

# TITAN PLATE T TIMBER

## PLATE FOR SHEAR LOADS



### SERVICE CONDITION

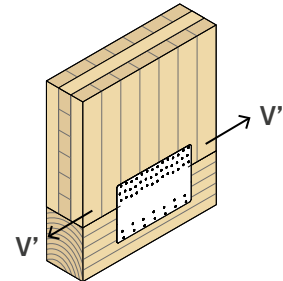


### MATERIAL

**DX51D**  
**Z275**

DX51D + Z275 carbon steel  
(Similar to 16-gauge ASTM A653 Grade 40)

### EXTERNAL LOADS



### TIMBER-TO-TIMBER

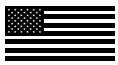
These plates are ideal for the flat connection of the base plate to load-bearing timber panels.

### CONTINUOUS CONNECTION

The 3.9 ft long TTP1200 version allows the creation of long connections in panel floors, replacing the classic spline joint connection.

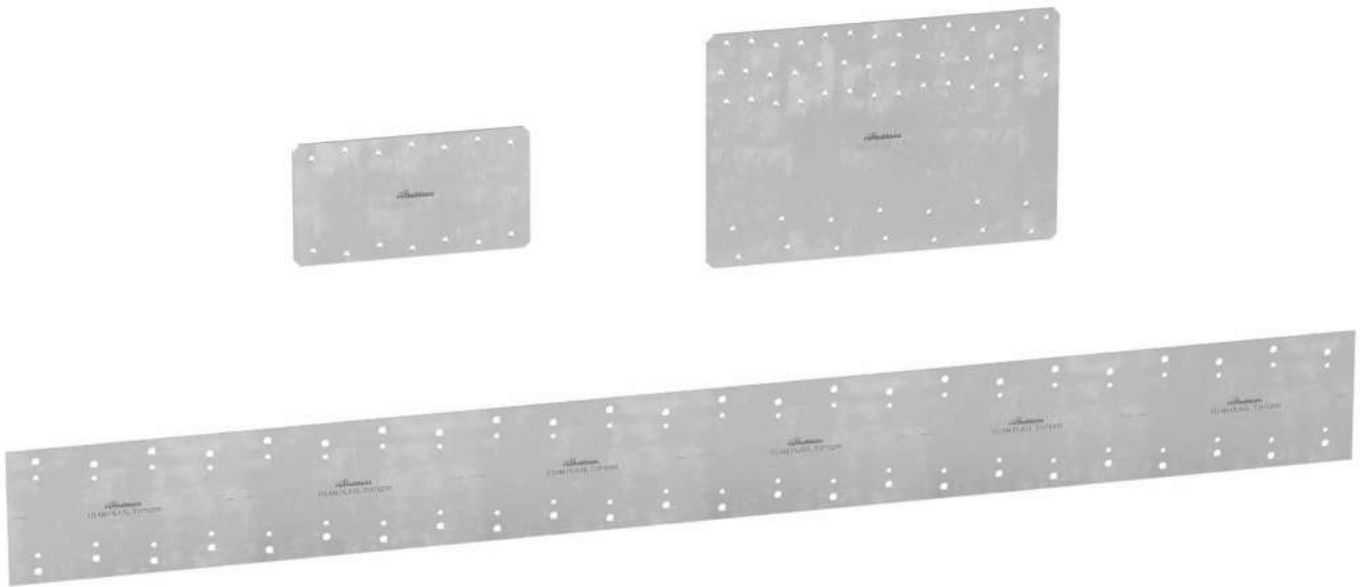
### CALCULATED AND CERTIFIED

CE marking according to European standard EN 14545. Available in three versions. TTP300 and TTP1200 versions ideal for CLT.



### USA DESIGN VALUES

CANADA, EU and more design values available online.



### FIELDS OF USE

Shear joints for timber walls or floors.  
Timber-to-timber configuration.

Can be applied to:

- solid timber and glulam
- timber frame
- CLT and LVL panels



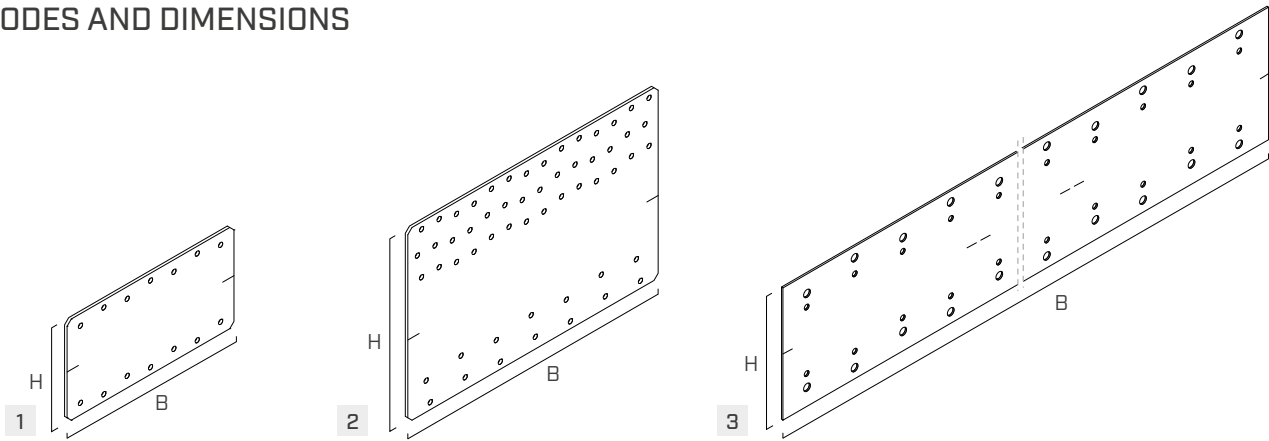
## SPLINE STRAP

Ideal for the construction of floors with diaphragm behaviour, restoring shear continuity between the different panels that make up the floor.

## FASTENING PATTERNS

The TTP300, with asymmetrical nailing, allows fastening on both beams and CLT with optimised fastening patterns.

## CODES AND DIMENSIONS

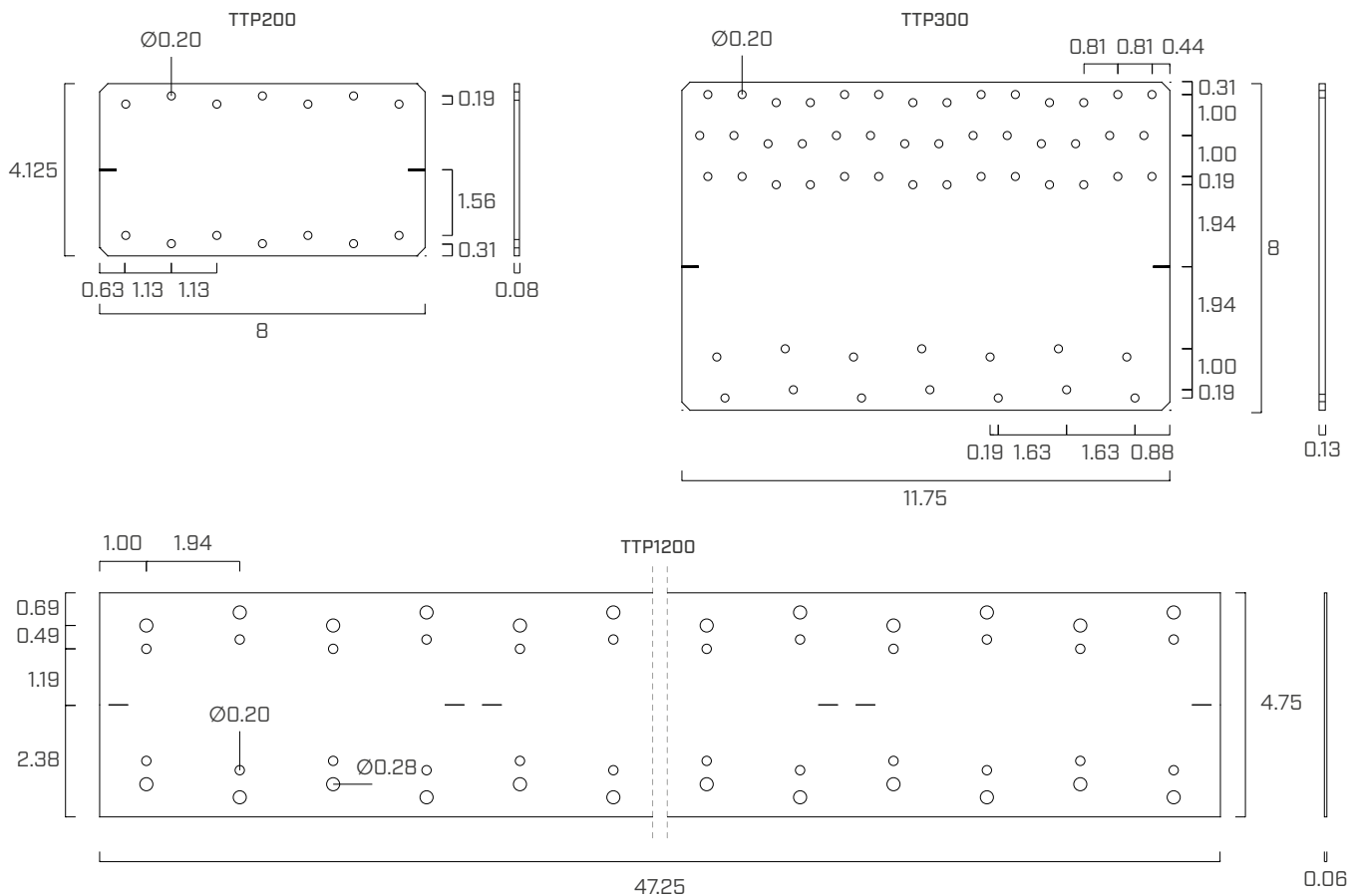


| CODE      | B<br>[in] | H<br>[in] | s<br>[in] | n <sub>V1</sub> Ø0.20<br>[pcs] | n <sub>V2</sub> Ø0.20<br>[pcs] | n <sub>V1</sub> Ø0.28<br>[pcs] | n <sub>V2</sub> Ø0.28<br>[pcs] |  | pcs |
|-----------|-----------|-----------|-----------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------------------------------------------------------------|-----|
| 1 TTP200  | 8         | 4 1/8     | 0.10      | 7                              | 7                              | -                              | -                              | ●                                                                                   | 10  |
| 2 TTP300  | 11 3/4    | 8         | 0.12      | 42                             | 14                             | -                              | -                              | ●                                                                                   | 5   |
| 3 TTP1200 | 47 1/4    | 4 3/4     | 0.06      | 48                             | 48                             | 48                             | 48                             | ●                                                                                   | 5   |

## FASTENERS

| type             | description                          |                                                                                      | d<br>[in]   | support<br> |
|------------------|--------------------------------------|--------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------|
| LBA              | high bond nail                       |   | 0.16        |             |
| LBS              | round head screw                     |  | 0.20 - 0.28 |            |
| LBS HARDWOOD EVO | C4 EVO round head screw on hardwoods |  | 0.28        |            |

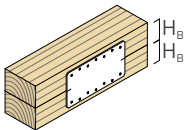
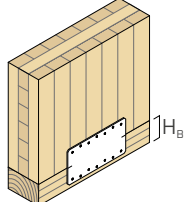
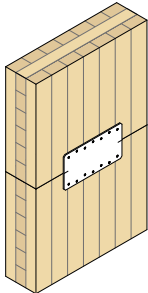
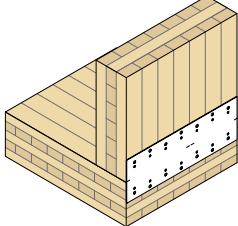
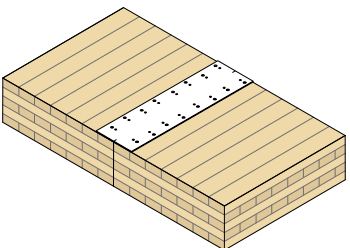
## GEOMETRY



## ■ INSTALLATION

TITAN PLATE T plates can be used on both CLT and solid timber/glulam elements and must be positioned with the assembly notches at the timber-to-timber interface.

Possible fastening configurations are shown below:

| configuration                                                                       |                                          | fasteners                   | TTP200 | TTP300 | TTP1200 |
|-------------------------------------------------------------------------------------|------------------------------------------|-----------------------------|--------|--------|---------|
|    | timber-to-timber                         | LBA Ø0.16                   | ●      | ●      | -       |
|                                                                                     |                                          | LBS Ø0.20                   | -      | ●      | -       |
|    | CLT - timber                             | LBA Ø0.16                   | ●      | ●      | -       |
|                                                                                     |                                          | LBS Ø0.20                   | -      | ●      | -       |
|   | CLT - CLT<br>lateral face - lateral face | LBA Ø0.16                   | ●      | ●      | -       |
|                                                                                     |                                          | LBS Ø0.20                   | ●      | ●      | ●       |
|                                                                                     |                                          | LBS Ø0.28<br>LBSH EVO Ø0.28 | -      | -      | ●       |
|  | CLT - CLT<br>lateral face - narrow face  | LBA Ø0.16                   | -      | -      | -       |
|                                                                                     |                                          | LBS Ø0.20                   | -      | -      | -       |
|                                                                                     |                                          | LBS Ø0.28<br>LBSH EVO Ø0.28 | -      | -      | ●       |
|  | CLT - CLT<br>lateral face - lateral face | LBA Ø0.16                   | ●      | ●      | ●       |
|                                                                                     |                                          | LBS Ø0.20                   | ●      | ●      | ●       |
|                                                                                     |                                          | LBS Ø0.28<br>LBSH EVO Ø0.28 | -      | -      | ●       |

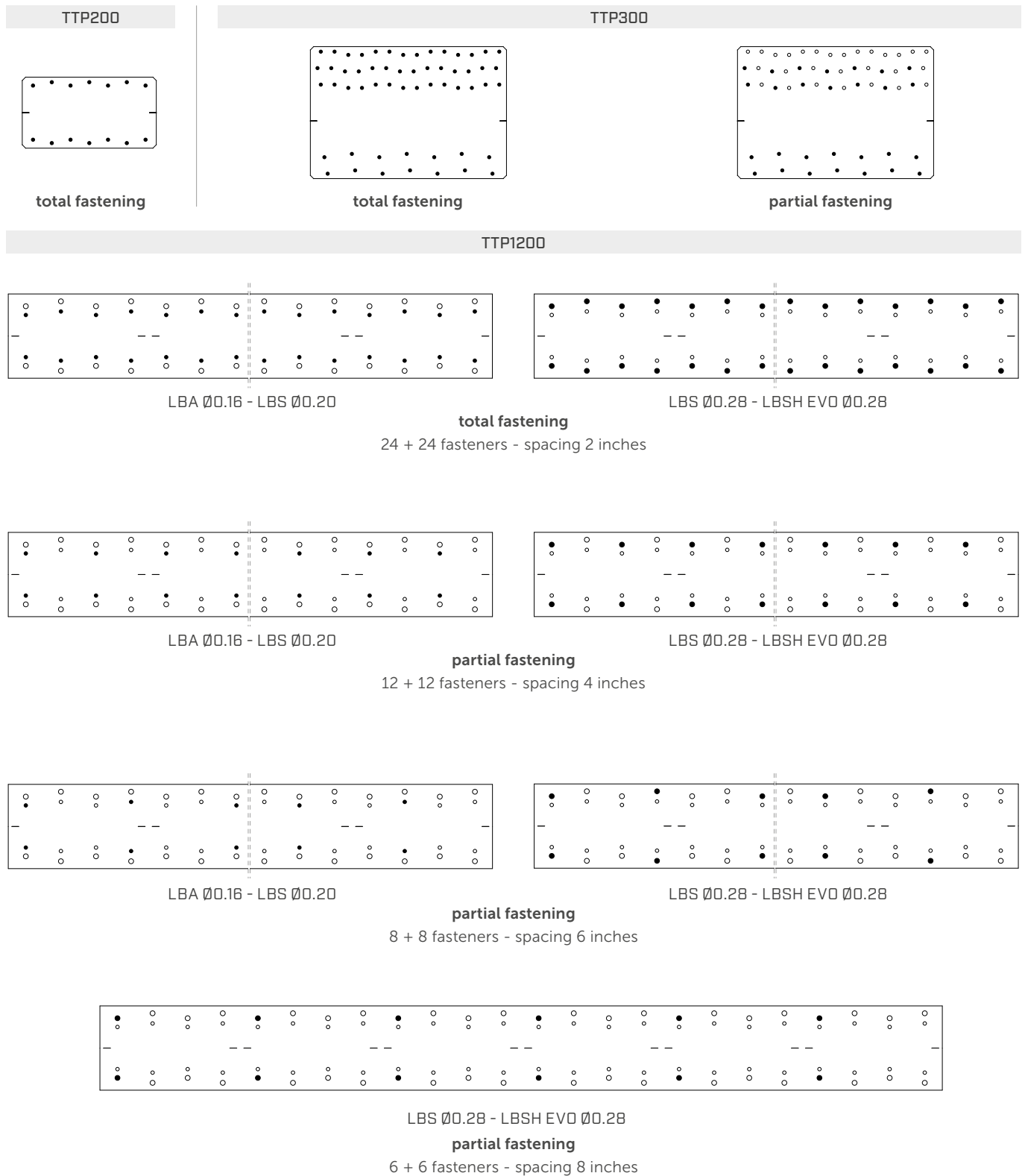
### MINIMUM HEIGHT OF H<sub>B</sub> ELEMENTS

In the case of fastening on beam/platform beam, the relative minimum H<sub>B</sub> height of the elements is shown in the table with reference to the installation diagrams.

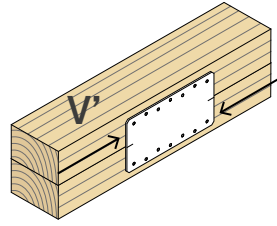
| configuration    | fasteners | H <sub>B min</sub> [in] |                   |                 |
|------------------|-----------|-------------------------|-------------------|-----------------|
|                  |           | TTP200<br>total         | TTP300<br>partial | TTP300<br>total |
| timber-to-timber | LBA Ø0.16 | 2 15/16                 | 4 3/8             | -               |
|                  | LBS Ø0.20 | -                       | 5 1/8             | -               |
| CLT - timber     | LBA Ø0.16 | 2 15/16                 | 4 3/8             | 4               |
|                  | LBS Ø0.20 | -                       | 5 1/8             | 4 1/8           |

The H<sub>B</sub> height is determined taking into account the minimum distances for solid timber or glulam consistent with EN 1995:2014 considering a timber density  $\rho_k \leq 420 \text{ kg/m}^3$ .

## FASTENING PATTERNS



## STRUCTURAL VALUES | TTP200 | V'

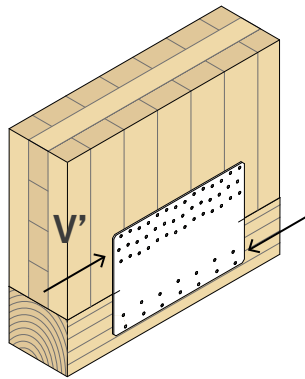


### ASD VALUES

| configuration   | fastening holes |               |                          |                          | V'[ASD] <sup>(1)(2)</sup><br>Allowable Shear Force |                 |                 |                 |
|-----------------|-----------------|---------------|--------------------------|--------------------------|----------------------------------------------------|-----------------|-----------------|-----------------|
|                 | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35<br>[lbf]                                    | G=0.42<br>[lbf] | G=0.49<br>[lbf] | G=0.55<br>[lbf] |
| total fastening | LBA             | Ø0.16 x 2 3/8 | 7                        | 7                        | 556                                                | 646             | 732             | 802             |

Load duration of CD = 1.6

## STRUCTURAL VALUES | TTP300 | V'

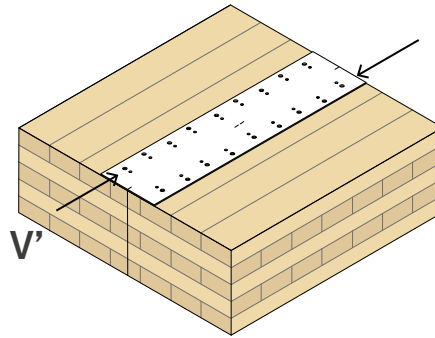


### ASD VALUES

| configuration     | fastening holes |               |                          |                          | V'[ASD] <sup>(1)(2)</sup><br>Allowable Shear Force |                 |                 |                 |
|-------------------|-----------------|---------------|--------------------------|--------------------------|----------------------------------------------------|-----------------|-----------------|-----------------|
|                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35<br>[lbf]                                    | G=0.42<br>[lbf] | G=0.49<br>[lbf] | G=0.55<br>[lbf] |
| total fastening   | LBA             | Ø0.16 x 2 3/8 | 42                       | 14                       | 2102                                               | 2440            | 2759            | 3019            |
|                   | LBS             | Ø0.20 x 2 3/8 | 42                       | 14                       | 3076                                               | 3572            | 4041            | 4423            |
| partial fastening | LBA             | Ø0.16 x 2 3/8 | 14                       | 14                       | 1143                                               | 1327            | 1501            | 1642            |
|                   | LBS             | Ø0.20 x 2 3/8 | 14                       | 14                       | 1673                                               | 1815            | 1949            | 2059            |

Load duration of CD = 1.6

CLT - CLT  
lateral face - lateral face



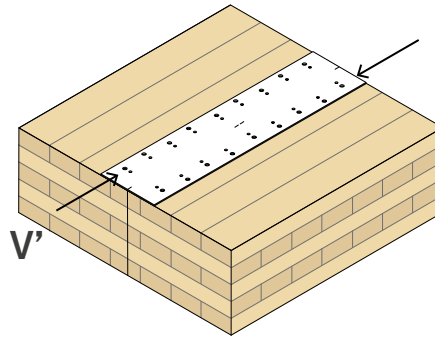
#### ASD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V'[ASD] <sup>(1)(2)(3)</sup><br>Allowable Shear Force for Seismic |      |             |      |             |      |             |      |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|-------------------------------------------------------------------|------|-------------|------|-------------|------|-------------|------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                            |      | G=0.42      |      | G=0.49      |      | G=0.55      |      |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>3820</b>                                                       | 970  | <b>4463</b> | 1134 | <b>5079</b> | 1290 | <b>5588</b> | 1419 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>2964</b>                                                       | 753  | <b>3464</b> | 880  | <b>3943</b> | 1002 | <b>4339</b> | 1102 |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>5086</b>                                                       | 1292 | <b>5960</b> | 1514 | <b>6802</b> | 1728 | <b>7501</b> | 1905 |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>1910</b>                                                       | 485  | <b>2231</b> | 567  | <b>2540</b> | 645  | <b>2794</b> | 710  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>1482</b>                                                       | 376  | <b>1732</b> | 440  | <b>1972</b> | 501  | <b>2170</b> | 551  |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>2543</b>                                                       | 646  | <b>2980</b> | 757  | <b>3401</b> | 864  | <b>3750</b> | 953  |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>1273</b>                                                       | 323  | <b>1488</b> | 378  | <b>1693</b> | 430  | <b>1863</b> | 473  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>988</b>                                                        | 251  | <b>1155</b> | 293  | <b>1314</b> | 334  | <b>1446</b> | 367  |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>1695</b>                                                       | 431  | <b>1987</b> | 505  | <b>2267</b> | 576  | <b>2500</b> | 635  |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>1272</b>                                                       | 323  | <b>1490</b> | 378  | <b>1701</b> | 432  | <b>1875</b> | 476  |

#### LRFD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V' [LRFD] <sup>(1)(2)(3)</sup><br>Factored Shear Force for Seismic |      |             |      |             |      |              |      |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|--------------------------------------------------------------------|------|-------------|------|-------------|------|--------------|------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                             |      | G=0.42      |      | G=0.49      |      | G=0.55       |      |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>5347</b>                                                        | 1358 | <b>6248</b> | 1587 | <b>7111</b> | 1806 | <b>7823</b>  | 1987 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>4149</b>                                                        | 1054 | <b>4849</b> | 1232 | <b>5521</b> | 1402 | <b>6075</b>  | 1543 |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>7121</b>                                                        | 1809 | <b>8344</b> | 2119 | <b>9523</b> | 2419 | <b>10501</b> | 2667 |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>2674</b>                                                        | 679  | <b>3124</b> | 793  | <b>3555</b> | 903  | <b>3911</b>  | 993  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>2075</b>                                                        | 527  | <b>2425</b> | 616  | <b>2760</b> | 701  | <b>3037</b>  | 772  |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>3560</b>                                                        | 904  | <b>4172</b> | 1060 | <b>4761</b> | 1209 | <b>5251</b>  | 1334 |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>1782</b>                                                        | 453  | <b>2083</b> | 529  | <b>2370</b> | 602  | <b>2608</b>  | 662  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>1383</b>                                                        | 351  | <b>1616</b> | 411  | <b>1840</b> | 467  | <b>2025</b>  | 514  |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>2374</b>                                                        | 603  | <b>2781</b> | 706  | <b>3174</b> | 806  | <b>3500</b>  | 889  |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>1780</b>                                                        | 452  | <b>2086</b> | 530  | <b>2381</b> | 605  | <b>2625</b>  | 667  |

CLT - CLT  
lateral face - lateral face



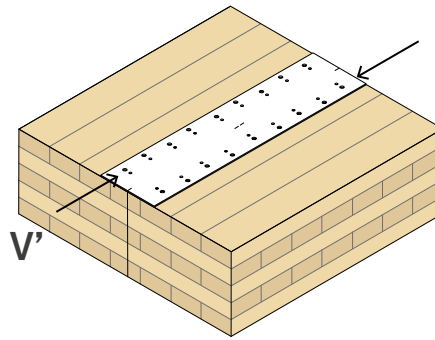
#### ASD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V' [ASD] <sup>(1)(2)(3)</sup><br>Allowable Shear Force for Wind |      |             |      |             |      |              |      |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|-----------------------------------------------------------------|------|-------------|------|-------------|------|--------------|------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                          |      | G=0.42      |      | G=0.49      |      | G=0.55       |      |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>5347</b>                                                     | 1358 | <b>6248</b> | 1587 | <b>7111</b> | 1806 | <b>7823</b>  | 1987 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>4149</b>                                                     | 1054 | <b>4849</b> | 1232 | <b>5521</b> | 1402 | <b>6075</b>  | 1543 |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>7121</b>                                                     | 1809 | <b>8344</b> | 2119 | <b>9523</b> | 2419 | <b>10501</b> | 2667 |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>2674</b>                                                     | 679  | <b>3124</b> | 793  | <b>3555</b> | 903  | <b>3911</b>  | 993  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>2075</b>                                                     | 527  | <b>2425</b> | 616  | <b>2760</b> | 701  | <b>3037</b>  | 772  |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>3560</b>                                                     | 904  | <b>4172</b> | 1060 | <b>4761</b> | 1209 | <b>5251</b>  | 1334 |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>1782</b>                                                     | 453  | <b>2083</b> | 529  | <b>2370</b> | 602  | <b>2608</b>  | 662  |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>1383</b>                                                     | 351  | <b>1616</b> | 411  | <b>1840</b> | 467  | <b>2025</b>  | 514  |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>2374</b>                                                     | 603  | <b>2781</b> | 706  | <b>3174</b> | 806  | <b>3500</b>  | 889  |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>1780</b>                                                     | 452  | <b>2086</b> | 530  | <b>2381</b> | 605  | <b>2625</b>  | 667  |

#### LRFD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V' [LRFD] <sup>(1)(2)(3)</sup><br>Factored Shear Force for Wind |      |              |      |              |      |              |      |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|-----------------------------------------------------------------|------|--------------|------|--------------|------|--------------|------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                          |      | G=0.42       |      | G=0.49       |      | G=0.55       |      |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>8556</b>                                                     | 2173 | <b>9996</b>  | 2539 | <b>11377</b> | 2890 | <b>12516</b> | 3179 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>6639</b>                                                     | 1686 | <b>7759</b>  | 1971 | <b>8833</b>  | 2244 | <b>9720</b>  | 2469 |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>11393</b>                                                    | 2894 | <b>13350</b> | 3391 | <b>15237</b> | 3870 | <b>16802</b> | 4268 |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>4278</b>                                                     | 1087 | <b>4998</b>  | 1270 | <b>5689</b>  | 1445 | <b>6258</b>  | 1590 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>3320</b>                                                     | 843  | <b>3880</b>  | 985  | <b>4417</b>  | 1122 | <b>4860</b>  | 1234 |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>5696</b>                                                     | 1447 | <b>6675</b>  | 1695 | <b>7618</b>  | 1935 | <b>8401</b>  | 2134 |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>2852</b>                                                     | 724  | <b>3332</b>  | 846  | <b>3792</b>  | 963  | <b>4172</b>  | 1060 |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>2213</b>                                                     | 562  | <b>2586</b>  | 657  | <b>2944</b>  | 748  | <b>3240</b>  | 823  |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>3798</b>                                                     | 965  | <b>4450</b>  | 1130 | <b>5079</b>  | 1290 | <b>5601</b>  | 1423 |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>2848</b>                                                     | 723  | <b>3337</b>  | 848  | <b>3809</b>  | 968  | <b>4200</b>  | 1067 |

CLT - CLT  
lateral face - lateral face



#### ASD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V'[ASD] <sup>(1)(2)(3)</sup><br>Allowable Shear Force |          |             |          |             |          |             |          |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|-------------------------------------------------------|----------|-------------|----------|-------------|----------|-------------|----------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                |          | G=0.42      |          | G=0.49      |          | G=0.55      |          |
|                                                                   |                 |               |                          |                          | [lbf]                                                 | [lbf/ft] | [lbf]       | [lbf/ft] | [lbf]       | [lbf/ft] | [lbf]       | [lbf/ft] |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>3803</b>                                           | 966      | <b>4443</b> | 1128     | <b>5057</b> | 1284     | <b>5563</b> | 1413     |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>2951</b>                                           | 749      | <b>3448</b> | 876      | <b>3926</b> | 997      | <b>4320</b> | 1097     |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>5064</b>                                           | 1286     | <b>5933</b> | 1507     | <b>6772</b> | 1720     | <b>7467</b> | 1897     |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>1901</b>                                           | 483      | <b>2221</b> | 564      | <b>2528</b> | 642      | <b>2781</b> | 706      |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>1475</b>                                           | 375      | <b>1724</b> | 438      | <b>1963</b> | 499      | <b>2160</b> | 549      |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>2532</b>                                           | 643      | <b>2967</b> | 754      | <b>3386</b> | 860      | <b>3734</b> | 948      |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>1268</b>                                           | 322      | <b>1481</b> | 376      | <b>1686</b> | 428      | <b>1854</b> | 471      |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>984</b>                                            | 250      | <b>1149</b> | 292      | <b>1309</b> | 332      | <b>1440</b> | 366      |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>1688</b>                                           | 429      | <b>1978</b> | 502      | <b>2257</b> | 573      | <b>2489</b> | 632      |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>1266</b>                                           | 322      | <b>1483</b> | 377      | <b>1693</b> | 430      | <b>1867</b> | 474      |

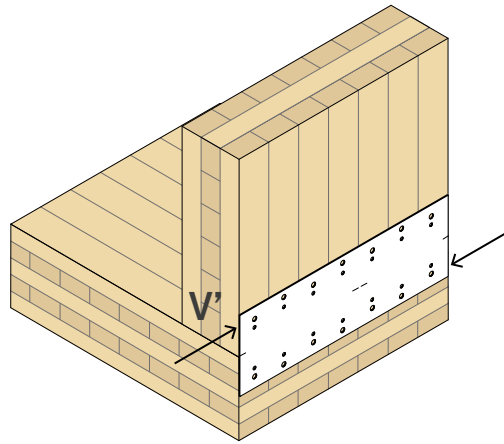
Load duration of CD = 1.6

#### LRFD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V'[LRFD] <sup>(1)(2)(3)</sup><br>Factored Shear Force |          |             |          |             |          |              |          |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|-------------------------------------------------------|----------|-------------|----------|-------------|----------|--------------|----------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                |          | G=0.42      |          | G=0.49      |          | G=0.55       |          |
|                                                                   |                 |               |                          |                          | [lbf]                                                 | [lbf/ft] | [lbf]       | [lbf/ft] | [lbf]       | [lbf/ft] | [lbf]        | [lbf/ft] |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 24                       | 24                       | <b>5129</b>                                           | 1303     | <b>5992</b> | 1522     | <b>6820</b> | 1732     | <b>7503</b>  | 1906     |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 24                       | 24                       | <b>3980</b>                                           | 1011     | <b>4651</b> | 1181     | <b>5295</b> | 1345     | <b>5826</b>  | 1480     |
|                                                                   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>6829</b>                                           | 1735     | <b>8002</b> | 2033     | <b>9134</b> | 2320     | <b>10072</b> | 2558     |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBA             | Ø0.16 x 2 3/8 | 12                       | 12                       | <b>2564</b>                                           | 651      | <b>2996</b> | 761      | <b>3410</b> | 866      | <b>3751</b>  | 953      |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 12                       | 12                       | <b>1990</b>                                           | 505      | <b>2326</b> | 591      | <b>2648</b> | 672      | <b>2913</b>  | 740      |
|                                                                   | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>3415</b>                                           | 867      | <b>4001</b> | 1016     | <b>4567</b> | 1160     | <b>5036</b>  | 1279     |
| <b>partial fastening</b><br>8 + 8 fasteners<br>6 inches spacing   | LBA             | Ø0.16 x 2 3/8 | 8                        | 8                        | <b>1710</b>                                           | 434      | <b>1997</b> | 507      | <b>2273</b> | 577      | <b>2501</b>  | 635      |
|                                                                   | LBS             | Ø0.20 x 2 3/8 | 8                        | 8                        | <b>1327</b>                                           | 337      | <b>1550</b> | 394      | <b>1765</b> | 448      | <b>1942</b>  | 493      |
|                                                                   | LBS             | Ø0.28 x 4     | 8                        | 8                        | <b>2276</b>                                           | 578      | <b>2667</b> | 678      | <b>3045</b> | 773      | <b>3357</b>  | 853      |
| <b>partial fastening</b><br>6 + 6 fasteners<br>8 inches spacing   | LBS             | Ø0.28 x 4     | 6                        | 6                        | <b>1707</b>                                           | 434      | <b>2001</b> | 508      | <b>2283</b> | 580      | <b>2518</b>  | 640      |

Load duration of λ = 1.0

CLT - CLT  
lateral face - narrow face



#### ASD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V'[ASD] <sup>(1)(2)(3)(4)</sup><br>Allowable Shear Force |         |             |         |             |         |             |         |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|----------------------------------------------------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                   |         | G=0.42      |         | G=0.49      |         | G=0.55      |         |
|                                                                   |                 |               |                          |                          | [lb]                                                     | [lb/ft] | [lb]        | [lb/ft] | [lb]        | [lb/ft] | [lb]        | [lb/ft] |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>3798</b>                                              | 965     | <b>4450</b> | 1130    | <b>5079</b> | 1290    | <b>5601</b> | 1423    |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>1899</b>                                              | 482     | <b>2225</b> | 565     | <b>2539</b> | 645     | <b>2800</b> | 711     |

#### LRFD VALUES

| configuration                                                     | fastening holes |               |                          |                          | V'[LRFD] <sup>(1)(2)(3)(4)</sup><br>Factored Shear Force |         |             |         |             |         |             |         |
|-------------------------------------------------------------------|-----------------|---------------|--------------------------|--------------------------|----------------------------------------------------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                                                   | type            | Ø x L<br>[in] | n <sub>V1</sub><br>[pcs] | n <sub>V2</sub><br>[pcs] | G=0.35                                                   |         | G=0.42      |         | G=0.49      |         | G=0.55      |         |
|                                                                   |                 |               |                          |                          | [lb]                                                     | [lb/ft] | [lb]        | [lb/ft] | [lb]        | [lb/ft] | [lb]        | [lb/ft] |
| <b>total fastening</b><br>24 + 24 fasteners<br>2 inches spacing   | LBS             | Ø0.28 x 4     | 24                       | 24                       | <b>6829</b>                                              | 1735    | <b>6002</b> | 1524    | <b>6850</b> | 1740    | <b>7554</b> | 1919    |
| <b>partial fastening</b><br>12 + 12 fasteners<br>4 inches spacing | LBS             | Ø0.28 x 4     | 12                       | 12                       | <b>2561</b>                                              | 651     | <b>3001</b> | 762     | <b>3425</b> | 870     | <b>3777</b> | 959     |

## STRUCTURAL VALUES

### GENERAL PRINCIPLES

- The steel plate made of Z275 carbon steel has a specified tensile strength equal to ~47.8 ksi with a DX51D coating, similar to galvanized finish.
- The specified bending yield strength values are as follows: LBA with a diameter of 0.16 in has  $f_{yb} = 94000$  psi, LBS/LBS EVO with a diameter of 0.20 in has  $f_{yb} = 180000$  psi, and LBS/LBS EVO with a diameter of 0.28 in has  $f_{yb} = 192000$  psi.
- G is the mean relative density according to Table A.11. Most common wood species are assumed such as Northern species (G = 0.35), Spruce-Pine-Fir (G = 0.42), Douglas Fir (G = 0.49), and Southern Pine (G = 0.55).
- It is admitted that the distance between the center of mass of the two nailed parts generates a transport moment that is already absorbed by the fasteners in the calculated values. For TTP300, the rotational stiffness of the upper section is much greater, therefore the moment was distributed only on this portion of the steel plate.
- Dimensioning and verification of the timber elements must be carried out separately.

### NOTES

- (1) Strength values are valid for all full/partial configurations indicated in the INSTALLATION section.
- (2) The design values for nails and wood screws has been determined following the guidelines according NDS2018 or SDPWS2021 Section 4.5.4. For values according NDS2018, the listed values are based on standard load duration factor (CD = 1.6), time effect factor ( $\lambda = 1.0$ ), format Conversion factor ( $K_F = 3.32$ ), resistance factor ( $\phi_Z = 0.65$ ), dry service condition factor ( $C_M = 1.0$ ), and temperature factor ( $C_T = 1.0$ ).
- (3) Values calculated according to SDPWS2021 can be use if following 2021 International Building Code (IBC) and onward.
- (4)  $C_{eg} = 0.75$  factor was considered in the calculations of narrow face connection.