a product where steel does not control the published capacity.

Products affected by these code changes are as follows:

- **Coiled Strapping** - CMST series, CMSTC16, & RS series
- **Embedded Truss Anchors** - HTA, TA, & TAR series
- **Foundation Straps** - HPAHD, MPAHD, & PAHD42
- **Lateral Plated Truss Anchors** - LPTA series
- **Purlin Anchors** - HPA, PA, PAI, PAT, & PATM25 series
- **Strap Rafter Ties** - RT\_F & RT\_T series
- **Strap Ties** - KST, KSTI, LSTI, & MSTC series
- **Strap Ties** - LSTA, MSTA, & ST series
- **Uplift Girder Ties** - UGTS & USC series

*USP Structural Connectors®* is committed to providing the most current code information available. Please keep these new code provisions in mind, specifically if designing with the 2000 IBC or other similar model codes. If you have any questions regarding these code provisions and how they affect our products, please contact any of our technical assistance departments.



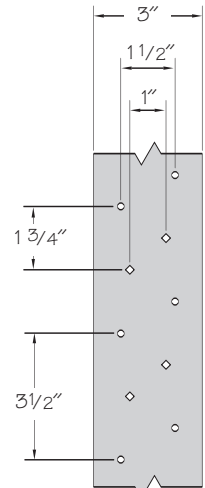
A GIBRALTAR INDUSTRIES COMPANY

# Coiled Strapping - CMST series, CMSTC16, & RS series

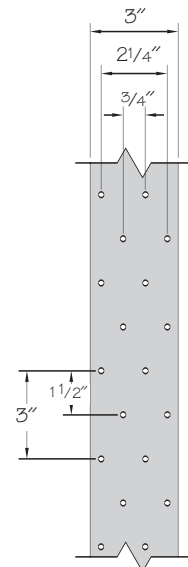
USP Stock No.	Ref. No.	Steel Gauge	Coil Length	Rim Joist Installation		Nail Spacing O.C.	Fastener Schedule <sup>2,3,4,5</sup>	Allowable Loads (Lbs.) <sup>1,5</sup>	
				Cut Length	End Length			Uplift	
								133%	160%
CMSTC16	CMSTC16	16	54'	Clear Span + 50"	25"	1-1/2"	(66) 10d <b>(48) 10d</b>	5050 <b>3790</b>	5050 <b>3790</b>
				Clear Span + 98"	49"	3"	(66) 10d <b>(48) 10d</b>	5050 <b>3790</b>	5050 <b>3790</b>
CMST14	CMST14	14	52-1/2'	Clear Span + 68"	34"	1-3/4"	(72) 16d <b>(54) 16d</b>	6905 <b>5180</b>	6905 <b>5180</b>
				Clear Span + 156"	78"	3-1/2"	(84) 10d <b>(64) 10d</b>	6905 <b>5180</b>	6905 <b>5180</b>
				Clear Span + 310"	155"	7"	(84) 10d <b>(64) 10d</b>	6905 <b>5180</b>	6905 <b>5180</b>
CMST12	CMST12	12	40'	Clear Span + 90"	45"	1-3/4"	(94) 16d <b>(72) 16d</b>	9670 <b>7250</b>	9670 <b>7250</b>
				Clear Span + 210"	105"	3-1/2"	(110) 10d <b>(84) 10d</b>	9670 <b>7250</b>	9670 <b>7250</b>
				Clear Span + 416"	208"	7"	(110) 10d <b>(84) 10d</b>	9670 <b>7250</b>	9670 <b>7250</b>
RS300	CS22	22	300'	Clear Span + 12"	6"	1-1/2"	(12) 10d <b>(10) 10d</b>	835 <b>625</b>	835 <b>625</b>
				Clear Span + 13"	6-1/2"	1-1/2"	(14) 8d <b>(10) 8d</b>	835 <b>625</b>	835 <b>625</b>
RS250	CS20	20	250'	Clear Span + 13"	6-1/2"	1-1/2"	(14) 10d <b>(10) 10d</b>	1010 <b>755</b>	1010 <b>755</b>
				Clear Span + 16"	8"	1-1/2"	(18) 8d <b>(14) 8d</b>	1010 <b>755</b>	1010 <b>755</b>
RS200	CS18	18	200'	Clear Span + 16"	8"	1-1/2"	(18) 10d <b>(14) 10d</b>	1355 <b>1015</b>	1355 <b>1015</b>
				Clear Span + 19"	9-1/2"	1-1/2"	(22) 8d <b>(18) 8d</b>	1355 <b>1015</b>	1355 <b>1015</b>
RS100	CS18S	18	100'	Clear Span + 16"	8"	1-1/2"	(18) 10d <b>(14) 10d</b>	1355 <b>1015</b>	1355 <b>1015</b>
				Clear Span + 19"	9-1/2"	1-1/2"	(22) 8d <b>(18) 8d</b>	1355 <b>1015</b>	1355 <b>1015</b>
RS150	CS16	16	150'	Clear Span + 19"	9-1/2"	1-1/2"	(22) 10d <b>(18) 10d</b>	1700 <b>1275</b>	1700 <b>1275</b>
				Clear Span + 24"	12"	1-1/2"	(28) 8d <b>(20) 8d</b>	1700 <b>1275</b>	1700 <b>1275</b>
RS22-R	CS22-R	22	25'	Clear Span + 12"	6"	1-1/2"	(12) 10d <b>(10) 10d</b>	835 <b>625</b>	835 <b>625</b>
				Clear Span + 13"	6-1/2"	1-1/2"	(14) 8d <b>(10) 8d</b>	835 <b>625</b>	835 <b>625</b>
RS20-R	CS20-R	20	25'	Clear Span + 13"	6-1/2"	1-1/2"	(14) 10d <b>(10) 10d</b>	1010 <b>755</b>	1010 <b>755</b>
				Clear Span + 16"	8"	1-1/2"	(18) 8d <b>(14) 8d</b>	1010 <b>755</b>	1010 <b>755</b>
RS18-R	CS18-R	18	25'	Clear Span + 16"	8"	1-1/2"	(18) 10d <b>(14) 10d</b>	1355 <b>1015</b>	1355 <b>1015</b>
				Clear Span + 19"	9-1/2"	1-1/2"	(22) 8d <b>(18) 8d</b>	1355 <b>1015</b>	1355 <b>1015</b>
RS16-R	CS16-R	16	25'	Clear Span + 19"	9-1/2"	1-1/2"	(22) 10d <b>(18) 10d</b>	1700 <b>1275</b>	1700 <b>1275</b>
				Clear Span + 24"	12"	1-1/2"	(28) 8d <b>(20) 8d</b>	1700 <b>1275</b>	1700 <b>1275</b>

- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) Total quantity of nails to be installed with equal fasteners on each side of the connection.
- 3) 16d sinker nails may be substituted for 10d nails with no load reduction.
- 4) Minimum header thickness shall be 1-5/16" for 8d nails, 1-1/2" for 10d nails, and 1-5/8" for 16d nails.
- 5) Products listed without an additional shaded row are not governed by steel stress.

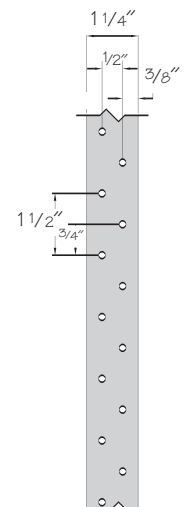
Values represent loads which do not include a stress increase on the steel calculations.



**CMST**



**CMSTC16**



**RS**

## Customer Service / Technical Assistance

Burnsville, MN Corporate Office

1-800-328-5934

# Embedded Truss Anchors - HTA, TA, & TAR series

USP Stock No. <sup>6</sup>	Ref. No.	W	H	Single Anchor								Double Anchor										
				Fastener Schedule <sup>3,5,7</sup>	Allowable Loads (Lbs.) <sup>1,7</sup>						Fastener Schedule <sup>3,5,7</sup>	Allowable Loads (Lbs.) <sup>1,7</sup>										
					Uplift				Lateral Loads			Uplift				Lateral Loads						
					DF-L / SP	S-P-F		F1	F2	133%/160%		133%/160%	DF-L / SP	S-P-F		F1	F2	133%/160%	133%/160%			
1 Ply	1 Ply	1 Ply	2 Ply or >																			
HTA16-18	META16	1-1/4	12	(14) 10d x 1-1/2	1600	1600	1600	1600	395	325	(14) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	790	650	
(10) 10d x 1-1/2	1200	1200	1120	1120	(10) 10d x 1-1/2	2375	2375	2400			2400	2240	2240	2240	2240							
(12) 10d	1600	1600	1570	1600	(12) 10d	2375	2375	2750			2750	2375	2375	2750	2750							
(8) 10d	1200	1200	1175	1175	(8) 10d	2375	2375	2400			2400	2350	2350	2350	2350							
HTA20-18	META20	1-1/4	16	(14) 10d x 1-1/2	1600	1600	1600	1600	395	325	(14) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	790	650	
(10) 10d x 1-1/2	1200	1200	1120	1120	(10) 10d x 1-1/2	2375	2375	2400			2400	2240	2240	2240	2240							
(12) 10d	1600	1600	1570	1600	(12) 10d	2375	2375	2750			2750	2375	2375	2750	2750							
(8) 10d	1200	1200	1175	1175	(8) 10d	2375	2375	2400			2400	2350	2350	2350	2350							
HTA24-18	META24	1-1/4	20	(14) 10d x 1-1/2	1600	1600	1600	1600	395	325	(14) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	790	650	
(10) 10d x 1-1/2	1200	1200	1120	1120	(10) 10d x 1-1/2	2375	2375	2400			2400	2240	2240	2240	2240							
(12) 10d	1600	1600	1570	1600	(12) 10d	2375	2375	2750			2750	2375	2375	2750	2750							
(8) 10d	1200	1200	1175	1175	(8) 10d	2375	2375	2400			2400	2350	2350	2350	2350							
HTA12	HETA12	1-1/4	8	(8) 10d x 1-1/2	1225	1470	1055	1265	590	660	(8) 10d x 1-1/2	2450	2940	2450	2940	2110	2530	2110	2530	1180	1320	
(8) 10d	1230	1475	1060	1270	(8) 10d	2460	2950	2460			2950	2120	2540	2120	2540							
HTA16	HETA16	1-1/4	12	(15) 10d x 1-1/2	2005	2005	1980	2005	590	660	(15) 10d x 1-1/2	3070	3070	3555	3555	3070	3070	3555	3555	1180	1320	
(10) 10d x 1-1/2	1500	1500	1500	1500	(10) 10d x 1-1/2	3000	3000	3000			3000	3000	3000	3000	3000							
(14) 10d	2005	2005	1905	2005	(14) 10d	3070	3070	3555			3555	3070	3070	3555	3555							
(10) 10d	1500	1500	1500	1500	(10) 10d	3000	3000	3000			3000	3000	3000	3000	3000							
HTA20	HETA20	1-1/4	16	(17) 10d x 1-1/2	2005	2005	1980	2005	590	660	(17) 10d x 1-1/2	3070	3070	3555	3555	3070	3070	3555	3555	1180	1320	
(10) 10d x 1-1/2	1500	1500	1500	1500	(10) 10d x 1-1/2	3000	3000	3000			3000	3000	3000	3000	3000							
(14) 10d	2005	2005	1905	2005	(14) 10d	3070	3070	3555			3555	3070	3070	3555	3555							
(10) 10d	1500	1500	1500	1500	(10) 10d	3000	3000	3000			3000	3000	3000	3000	3000							
HTA24	HETA24	1-1/4	20	(17) 10d x 1-1/2	2005	2005	1980	2005	590	660	(17) 10d x 1-1/2	3070	3070	3555	3555	3070	3070	3555	3555	1180	1320	
(10) 10d x 1-1/2	1500	1500	1500	1500	(10) 10d x 1-1/2	3000	3000	3000			3000	3000	3000	3000	3000							
(14) 10d	2005	2005	1905	2005	(14) 10d	3070	3070	3555			3555	3070	3070	3555	3555							
(10) 10d	1500	1500	1500	1500	(10) 10d	3000	3000	3000			3000	3000	3000	3000	3000							
HTA48	--	1-1/4	46-1/2	(17) 10d x 1-1/2	2005	2005	1980	2005	590	660	(17) 10d x 1-1/2	3070	3070	3555	3555	3070	3070	3555	3555	1180	1320	
(10) 10d x 1-1/2	1500	1500	1500	1500	(10) 10d x 1-1/2	3000	3000	3000			3000	3000	3000	3000	3000							
(14) 10d	2005	2005	1905	2005	(14) 10d	3070	3070	3555			3555	3070	3070	3555	3555							
(10) 10d	1500	1500	1500	1500	(10) 10d	3000	3000	3000			3000	3000	3000	3000	3000							
TA12	TA12R	--	1	6-3/4	(7) 10d x 1-1/2	1045	1205	905	1085	380	335	(7) 10d x 1-1/2	2090	2375	2090	2410	1810	2170	1810	2170	490	670
(7) 10d	1075	1205	925	1110	(7) 10d	2150	2375	2150	2410			1850	2220	1850	2220							
TA14	TA14R	--	1	8-3/4	(9) 10d x 1-1/2	1205	1205	1190	1205	380	335	(9) 10d x 1-1/2	2375	2375	2410	2410	2375	2375	2380	2410	490	670
(9) 10d	1415	1605	1225	1470	(9) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA16	TA16R	--	1	10-3/4	(11) 10d x 1-1/2	1605	1605	1450	1605	380	335	(10) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410	2410			2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA18	TA18R	--	1	12-3/4	(13) 10d x 1-1/2	1605	1605	1605	1605	380	335	(13) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410	2410			2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA20	TA20R	--	1	14-3/4	(13) 10d x 1-1/2	1605	1605	1605	1605	380	335	(13) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410	2410			2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA22	TA22R	--	1	16-3/4	(13) 10d x 1-1/2	1605	1605	1605	1605	380	335	(13) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410	2410			2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA24	TA24R	--	1	18-3/4	(13) 10d x 1-1/2	1605	1605	1605	1605	380	335	(13) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410	2410			2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750	2750			2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410	2410			2375	2375	2410	2410							
TA36	--	1	34-3/4	(13) 10d x 1-1/2	1605	1605	1605	1605	380	335	(13) 10d x 1-1/2	2375	2375	2750	2750	2375	2375	2750	2750	490	670	
(9) 10d x 1-1/2	1205	1205	1165	1205	(9) 10d x 1-1/2	2375	2375	2410			2410	2375	2375	2410	2410							
(11) 10d	1605	1605	1495	1605	(11) 10d	2375	2375	2750			2750	2375	2375	2750	2750							
(8) 10d	1205	1205	1055	1205	(8) 10d	2375	2375	2410			2410	2375	2375	2410	2410							

1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.

2) Anchors are installed on opposite sides of the wood member, centered in masonry bond beam.

3) Minimum nail penetration shall be 1-3/4" for 10d nails.

4) Grout or concrete compressive strength shall be 2500 psi or greater at 28 days.

5) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.

6) "R" after TA models indicates riveted truss anchors as in TA12R.

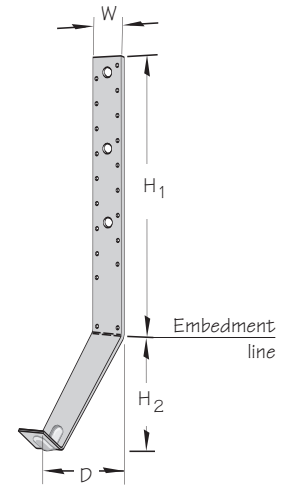
7) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.

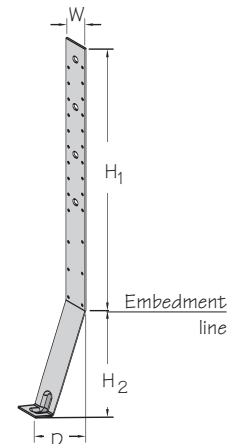
# Foundation Straps - HPAHD, MPAHD, & PAHD42

USP Stock No.	Ref. No.	Steel Gauge	Dimensions				Installation Type	Stemwall Width	Fastener Schedule <sup>2</sup> <sub>4</sub>	Allowable Loads (Lbs.) <sup>14</sup>	
			W	H1	H2	D				Uplift	
										133%	160%
<b>EDGE INSTALLATION - 2500 psi Concrete</b>											
<b>Single Pour - 8" min from corner</b>											
PAHD42	PAHD42	12	2-1/16	16-5/8	6-3/8	5-3/4	Figure 1	6	(18) 16d	3535	3755
								8	(15) 16d	2775	2775
MPAHD	MPAHD	12	2-1/16	24-3/4	9-1/2	4-5/8	Figure 1	6	(22) 16d	3700	3855
								8	(15) 16d	2775	2775
HPAHD22	HPAHD22	10	2-1/16	24-3/4	10	4-1/8	Figure 1	6	(24) 16d	5170	5170
								8	(23) 16d	4540	4540
<b>Double Pour Edge Installation - 8" min from corner</b>											
PAHD42	PAHD42	12	2-1/16	16-5/8	6-3/8	5-3/4	Figure 5	6	(14) 16d	2750	3300
								8	(14) 16d	2750	2775
MPAHD	MPAHD	12	2-1/16	24-3/4	9-1/2	4-5/8	Figure 5	6	(18) 16d	3535	3855
								8	(15) 16d	2775	2775
HPAHD22	HPAHD22	10	2-1/16	24-3/4	10	4-1/8	Figure 5	6	(20) 16d	4445	5170
								8	(20) 16d	4445	4540
HPAHD22-2P	HPAHD22-2P	10	2-1/16	26-1/4	14	6-1/4	Figure 5	6	(24) 16d	5170	5170
								8	(24) 16d	4540	4540
<b>CORNER INSTALLATION - 2500 psi Concrete</b>											
<b>Single Pour Installation - 1/2" min from corner</b>											
PAHD42	PAHD42	12	2-1/16	16-5/8	6-3/8	5-3/4	Figure 2 & 3	6	(18) 16d	2220	2220
								8			
MPAHD	MPAHD	12	2-1/16	24-3/4	9-1/2	4-5/8	Figure 2 & 3	6	(22) 16d	2120	2120
								8			
HPAHD22	HPAHD22	10	2-1/16	24-3/4	10	4-1/8	Figure 2 & 3	6	(12) 16d <sup>3</sup>	2670	3205
								8	(24) 16d	4095	4095
<b>Double Pour Edge Installation - 1/2" min from corner</b>											
PAHD42	PAHD42	12	2-1/16	16-5/8	6-3/8	5-3/4	Figure 4	6	(14) 16d	2220	2220
								8			
MPAHD	MPAHD	12	2-1/16	24-3/4	9-1/2	4-5/8	Figure 4	6	(18) 16d	2120	2120
								8			
HPAHD22	HPAHD22	10	2-1/16	24-3/4	10	4-1/8	Figure 4	6	(20) 16d	4095	4095
								8			
HPAHD22-2P	HPAHD22-2P	10	2-1/16	26-1/4	14	6-1/4	Figure 4	6	(24) 16d	4095	4095
								8			

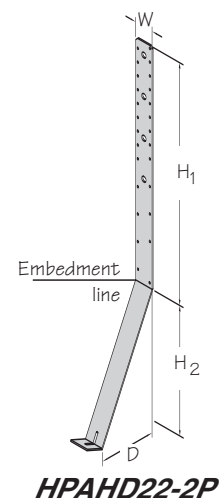
- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
  - 2) Nails require a minimum embedment length of 1-5/8" for 16d nails.  
16d sinkers (0.148" diameter by 3-1/4" long) or 10d common nails may be substituted for the specified 16d common nails provided the listed allowable loads are reduced 15%.
  - 3) Rim joist application; see Figure 3 for corner condition.
  - 4) Products listed without an additional shaded row are not governed by steel stress.
- Values represent loads which do not include a stress increase on the steel calculations.**



**PAHD42**



**HPAHD22**  
**MPAHD similar**



**HPAHD22-2P**

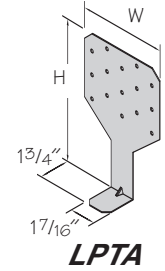
## Customer Service / Technical Assistance

Burnsville, MN Corporate Office

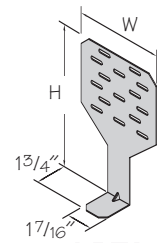
1-800-328-5934

# Lateral Plated Truss Anchors - LPTA series

USP Stock No.	Ref. No.	Steel Gauge	Dimensions		Fastener Schedule <sup>2,3</sup>	Allowable Loads (Lbs.) <sup>3</sup>							
			W	H		DF-L / SP		S-P-F		F1		F2	
						Uplift <sup>1</sup>		Uplift <sup>1</sup>		133%	160%	133%	160%
						133%	160%	133%	160%				
LPTA	LTA1	18	5	8-1/4	(15) 10d x 1-1/2	1535	1535	1535	1535	810	810	1500	1500
					(11) 10d x 1-1/2	1250	1250	1250	1250				
					(13) 10d x 1-1/2	1535	1535	1535	1535	810	810	1500	1500
					(11) 10d x 1-1/2	1250	1250	1250	1250				
					(10) 10d x 1-1/2	1495	1535	1295	1535	810	810	1495	1500
(10) 10d x 1-1/2	1250	1250	1250	1250									
LPTA-S	---	18	5	8-1/4	(15) 10d x 1-1/2	1500	1500	1500	1500	520	520	---	---
					(11) 10d x 1-1/2	1250	1250	1250	1250				



**LPTA**



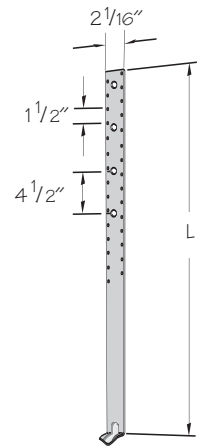
**LPTA-S**

- 1) Uplift loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 3) Products listed without an additional shaded row are not governed by steel stress.

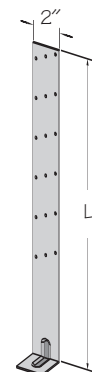
Values represent loads which do not include a stress increase on the steel calculations.

# Purlin Anchors - HPA, PA, PAI, PAT, & PATM25 series

USP Stock No.	Ref. No.	L	Minimum Embedment		Fastener Schedule <sup>7,8</sup>		Allowable Loads (Lbs.) <sup>1,3,8</sup>							
			Concrete	Masonry	Nails <sup>4,5,6</sup>	Bolts	Concrete				Masonry			
							Nails		Bolts <sup>2</sup>		Nails		Bolts <sup>2</sup>	
							133%	160%	133%	160%	133%	160%	133%	160%
<b>MAXIMUM CAPACITY</b>														
PA18	PA18	18-1/2	4	6	(12) 16d	(2) 1/2	2355	2830	1255	1505	2355	2830	1255	1505
					(12) 16d	(2) 1/2	2355	2775	1255	1505	2155	2585	1255	1505
PA23	PA23	23-3/4	4	6	(18) 16d	(3) 1/2	3535	3700	1820	2180	3035	3035	1820	2180
					(15) 16d	(3) 1/2	2775	2775	1820	2180	2475	2775	1820	2180
PA28	PA28	29	4	6	(24) 16d	(4) 1/2	3700	3700	2295	2750	3035	3035	2295	2750
					(15) 16d	(4) 1/2	2775	2775	2295	2750	2775	2775	2295	2750
PA35	PA35	35	4	6	(24) 16d	(5) 1/2	3700	3700	2670	3205	3035	3035	2670	3035
					(15) 16d	(4) 1/2	2775	2775	2670	2775	2775	2775	2670	2775
PAT18	PAT18	18-1/2	4	6	(8) 16d	(2) 1/2	1570	1885	1255	1505	1570	1885	1255	1505
PAT23	PAT23	23-3/4	4	6	(14) 16d	(3) 1/2	2750	3135	1820	2180	2750	3135	1820	2180
					(14) 16d	(3) 1/2	2750	2775	1820	2180	2750	2775	1820	2180
PAT28	PAT28	29	4	6	(20) 16d	(4) 1/2	3135	3135	2295	2750	3135	3135	2295	2750
					(15) 16d	(4) 1/2	2750	2775	2295	2750	2750	2775	2295	2750
PAT35	PAT35	35	4	6	(24) 16d	(4) 1/2	3135	3135	2295	2750	3135	3135	2295	2750
					(15) 16d	(4) 1/2	2775	2775	2295	2750	2775	2775	2295	2750
PATM25	PATM25	28-7/8	6	6	(13) 16d	(3) 1/2	2550	2775	1820	2180	2425	2425	2590	2590
HPA28	HPA28	29	6	8	(24) 16d	(4) 1/2	5335	6055	2475	2975	3035	3035	2475	2975
					(23) 16d	(4) 1/2	4540	4540	2475	2975	3035	3035	2475	2975
HPA35	HPA35	35	6	8	(30) 16d	(4) 1/2	6055	6055	2475	2975	3035	3035	2475	2975
					(23) 16d	(4) 1/2	4540	4540	2475	2975	3035	3035	2475	2975
PAI18	PAI18	18-1/2	4	6	(12) 10d x 1-1/2	---	1900	2280	---	---	1900	2280	---	---
PAI23	PAI23	23-1/2	4	6	(18) 10d x 1-1/2	---	2850	3420	---	---	2850	3385	---	---
					(18) 10d x 1-1/2	---	2850	3385	---	---	2850	3385	---	---
PAI28	PAI28	28-1/2	4	6	(24) 10d x 1-1/2	---	3700	3700	---	---	3385	3385	---	---
					(24) 10d x 1-1/2	---	3385	3385	---	---	3385	3385	---	---
PAI35	PAI35	35-1/2	4	6	(26) 10d x 1-1/2	---	3700	3700	---	---	3385	3385	---	---
					(26) 10d x 1-1/2	---	3385	3385	---	---	3385	3385	---	---



**PA / HPA**



**PAI**

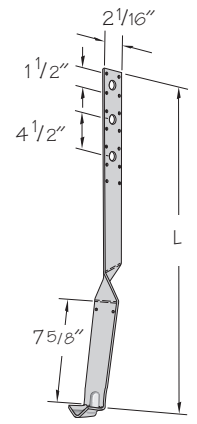
- 1) Allowable Loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) The allowable loads for bolts are based on parallel-to-grain loading with 3" minimum member thickness, except HPA which requires a 3-1/2" thick wood member.
- 3) Allowable loads are based on the use of either nails or bolts; nail and bolt values cannot be combined.
- 4) 16d sinkers or 10d common nails may be substituted for the specified 16d common nails at 0.85 of the table loads.
- 5) Minimum nail penetration is 1-5/8" for 16d nails.
- 6) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 7) For alternate nail schedule and load values consult USP.
- 8) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.

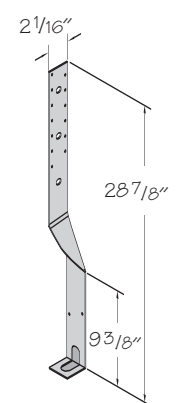
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# Purlin Anchors - HPA, PA, PAI, PAT, & PATM25 series continued

USP Stock No.	Ref. No.	L	Minimum Embedment		Fastener Schedule <sup>7,8</sup>		Allowable Loads (Lbs.) <sup>1,3,8</sup>							
			Concrete	Masonry	Nails <sup>4,5,6</sup>	Bolts	Concrete				Masonry			
							Nails		Bolts <sup>2</sup>		Nails		Bolts <sup>2</sup>	
							133%	160%	133%	160%	133%	160%	133%	160%
<b>2X LEDGER &amp; 3X LEDGER</b>														
PA18	PA18	18-1/2	4	6	(12) 16d	(2) 1/2	2355	2775	1255	1505	2155	2585	1255	1505
PA23	PA23	23-3/4	4	6	(18) 16d	(3) 1/2	3535	3700	1820	2180	3035	3035	1820	2180
					<b>(15) 16d</b>	<b>(3) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>1820</b>	<b>2180</b>	<b>2475</b>	<b>2775</b>	<b>1820</b>	<b>2180</b>
PA28	PA28	29	4	6	(24) 16d	(4) 1/2	3700	3700	2295	2750	3035	3035	2295	2750
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>	<b>2775</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>
PA35	PA35	35	4	6	(24) 16d	(5) 1/2	3700	3700	2670	3205	3035	3035	2670	3035
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>2670</b>	<b>2775</b>	<b>2775</b>	<b>2775</b>	<b>2670</b>	<b>2775</b>
PAT18	PAT18	18-1/2	4	6	(8) 16d	(2) 1/2	1570	1885	1255	1505	---	---	---	---
PAT23	PAT23	23-3/4	4	6	(14) 16d	(3) 1/2	2750	3135	1820	2180	---	---	---	---
					<b>(14) 16d</b>	<b>(3) 1/2</b>	<b>2750</b>	<b>2775</b>	<b>1820</b>	<b>2180</b>	---	---	---	---
PAT28	PAT28	29	4	6	(20) 16d	(4) 1/2	3135	3135	2295	2750	---	---	---	---
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2750</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>	---	---	---	---
PAT35	PAT35	35	4	6	(24) 16d	(4) 1/2	3135	3135	2295	2750	---	---	---	---
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>	---	---	---	---
PATM25	PATM25	28-7/8	6	6	(13) 16d	(3) 1/2	2550	2775	1820	2180	2425	2425	2590	2590
HPA28	HPA28	29	6	8	(24) 16d	(4) 1/2	5335	6055	2475	2975	3035	3035	2475	2975
					<b>(23) 16d</b>	<b>(4) 1/2</b>	<b>4540</b>	<b>4540</b>	<b>2475</b>	<b>2975</b>	<b>3035</b>	<b>3035</b>	<b>2475</b>	<b>2975</b>
HPA35	HPA35	35	6	8	(30) 16d	(4) 1/2	6055	6055	2475	2975	3035	3035	2475	2975
					<b>(23) 16d</b>	<b>(4) 1/2</b>	<b>4540</b>	<b>4540</b>	<b>2475</b>	<b>2975</b>	<b>3035</b>	<b>3035</b>	<b>2475</b>	<b>2975</b>
PAI18	PAI18	18-1/2	4	6	(12) 10d x 1-1/2	---	1900	2280	---	---	1430	1430	---	---
PAI23	PAI23	23-1/2	4	6	(18) 10d x 1-1/2	---	2695	3235	---	---	2380	2855	---	---
PAI28	PAI28	28-1/2	4	6	(24) 10d x 1-1/2	---	3385	3385	---	---	3330	3385	---	---
PAI35	PAI35	35-1/2	4	6	(26) 10d x 1-1/2	---	3700	3700	---	---	3385	3385	---	---
					<b>(26) 10d x 1-1/2</b>	---	<b>3385</b>	<b>3385</b>	---	---	<b>3385</b>	<b>3385</b>	---	---
<b>4X LEDGER</b>														
PA18	PA18	18-1/2	4	6	(12) 16d	(2) 1/2	2355	2775	1255	1505	2155	2585	1255	1505
PA23	PA23	23-3/4	4	6	(18) 16d	(3) 1/2	3535	3700	1820	2180	3035	3035	1820	2180
					<b>(15) 16d</b>	<b>(3) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>1820</b>	<b>2180</b>	<b>2475</b>	<b>2775</b>	<b>1820</b>	<b>2180</b>
PA28	PA28	29	4	6	(24) 16d	(4) 1/2	3700	3700	2295	2750	3035	3035	2295	2750
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>	<b>2775</b>	<b>2775</b>	<b>2295</b>	<b>2750</b>
PA35	PA35	35	4	6	(24) 16d	(5) 1/2	3700	3700	2670	3205	3035	3035	2670	3035
					<b>(15) 16d</b>	<b>(4) 1/2</b>	<b>2775</b>	<b>2775</b>	<b>2670</b>	<b>2775</b>	<b>2775</b>	<b>2775</b>	<b>2670</b>	<b>2775</b>
PATM25	PATM25	28-7/8	6	6	(13) 16d	(3) 1/2	2550	2775	1820	2180	2425	2425	2590	2590
HPA28	HPA28	29	6	8	(24) 16d	(4) 1/2	5335	6055	2475	2975	3035	3035	2475	2975
					<b>(23) 16d</b>	<b>(4) 1/2</b>	<b>4540</b>	<b>4540</b>	<b>2475</b>	<b>2975</b>	<b>3035</b>	<b>3035</b>	<b>2475</b>	<b>2975</b>
HPA35	HPA35	35	6	8	(30) 16d	(4) 1/2	6055	6055	2475	2975	3035	3035	2475	2975
					<b>(23) 16d</b>	<b>(4) 1/2</b>	<b>4540</b>	<b>4540</b>	<b>2475</b>	<b>2975</b>	<b>3035</b>	<b>3035</b>	<b>2475</b>	<b>2975</b>
PAI18	PAI18	18-1/2	4	6	(12) 10d x 1-1/2	---	1745	2095	---	---	1430	1430	---	---
PAI23	PAI23	23-1/2	4	6	(18) 10d x 1-1/2	---	2690	3230	---	---	2375	2850	---	---
					<b>(18) 10d x 1-1/2</b>	---	<b>2380</b>	<b>2855</b>	---	---	<b>2220</b>	<b>2665</b>	---	---
PAI28	PAI28	28-1/2	4	6	(24) 10d x 1-1/2	---	3330	3700	---	---	3015	3385	---	---
					<b>(24) 10d x 1-1/2</b>	---	<b>3330</b>	<b>3385</b>	---	---	<b>3015</b>	<b>3385</b>	---	---
PAI35	PAI35	35-1/2	4	6	(26) 10d x 1-1/2	---	3700	3700	---	---	3385	3385	---	---
					<b>(26) 10d x 1-1/2</b>	---	<b>3385</b>	<b>3385</b>	---	---	<b>3385</b>	<b>3385</b>	---	---



**PAT**



**PATM25**

- 1) Allowable Loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) The allowable loads for bolts are based on parallel-to-grain loading with 3" minimum member thickness, except HPA which requires a 3-1/2" thick wood member.
- 3) Allowable loads are based on the use of either nails or bolts; nail and bolt values cannot be combined.
- 4) 16d sinkers or 10d common nails may be substituted for the specified 16d common nails at 0.85 of the table loads.
- 5) Minimum nail penetration is 1-5/8" for 16d nails.
- 6) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 7) For alternate nail schedule and load values consult USP.
- 8) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.

## Customer Service/ Technical Assistance

Burnsville, MN Corporate Office

1-800-328-5934

# Strap Rafter Ties - RT\_F & RT\_T series

USP Stock No.	Ref. No.	Steel Gauge	Dimensions		Fastener Schedule <sup>2,3</sup>	Allowable Loads (Lbs.) <sup>1,3</sup>	
			W	L		Uplift	
						133%	160%
RT12F	--	14	1	12	(12) 16d	1120	1345
					(12) 16d	1120	1225
RT16F	--	14	1	16	(16) 16d	1495	1525
					(14) 16d	1225	1225
RT18F	--	14	1	18	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT20F	--	14	1	20	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT22F	--	14	1	22	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT24F	--	14	1	24	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT30F	--	14	1	30	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT36F	--	14	1	36	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT48F	--	14	1	48	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT12T	--	14	1	12	(12) 16d	1120	1345
					(12) 16d	1090	1225
RT16T	--	14	1	16	(16) 16d	1495	1525
					(14) 16d	1225	1225
RT18T	--	14	1	18	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT20T	--	14	1	20	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT22T	--	14	1	22	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT24T	--	14	1	24	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT30T	--	14	1	30	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT36T	--	14	1	36	(18) 16d	1525	1525
					(14) 16d	1225	1225
RT48T	--	14	1	48	(18) 16d	1525	1525
					(14) 16d	1225	1225

1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads;

no further increase shall be permitted.

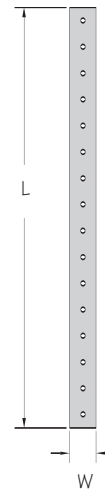
2) Minimum nail penetration shall be 1-5/8" for 16d nails.

3) Products listed without an additional shaded row are not governed by steel stress.

**Values represent loads which do not include a stress increase on the steel calculations.**



**RT16T**



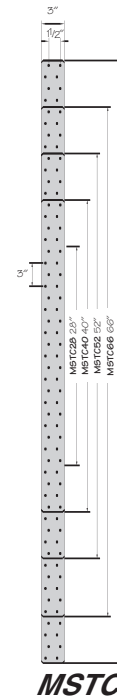
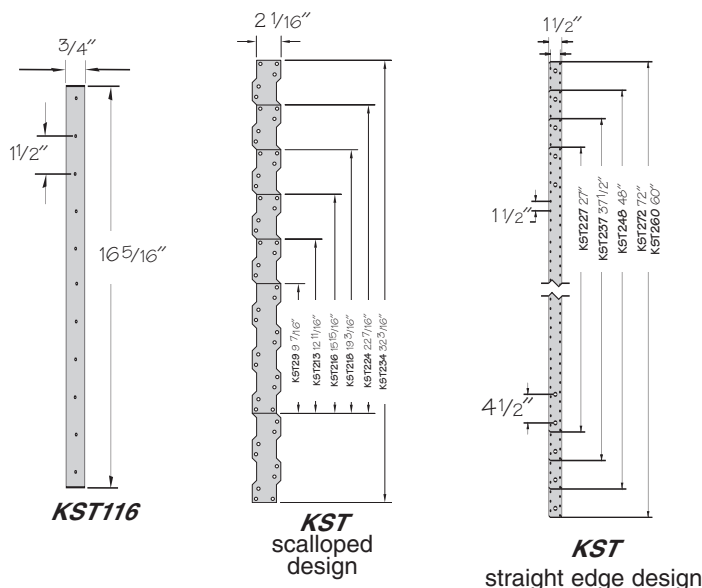
**RT16F**

# Strap Ties - KST & MSTC series

USP Stock No. <sup>6</sup>	Ref. No.	Steel Gauge	Dimensions		Fastener Schedule <sup>3,7</sup>				Allowable Loads (Lbs.) <sup>12,7,8</sup>			
			W	L	Total Qty <sup>4</sup>		Min Qty <sup>5</sup>		Uplift			
					Nails	Bolts	Nails	Bolts	Nails		Bolts	
							133%	160%	133%	160%		
MSTC28	MSTC28	16	3	28-1/4	38	---	(38) 10d	---	2990	3585	---	---
MSTC40	MSTC40	16	3	40-1/4	54	---	(54) 10d	---	4250	5050	---	---
MSTC52	MSTC52	16	3	52-1/4	70	---	(70) 10d	---	5050	5050	---	---
MSTC66	MSTC66	14	3	65-3/4	88	---	(88) 10d	---	6310	6310	---	---
MSTC78	MSTC78	14	3	77-3/4	104	---	(104) 10d	---	6310	6310	---	---
KST116	ST2115	20	3/4	16-5/16	10	---	(8) 16d	---	550	550	---	---
KST227	MST27	12	2-1/16	27	34	4	(34) 16d	(4) 1/2	3330	4000	1820	2185
KST237	MST37	12	2-1/16	37-1/2	48	6	(48) 16d	(6) 1/2	4705	5180	2670	3205
KST248	MST48	12	2-1/16	48	62	8	(62) 16d	(8) 1/2	5180	5180	3435	3740
KST260	MST60	10	2-1/16	60	72	10	(72) 16d	(10) 1/2	6675	6675	4285	4820
KST272	MST72	10	2-1/16	72	72	10	(72) 16d	(10) 1/2	6675	6675	4285	4820
KST29	ST292	20	2-1/16	9-7/16	14	---	(14) 16d	---	1270	1525	---	---
KST213	ST2122	20	2-1/16	12-11/16	18	---	(18) 16d	---	1630	1775	---	---
KST216	ST2215	20	2-1/16	15-15/16	22	---	(22) 16d	---	1775	1775	---	---
KST218	ST6215	16	2-1/16	19-3/16	26	---	(26) 16d	---	2390	2870	---	---
KST224	ST6224	16	2-1/16	22-7/16	30	---	(30) 16d	---	2760	2960	---	---
KST234	ST6236	14	2-1/16	32-3/16	42	---	(42) 16d	---	3650	3650	---	---

- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) Allowable loads are based on the use of either nails or bolts; nail and bolt values cannot be combined.
- 3) Minimum nail embedment shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.
- 4) Total number of nail and/or bolt holes provided in the strap.
- 5) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection.
- 6) For MSTC straps: 16d sinker nails may be substituted for 10d nails with no reduction in load.
- 7) Allowable bolt loads are based on parallel-to-grain loading, minimum of 2-1/2" thick.
- 8) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.



## Clear Span Chart

USP Stock No.	Ref. No.	Clear Span	Fasteners Total <sup>2,3,4</sup>	Allowable Loads (Lbs.) <sup>14</sup>	
				Uplift	
				133%	160%
MSTC28	MSTC28	18	(12) 10d	945	1135
MSTC40	MSTC40	16	(16) 10d	1260	1510
		18	(28) 10d	2205	2645
MSTC52	MSTC52	16	(32) 10d	2515	3020
		18	(44) 10d	3460	3790
MSTC66	MSTC66	16	(48) 10d	3775	3790
		18	(64) 10d	5205	6245
		16	(58) 10d	4715	4735
MSTC78	MSTC78	16	(68) 10d	5530	6310
		18	(80) 10d	6310	6310
		16	(58) 10d	4715	4735
KST237	MST37	18	(24) 16d	2350	2820
		16	(26) 16d	2550	3060
KST248	MST48	18	(38) 16d	3725	4470
		16	(38) 16d	3725	3885
KST260	MST60	18	(40) 16d	3920	4705
		16	(40) 16d	3885	3885
KST272	MST72	18	(54) 16d	5200	5200
		16	(46) 16d	4845	5005
		18	(56) 16d	5200	5200
KST272	MST72	16	(48) 16d	5005	5005
		18	(68) 16d	5200	5200
		16	(46) 16d	4845	5005
KST272	MST72	18	(68) 16d	5200	5200
		16	(48) 16d	5005	5005

- 1) Allowable loads have been increased 33-1/3% or 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.
- 3) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 4) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.

## Customer Service/ Technical Assistance

Burnsville, MN Corporate Office  
1-800-328-5934

# Strap Ties - KSTI & LSTI series

USP Stock No. <sup>6</sup>	Ref. No.	Steel Gauge	Dimensions		Fastener Schedule <sup>2,5,6</sup>		Allowable Loads (Lbs.) <sup>1,6</sup>	
			W	L	Total Qty <sup>3</sup>	Min Qty <sup>4</sup>	Uplift	
					Nails	Nails	133%	160%
LSTI49	LSTI49	18	3-3/4	49	32	(32) 10d x 1-1/2	2430	2920
						<b>(32) 10d x 1-1/2</b>	<b>2390</b>	<b>2865</b>
						(32) 10d	2475	2970
						<b>(32) 10d</b>	<b>2430</b>	<b>2960</b>
LSTI73	LSTI73	18	3-3/4	73	48	(48) 10d x 1-1/2	3650	4380
						<b>(48) 10d x 1-1/2</b>	<b>3550</b>	<b>3550</b>
						(48) 10d	3710	4455
						<b>(40) 10d</b>	<b>3040</b>	<b>3550</b>
KSTI223	-- --	18	2-1/16	23	23	(22) 10d x 1-1/2	1645	1970
						<b>(22) 10d x 1-1/2</b>	<b>1645</b>	<b>1765</b>
KSTI226	MSTI26	12	2-1/16	26	26	(26) 10d x 1-1/2	2065	2475
KSTI236	MSTI36	12	2-1/16	36	36	(36) 10d x 1-1/2	2855	3425
KSTI248	MSTI48	12	2-1/16	48	48	(48) 10d x 1-1/2	3810	4570
						<b>(48) 10d x 1-1/2</b>	<b>3810</b>	<b>3900</b>
KSTI260	MSTI60	12	2-1/16	60	60	(60) 10d x 1-1/2	4760	5200
						<b>(60) 10d x 1-1/2</b>	<b>3900</b>	<b>3900</b>
KSTI272	MSTI72	12	2-1/16	72	72	(66) 10d x 1-1/2	5200	5200
						<b>(60) 10d x 1-1/2</b>	<b>3900</b>	<b>3900</b>

- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) Minimum nail embedment shall be 1-1/2" for 10d nails.
- 3) Total number of nail and/or bolt holes provided in the strap.
- 4) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection.
- 5) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 6) Products listed without an additional shaded row are not governed by steel stress.

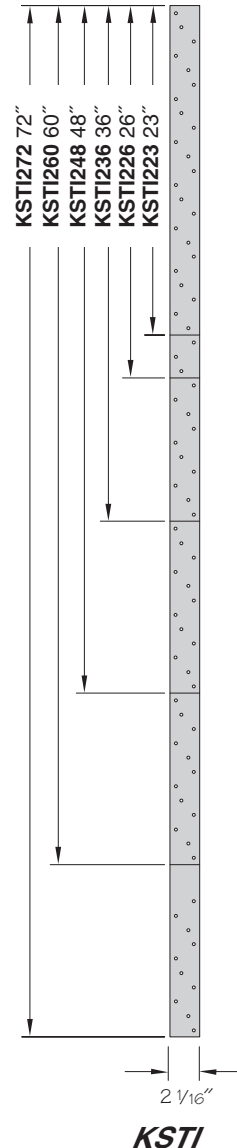
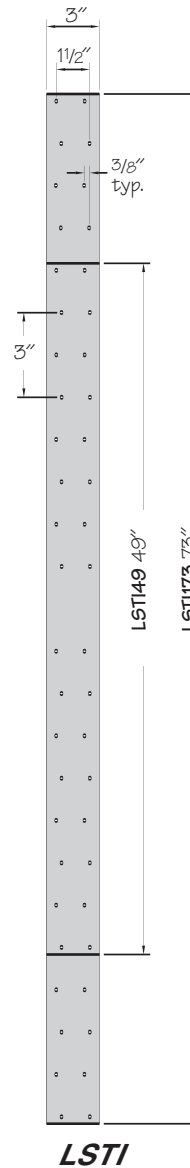
Values represent loads which do not include a stress increase on the steel calculations.

## Clear Span Chart

USP Stock No.	Ref. No.	Clear Span	Fasteners Total <sup>2,3</sup>	Allowable Loads (Lbs.) <sup>1,3</sup>	
				Uplift	
				133%	160%
KSTI236	MSTI36	18	(18) 10d x 1-1/2	1430	1715
		16	(20) 10d x 1-1/2	1585	1905
KSTI248	MSTI48	18	(30) 10d x 1-1/2	2380	2855
		16	(32) 10d x 1-1/2	2540	3045
KSTI260	MSTI60	18	(42) 10d x 1-1/2	3330	3900
		16	(44) 10d x 1-1/2	3490	3900
KSTI272	MSTI72	18	(54) 10d x 1-1/2	4285	5200
			<b>(48) 10d x 1-1/2</b>	<b>3810</b>	<b>3900</b>
		16	(56) 10d x 1-1/2	4445	5200
			<b>(50) 10d x 1-1/2</b>	<b>3900</b>	<b>3900</b>

- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 3) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.

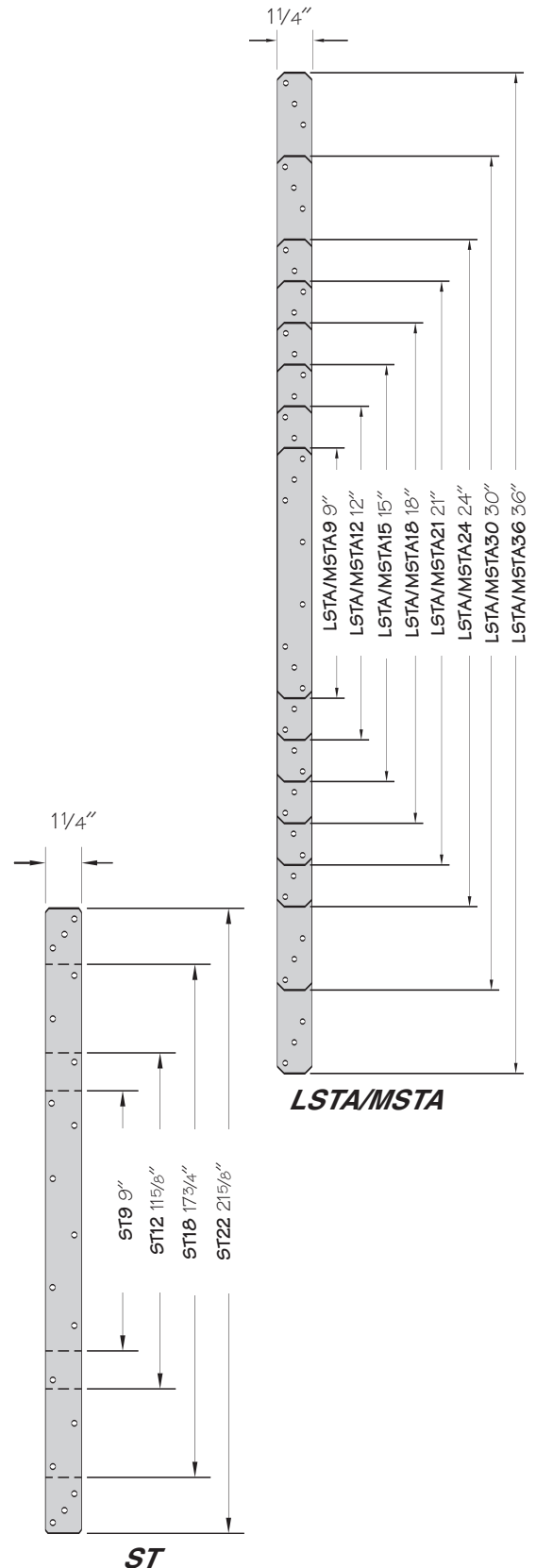


# Strap Ties - LSTA, MSTA, & ST series

USP Stock No.	Ref. No.	Steel Gauge	Dimensions		Total Qty <sup>3</sup>	Fastener Schedule <sup>2,5,6</sup>		Allowable Loads (Lbs.) <sup>1,6</sup>	
			W	L		Min Qty <sup>4</sup>	Uplift		
							133%	160%	
LSTA9	LSTA9	20	1-1/4	9	8	(8) 10d x 1-1/2 (8) 10d	610 615	730 735	
LSTA12	LSTA12	20	1-1/4	12	10	(10) 10d x 1-1/2 (10) 10d	760 765	910 920	
LSTA15	LSTA15	20	1-1/4	15	12	(12) 10d x 1-1/2 <b>(12) 10d x 1-1/2</b> (12) 10d	910 <b>910</b> 920	1095 <b>980</b> 1105	
LSTA18	LSTA18	20	1-1/4	18	14	(14) 10d x 1-1/2 <b>(14) 10d x 1-1/2</b> (14) 10d	1065 <b>980</b> 1075	1275 <b>980</b> 1290	
LSTA21	LSTA21	20	1-1/4	21	16	(16) 10d x 1-1/2 <b>(16) 10d x 1-1/2</b> (16) 10d (14) 10d	1215 <b>980</b> 1225 <b>980</b>	1305 <b>980</b> 1305 <b>980</b>	
LSTA24	LSTA24	20	1-1/4	24	18	(18) 10d x 1-1/2 <b>(16) 10d x 1-1/2</b> (18) 10d (14) 10d	1305 <b>980</b> 1305 <b>980</b>	1305 <b>980</b> 1305 <b>980</b>	
LSTA30	LSTA30	18	1-1/4	30	22	(22) 10d x 1-1/2 <b>(22) 10d x 1-1/2</b> (22) 10d (18) 10d	1670 <b>1305</b> 1700 <b>1305</b>	1740 <b>1305</b> 1740 <b>1305</b>	
LSTA36	LSTA36	18	1-1/4	36	26	(24) 10d x 1-1/2 <b>(22) 10d x 1-1/2</b> (24) 10d (18) 10d	1740 <b>1305</b> 1740 <b>1305</b>	1740 <b>1305</b> 1740 <b>1305</b>	
MSTA9	MSTA9	18	1-1/4	9	8	(8) 10d x 1-1/2 (8) 10d	610 620	730 740	
MSTA12	MSTA12	18	1-1/4	12	10	(10) 10d x 1-1/2 (10) 10d	760 775	910 930	
MSTA15	MSTA15	18	1-1/4	15	12	(12) 10d x 1-1/2 (12) 10d	910 930	1095 1115	
MSTA18	MSTA18	18	1-1/4	18	14	(14) 10d x 1-1/2 (14) 10d	1065 1085	1275 1300	
MSTA21	MSTA21	18	1-1/4	21	16	(16) 10d x 1-1/2 <b>(16) 10d x 1-1/2</b> (16) 10d	1215 <b>1215</b> 1235	1305 <b>1305</b> 1485	
MSTA24	MSTA24	18	1-1/4	24	18	(18) 10d x 1-1/2 <b>(18) 10d x 1-1/2</b> (18) 10d (18) 10d	1370 <b>1305</b> 1390 <b>1305</b>	1640 <b>1305</b> 1670 <b>1305</b>	
MSTA30	MSTA30	16	1-1/4	30	22	(22) 10d x 1-1/2 <b>(22) 10d x 1-1/2</b> (22) 10d (22) 10d	1685 <b>1635</b> 1730 <b>1635</b>	2025 <b>1635</b> 2075 <b>1635</b>	
MSTA36	MSTA36	16	1-1/4	36	26	(26) 10d x 1-1/2 <b>(26) 10d x 1-1/2</b> (26) 10d (22) 10d	1995 <b>1635</b> 2045 <b>1635</b>	2180 <b>1635</b> 2180 <b>1635</b>	
MSTA48	--	16	1-1/4	48	32	(30) 10d x 1-1/2 <b>(26) 10d x 1-1/2</b> (28) 10d (22) 10d	2180 <b>1635</b> 2180 <b>1635</b>	2180 <b>1635</b> 2180 <b>1635</b>	
ST9	ST9	16	1-1/4	9	8	(8) 16d	735	885	
ST12	ST12	16	1-1/4	11-5/8	10	(10) 16d	920	1105	
ST18	ST18	16	1-1/4	17-3/4	14	(14) 16d <b>(14) 16d</b>	1290 <b>1165</b>	1545 <b>1165</b>	
ST22	ST22	16	1-1/4	21-5/8	18	(18) 16d <b>(14) 16d</b>	1655 <b>1480</b>	1690 <b>1480</b>	

- 1) Allowable loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) Minimum nail embedment shall be 1-5/8" for 16d nails and 1-1/2" for 10d nails.
- 3) Total number of nail and/or bolt holes provided in the strap.
- 4) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection.
- 5) 10d x 1-1/2 nails are 9 gauge (0.148" diameter) by 1-1/2" long.
- 6) Products listed without an additional shaded row are not governed by steel stress.

Values represent loads which do not include a stress increase on the steel calculations.



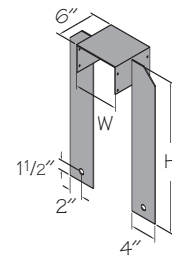
## Customer Service / Technical Assistance

Burnsville, MN Corporate Office

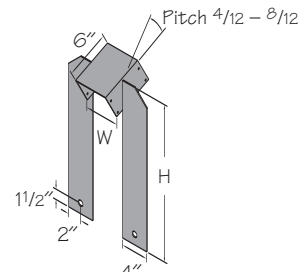
1-800-328-5934

# Uplift Girder Ties - UGTS & USC series

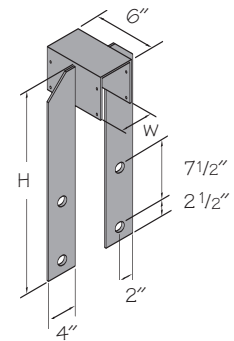
Description	USP Stock No.	Ref. No.	Steel Gauge	Dimensions			Fastener Schedule <sup>2,3,4,6</sup>		Allowable Loads (Lbs.) <sup>6</sup>	
				W	H	D	Rafter/Truss <sup>5</sup>	Concrete/Masonry Wall	Uplift <sup>1</sup>	
									133%	160%
3 Ply Flat	UGTS3F	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	USC3F	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
4 Ply Flat	UGTS4F	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC4F	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
4/12 pitch	UGTS43	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	UGTS44	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC43	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
	(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>						
	USC44	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
(8) 16d							(4) 3/4	12340	12340	
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
5/12 pitch	UGTS53	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	UGTS54	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC53	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
	(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>						
	USC54	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
(8) 16d							(4) 3/4	12340	12340	
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
6/12 pitch	UGTS63	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	UGTS64	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC63	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
	(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>						
	USC64	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
(8) 16d							(4) 3/4	12340	12340	
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
7/12 pitch	UGTS73	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	UGTS74	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC73	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
	(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>						
	USC74	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
(8) 16d							(4) 3/4	12340	12340	
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							
8/12 pitch	UGTS83	--	10	4-3/4	23	6	(8) 16d	(2) 3/4	6170	6170
	UGTS84	--	10	6-1/2	23	6	(8) 16d	(2) 3/4	6170	6170
	USC83	--	10	4-3/4	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
							(8) 16d	(4) 3/4	12340	12340
	(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>						
	USC84	--	10	6-1/2	30-1/2	6	(8) 16d	(2) 3/4	6170	6170
(8) 16d							(4) 3/4	12340	12340	
(8) 16d	(4) 3/4	<b>11150</b>	<b>11150</b>							



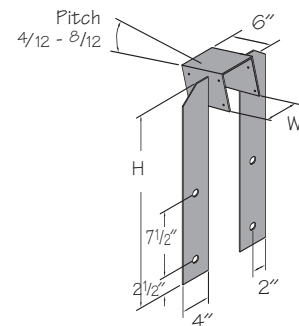
**UGTS4F**



**UGTS63**



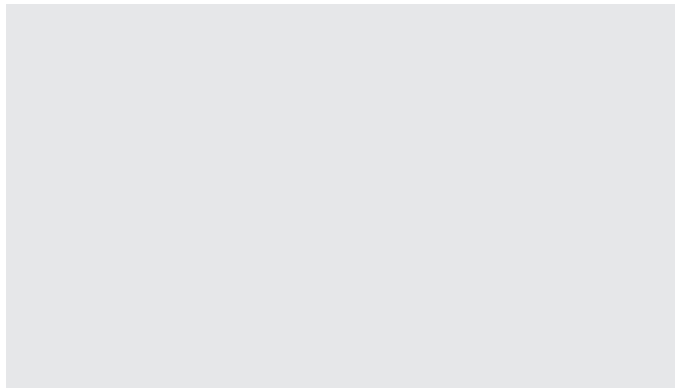
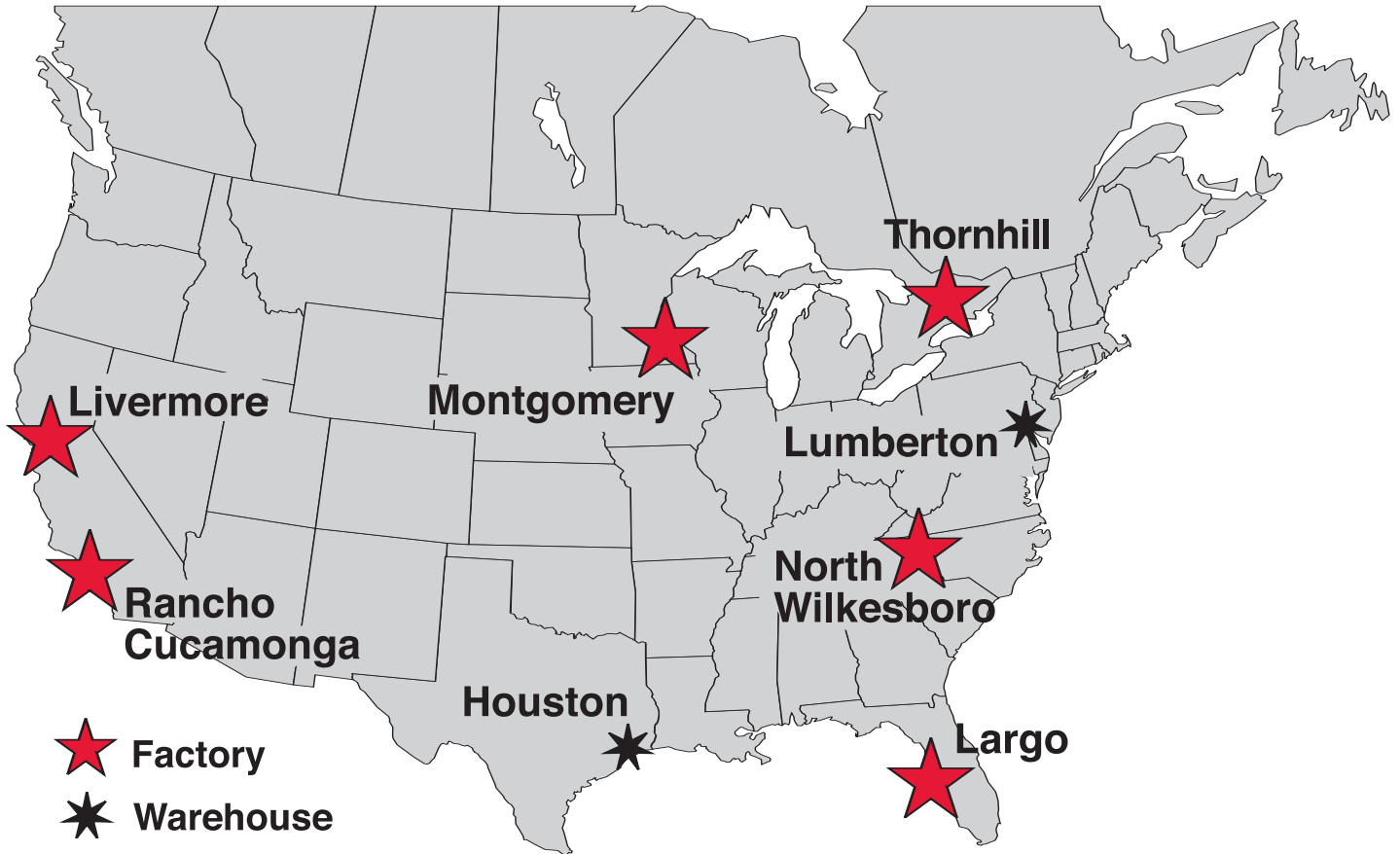
**USC3F**



**USC53**

- 1) Uplift loads have been increased 33-1/3% or 60% for wind or seismic loads; no further increase shall be permitted.
- 2) Use Powers Fasteners 3/4" - 6" Wedge Bolts; or equal, installed in accordance with manufacturer's specifications.
- 3) Fasteners shall be installed to fully grouted and reinforced concrete masonry or reinforced concrete (f<sub>c</sub> = 2000 psi at 28 days).
- 4) Bolts shall conform to ASTM A 307 or better.
- 5) Minimum nail embedment shall be 1-5/8" for 16d nails.
- 6) Products listed without an additional shaded row are not governed by steel stress.

**Values represent loads which do not include a stress increase on the steel calculations.**



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