# TECH NOTES

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## *Design Load Tables for Wood Studwalls Subjected to Wind Pressure*


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The design of wood studwalls for wind pressure is complicated, as two or more load combinations must be considered. Since hand computations are very time consuming, Western Wood Products Association has prepared a useful set of design load tables for Douglas Fir-Larch and Hem-Fir lumber according to the 1991 edition of ANSI/AF&PA National Design Specification (NDS) for Wood Construction.

### Design Procedures

The 1991 NDS, published by the American Forest & Paper Association, is the design specification for wood construction. The 1991 NDS design provisions used for studwalls subjected to out-of-plane wind pressure are: the column formula, the combined bending and axial compression interaction equation, load duration factor, and lumber design values.

The 1991 NDS provides a load duration factor of 1.6 for wind, which corresponds to a cumulative load duration of approximately 10 minutes over the service life of the structure. A note on the use of the load duration factor is included in the **Notes to Designers** section shown on the following pages. The lumber design values are the result of full-size lumber testing.

### Load Tables for Combined Bending and Compression Forces

Tables 1 and 2 show allowable axial compressive loads per stud for several commonly used combinations of ceiling heights, stud spacings, lumber sizes and lumber grades. Effective column length is 4-1/2 inches less than the ceiling height, to account for two top plates and one bottom plate typically found in light-frame construction.

The allowable loads listed in the tables are calculated assuming the studwalls are sheathed to prevent buckling of studs with respect to the weak axis. Slenderness ratio is determined using the actual dimensions of bare studs. The cases where lateral load has caused overstress in the studs by bending alone are marked as "----" in the tables. In these cases, larger sizes and/or higher grades of lumber are needed.

**Table 1** reflects interior studwalls subjected to the code-required minimum 5 psf lateral pressure with load duration factors of 1.0, 1.15 and 1.25 corresponding to controlling load combinations with occupancy live load (10 years duration), snow load (two months duration) and roof live load (seven days duration), respectively.

**Table 2** shows allowable loads for wind pressures of 10, 15, 20 and 25 psf. The allowable axial compressive loads are calculated using the load combination of wind pressure (load duration factor of 1.6) plus the sum of all vertical loads, including dead, occupancy live, and snow (or roof live) loads. Load combinations with vertical loads only (no wind pressure) were also checked with load duration factors of 1.15 and 1.25. The smallest allowable loads from these combinations, with and without wind, are tabulated in this table .

*(Continued on page 2)*

## Check for Crushing at the Bottom Plate

The allowable compression perpendicular-to-grain stresses are independent of grade — one value for each species. The maximum allowable vertical loads per stud computed using the allowable compression perpendicular-to-grain stress adjusted for a 1.25 bearing area factor are:

| Species Group | 2x4 | 3x4 | 2x6 |
|---|---|---|---|
| Douglas Fir-Larch | 4102 lbs | 6836 lbs | 6445 lbs |
| Hem-Fir | 2657 lbs | 4430 lbs | 4177 lbs |

## Check for Allowable Deflection

Excessive deflection may cause damage to finished materials. Table 3 provides the allowable ceiling heights based on lateral bending deflections under static wind pressure alone (no system effect is considered).

Deflection is a serviceability limit. Limiting member deflection for worst-case extreme events, such as a hurricane, would result in unreasonable (conservative) designs.

**Example:**

8' exterior wall sheathed with 3/8" CD Plywood outside and 1/2" Type X gypsum wallboard inside, 2x4 Douglas Fir-Larch STUD grade studs 16" o.c. 2x4 Douglas Fir-Larch Standard & Btr. grade for top and bottom plates. 15 psf wind pressure. 1,000 lbs per linear foot (PLF) vertical bearing load.

Step 1. ***Check allowable axial compressive load and bending load combination.***
Calculate vertical load per stud: 1000 x (16/12) = 1333 lbs
Allowable load from Table 2: 1431 lbs per stud.
1333 lbs < 1431 lbs ==>> O.K.

Step 2. ***Check crushing on plates.***
Vertical load per stud (from Step 1): 1333 lbs.
Max. allowable load for crushing per stud: 4102 lbs
1333 lbs < 4102 lbs ==>> O.K.

Step 3. ***Check lateral deflection.***
Gypsum wallboard: Limit deflection to L/240.
Maximum ceiling height from Table 3: 9'-9".
Wall height: 8'-0" < 9'-9" ==>> O.K.

**NOTE:** The weight of the wall itself is not considered in this example.

## Notes to Designers

***I. Load Combination Factor of 1.33***
Most model building codes provide an allowable stress increase of 33% for load combinations that include wind loads -- a 1.33 load combination factor. This factor accounts for the low probability of having all loads in the load combination to occur simultaneously, and is independent of the 1.6 load duration factor provided in the 1991 NDS. The 1.33 load combination factor was not used in preparing the allowable load values here because the Uniform Building Code, at this time, does not allow the use of both factors together in a design.

*(Continued on page 3)*

### *II. Prescriptive Construction Codes*

For a majority of residential buildings, prescriptive construction codes are used. The CABO One and Two Family Dwelling Code is a widely accepted prescriptive code. Other codes (UBC, SBCCI and BOCA) contain prescriptive provisions as part of the code. It should be noted that some of the prescriptive code provisions allow for designs where the applied member stresses (based on the bare member capacity alone) exceed the allowable stresses. One can find instances where a design is not acceptable according to the tables shown here, but is allowed per the prescriptive code provisions. Prescriptive code provisions are largely based on field experience, as wood studwalls have performed well for many years. Research at Oregon State University has shown a system factor of as much as 1.5 for bending strength of sheathed wood studwalls. This system factor is not yet recognized in the engineering calculations.

### *III. Load Duration Factor*

The tabulated compression design value shall be multiplied by all applicable adjustment factors, including the load duration factor but not including the column stability factor, before entering to the column formula. The load duration factor for the shortest duration load in a combination of loads shall apply for that load combination. All applicable load combination shall be evaluated to determine the critical load combination.

### *IV. Evolution of Wind Loads*

The design wind load criteria and its interpretations continue to evolve. Through the efforts of the engineering staff of the American Wood Council, American Forest & Paper Association (the publisher of NDS), the wind engineering community is now endorsing recommendations that studs should be engineered using Main Wind-Force Resisting System pressures when considering interactions of axial and bending stresses and designed using Components and Cladding pressures when considering axial or bending stresses individually. This interpretation is now written into the SBCCI's Standard Building Code and into the proposed ASCE 7-95 definitions. This new interpretation allows better utilization of stud lumber.

## ALLOWABLE AXIAL COMPRESSIVE LOAD PER STUD (LBS) FOR INTERIOR WALLS

Table 1

| SPECIES | GRADE | SIZE | Ceiling Height | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8 ft | | | 10 ft | | | 12 ft | | | 16 ft | | |
| | | | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. |
| **Wood Studwalls subjected to 5 psf Lateral Pressure** | | **DOL=1.00** | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 1950 | 1805 | 1541 | 1131 | 991 | 733 | 659 | 526 | 265 | 192 | 48 | ---- |
| | | 3x4 | 3578 | 3407 | 3102 | 2199 | 2035 | 1743 | 1388 | 1238 | 965 | 586 | 452 | 181 |
| | | 2x6 | 5410 | 5283 | 5031 | 4315 | 4110 | 3725 | 3150 | 2911 | 2476 | 1558 | 1326 | 886 |
| | STANDARD | 2x4 | 1907 | 1710 | 1351 | 1008 | 827 | 474 | 526 | 348 | ---- | 40 | ---- | ---- |
| | No.2 | 2x4 | 2642 | 2514 | 2291 | 1570 | 1457 | 1257 | 984 | 883 | 701 | 420 | 332 | 158 |
| | | 2x6 | 8398 | 8246 | 7955 | 6145 | 5930 | 5544 | 4301 | 4082 | 3695 | 2197 | 2007 | 1666 |
| HF | STUD | 2x4 | 1710 | 1580 | 1347 | 978 | 857 | 633 | 567 | 453 | 227 | 165 | 41 | ---- |
| | | 3x4 | 3144 | 2990 | 2718 | 1904 | 1761 | 1507 | 1196 | 1066 | 830 | 503 | 388 | 155 |
| | | 2x6 | 5066 | 4939 | 4689 | 3904 | 3710 | 3350 | 2775 | 2561 | 2173 | 1347 | 1145 | 765 |
| | STANDARD | 2x4 | 1650 | 1479 | 1167 | 868 | 711 | 408 | 452 | 299 | ---- | 34 | ---- | ---- |
| | No.2 | 2x4 | 2170 | 2062 | 1872 | 1276 | 1181 | 1014 | 795 | 711 | 559 | 336 | 262 | 115 |
| | | 2x6 | 7419 | 7266 | 6976 | 5175 | 4981 | 4637 | 3542 | 3355 | 3026 | 1782 | 1623 | 1338 |
| **Wood Studwalls subjected to 5 psf Lateral Pressure** | | **DOL=1.15** | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 2064 | 1926 | 1679 | 1201 | 1073 | 839 | 717 | 598 | 370 | 244 | 126 | ---- |
| | | 3x4 | 3754 | 3590 | 3299 | 2294 | 2142 | 1872 | 1459 | 1322 | 1074 | 642 | 522 | 291 |
| | | 2x6 | 6038 | 5904 | 5644 | 4679 | 4473 | 4093 | 3353 | 3125 | 2715 | 1670 | 1458 | 1065 |
| | STANDARD | 2x4 | 2012 | 1830 | 1502 | 1089 | 925 | 615 | 598 | 442 | 115 | 120 | ---- | ---- |
| | No.2 | 2x4 | 2732 | 2613 | 2403 | 1627 | 1523 | 1340 | 1030 | 938 | 772 | 457 | 378 | 228 |
| | | 2x6 | 9099 | 8940 | 8639 | 6450 | 6240 | 5866 | 4464 | 4258 | 3896 | 2290 | 2115 | 1804 |
| HF | STUD | 2x4 | 1801 | 1679 | 1462 | 1037 | 926 | 724 | 617 | 514 | 318 | 210 | 108 | ---- |
| | | 3x4 | 3281 | 3135 | 2877 | 1982 | 1850 | 1616 | 1256 | 1137 | 924 | 551 | 448 | 249 |
| | | 2x6 | 5613 | 5480 | 5222 | 4196 | 4003 | 3651 | 2938 | 2735 | 2371 | 1442 | 1258 | 918 |
| | STANDARD | 2x4 | 1736 | 1580 | 1296 | 936 | 795 | 529 | 514 | 380 | 99 | 103 | ---- | ---- |
| | No.2 | 2x4 | 2238 | 2137 | 1961 | 1322 | 1235 | 1082 | 833 | 756 | 618 | 366 | 300 | 174 |
| | | 2x6 | 7934 | 7775 | 7481 | 5388 | 5202 | 4873 | 3665 | 3489 | 3183 | 1857 | 1711 | 1451 |
| **Wood Studwalls subjected to 5 psf Lateral Pressure** | | **DOL=1.25** | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 2126 | 1993 | 1755 | 1241 | 1119 | 898 | 749 | 637 | 426 | 272 | 165 | ---- |
| | | 3x4 | 3849 | 3689 | 3407 | 2347 | 2201 | 1943 | 1499 | 1368 | 1134 | 672 | 560 | 347 |
| | | 2x6 | 6420 | 6283 | 6017 | 4883 | 4678 | 4301 | 3465 | 3244 | 2848 | 1733 | 1531 | 1162 |
| | STANDARD | 2x4 | 2070 | 1896 | 1586 | 1133 | 978 | 690 | 637 | 492 | 200 | 160 | ---- | ---- |
| | No.2 | 2x4 | 2782 | 2666 | 2466 | 1659 | 1560 | 1385 | 1055 | 968 | 812 | 477 | 403 | 264 |
| | | 2x6 | 9494 | 9332 | 9025 | 6613 | 6407 | 6041 | 4553 | 4354 | 4007 | 2343 | 2175 | 1880 |
| HF | STUD | 2x4 | 1851 | 1734 | 1525 | 1070 | 965 | 774 | 644 | 548 | 366 | 233 | 142 | ---- |
| | | 3x4 | 3356 | 3214 | 2965 | 2026 | 1899 | 1676 | 1290 | 1177 | 975 | 577 | 481 | 298 |
| | | 2x6 | 5940 | 5803 | 5541 | 4356 | 4165 | 3819 | 3027 | 2831 | 2482 | 1494 | 1320 | 1002 |
| | STANDARD | 2x4 | 1786 | 1636 | 1367 | 974 | 841 | 593 | 547 | 423 | 171 | 137 | ---- | ---- |
| | No.2 | 2x4 | 2276 | 2179 | 2010 | 1347 | 1265 | 1119 | 853 | 781 | 651 | 383 | 321 | 205 |
| | | 2x6 | 8215 | 8054 | 7759 | 5502 | 5321 | 5002 | 3732 | 3563 | 3270 | 1899 | 1760 | 1514 |

## ALLOWABLE AXIAL COMPRESSIVE LOAD PER STUD (LBS) FOR EXTERIOR WALLS — Table 2

| SPECIES | GRADE | SIZE | Ceiling Height | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8 ft | | | 10 ft | | | 12 ft | | | 16 ft | | |
| | | | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. |
| **Wood Studwalls subjected to 10 psf Wind Pressure** | | | | | | **DOL=1.60** | | | | | | | | |
| DF-L | STUD | 2x4 | 1958 | 1771 | 1431 | 1052 | 880 | 554 | 566 | 401 | 42 | 87 | --- | --- |
| | | 3x4 | 3692 | 3468 | 3073 | 2134 | 1936 | 1579 | 1293 | 1113 | 779 | 488 | 321 | --- |
| | | 2x6 | 6454 | 6454 | 6338 | 4859 | 4535 | 3951 | 3202 | 2886 | 2311 | 1416 | 1128 | 559 |
| | STANDARD | 2x4 | 1807 | 1566 | 1119 | 882 | 658 | 191 | 395 | 160 | --- | --- | --- | --- |
| | No.2 | 2x4 | 2631 | 2476 | 2205 | 1507 | 1374 | 1136 | 915 | 796 | 576 | 355 | 247 | 8 |
| | | 2x6 | 10040 | 9620 | 9232 | 6494 | 6198 | 5679 | 4300 | 4030 | 3556 | 2082 | 1856 | 1447 |
| HF | STUD | 2x4 | 1694 | 1531 | 1236 | 905 | 758 | 476 | 487 | 345 | 36 | 74 | --- | --- |
| | | 3x4 | 3197 | 3002 | 2658 | 1837 | 1666 | 1359 | 1111 | 957 | 669 | 419 | 275 | --- |
| | | 2x6 | 6037 | 6037 | 5711 | 4266 | 3977 | 3458 | 2775 | 2500 | 2000 | 1218 | 971 | 481 |
| | STANDARD | 2x4 | 1555 | 1348 | 963 | 757 | 565 | 164 | 339 | 138 | --- | --- | --- | --- |
| | No.2 | 2x4 | 2141 | 2011 | 1785 | 1219 | 1108 | 909 | 736 | 637 | 453 | 281 | 190 | --- |
| | | 2x6 | 8470 | 8207 | 7740 | 5338 | 5086 | 4646 | 3501 | 3276 | 2878 | 1680 | 1492 | 1151 |
| **Wood Studwalls subjected to 15 psf Wind Pressure** | | | | | | **DOL=1.60** | | | | | | | | |
| DF-L | STUD | 2x4 | 1682 | 1431 | 955 | 798 | 554 | 7 | 318 | 42 | --- | --- | --- | --- |
| | | 3x4 | 3364 | 3073 | 2549 | 1843 | 1579 | 1086 | 1028 | 779 | 266 | 235 | --- | --- |
| | | 2x6 | 6454 | 6338 | 5636 | 4383 | 3951 | 3156 | 2737 | 2311 | 1500 | 988 | 559 | --- |
| | STANDARD | 2x4 | 1451 | 1119 | 443 | 546 | 191 | --- | 26 | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 2404 | 2205 | 1849 | 1312 | 1136 | 810 | 740 | 576 | 248 | 192 | 8 | --- |
| | | 2x6 | 9617 | 9232 | 8541 | 6061 | 5679 | 5003 | 3905 | 3556 | 2929 | 1750 | 1447 | 865 |
| HF | STUD | 2x4 | 1455 | 1236 | 824 | 686 | 476 | 6 | 273 | 36 | --- | --- | --- | --- |
| | | 3x4 | 2911 | 2658 | 2203 | 1586 | 1359 | 934 | 883 | 669 | 229 | 202 | --- | --- |
| | | 2x6 | 6037 | 5711 | 5059 | 3841 | 3458 | 2755 | 2370 | 2000 | 1296 | 850 | 481 | --- |
| | STANDARD | 2x4 | 1249 | 963 | 380 | 469 | 164 | --- | 22 | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 1951 | 1785 | 1487 | 1056 | 909 | 636 | 590 | 453 | 176 | 144 | --- | --- |
| | | 2x6 | 8084 | 7740 | 7128 | 4970 | 4646 | 4073 | 3171 | 2878 | 2353 | 1404 | 1151 | 662 |
| **Wood Studwalls subjected to 20 psf Wind Pressure** | | | | | | **DOL=1.60** | | | | | | | | |
| DF-L | STUD | 2x4 | 1431 | 1112 | 464 | 554 | 209 | --- | 42 | --- | --- | --- | --- | --- |
| | | 3x4 | 3073 | 2718 | 2064 | 1579 | 1248 | 588 | 779 | 445 | --- | --- | --- | --- |
| | | 2x6 | 6454 | 5865 | 4972 | 3951 | 3414 | 2395 | 2311 | 1769 | 646 | 559 | --- | --- |
| | STANDARD | 2x4 | 1119 | 677 | --- | 191 | --- | --- | --- | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 2205 | 1963 | 1522 | 1136 | 916 | 487 | 576 | 360 | --- | 8 | --- | --- |
| | | 2x6 | 9232 | 8762 | 7915 | 5679 | 5219 | 4393 | 3556 | 3131 | 2349 | 1447 | 1059 | 237 |
| HF | STUD | 2x4 | 1236 | 960 | 399 | 476 | 180 | --- | 36 | --- | --- | --- | --- | --- |
| | | 3x4 | 2658 | 2349 | 1783 | 1359 | 1074 | 505 | 669 | 382 | --- | --- | --- | --- |
| | | 2x6 | 5711 | 5270 | 4448 | 3458 | 2983 | 2086 | 2000 | 1529 | 556 | 481 | --- | --- |
| | STANDARD | 2x4 | 963 | 581 | --- | 164 | --- | --- | --- | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 1785 | 1582 | 1212 | 909 | 726 | 365 | 453 | 272 | --- | --- | --- | --- |
| | | 2x6 | 7740 | 7323 | 6579 | 4646 | 4256 | 3557 | 2878 | 2522 | 1865 | 1151 | 825 | 125 |
| **Wood Studwalls subjected to 25 psf Wind Pressure** | | | | | | **DOL=1.60** | | | | | | | | |
| DF-L | STUD | 2x4 | 1191 | 796 | --- | 300 | --- | --- | --- | --- | --- | --- | --- | --- |
| | | 3x4 | 2804 | 2385 | 1592 | 1330 | 923 | 12 | 530 | 70 | --- | --- | --- | --- |
| | | 2x6 | 6454 | 5412 | 4326 | 3545 | 2901 | 1620 | 1904 | 1226 | --- | 73 | --- | --- |
| | STANDARD | 2x4 | 789 | 188 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 2021 | 1737 | 1206 | 970 | 703 | 132 | 415 | 127 | --- | --- | --- | --- |
| | | 2x6 | 8876 | 8326 | 7333 | 5330 | 4794 | 3819 | 3234 | 2733 | 1782 | 1155 | 666 | --- |
| HF | STUD | 2x4 | 1029 | 686 | --- | 258 | --- | --- | --- | --- | --- | --- | --- | --- |
| | | 3x4 | 2424 | 2061 | 1373 | 1144 | 794 | 10 | 455 | 60 | --- | --- | --- | --- |
| | | 2x6 | 5378 | 4852 | 3858 | 3099 | 2531 | 1407 | 1646 | 1058 | --- | 63 | --- | --- |
| | STANDARD | 2x4 | 678 | 162 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | No.2 | 2x4 | 1631 | 1393 | 947 | 771 | 547 | 60 | 318 | 73 | --- | --- | --- | --- |
| | | 2x6 | 7423 | 6939 | 6071 | 4350 | 3897 | 3072 | 2609 | 2188 | 1387 | 906 | 493 | --- |

## ALLOWABLE CEILING HEIGHTS (ft-in.) BASED ON DEFLECTIONS

Table 3

| SPECIES | GRADE | SIZE | Deflection Criteria | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L/120 | | | L/180 | | | L/240 | | | L/360 | | |
| | | | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. | 12" o.c. | 16" o.c. | 24" o.c. |
| **Wood Studwalls subjected to 10 psf Wind Pressure** | | | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 15-4 | 13-11 | 12-3 | 13-5 | 12-3 | 10-9 | 12-3 | 11-2 | 9-9 | 10-9 | 9-9 | 8-7 |
| | | 3x4 | 18-1 | 16-6 | 14-5 | 15-10 | 14-5 | 12-8 | 14-5 | 13-2 | 11-6 | 12-8 | 11-6 | 10-1 |
| | | 2x6 | 23-10 | 21-8 | 19-0 | 20-11 | 19-0 | 16-8 | 19-0 | 17-4 | 15-2 | 16-8 | 15-2 | 13-4 |
| | STANDARD | 2x4 | 15-4 | 13-11 | 12-3 | 13-5 | 12-3 | 10-9 | 12-3 | 11-2 | 9-9 | 10-9 | 9-9 | 8-7 |
| | No.2 | 2x4 | 16-0 | 14-7 | 12-9 | 14-0 | 12-9 | 11-2 | 12-9 | 11-8 | 10-3 | 11-2 | 10-3 | 9-0 |
| | | 2x6 | 24-11 | 22-8 | 19-10 | 21-10 | 19-10 | 17-5 | 19-10 | 18-1 | 15-10 | 17-5 | 15-10 | 13-11 |
| HF | STUD | 2x4 | 14-7 | 13-3 | 11-8 | 12-9 | 11-8 | 10-3 | 11-8 | 10-7 | 9-4 | 10-3 | 9-4 | 8-2 |
| | | 3x4 | 17-2 | 15-8 | 13-9 | 15-1 | 13-9 | 12-1 | 13-9 | 12-6 | 11-0 | 12-1 | 11-0 | 9-8 |
| | | 2x6 | 22-8 | 20-8 | 18-1 | 19-10 | 18-1 | 15-10 | 18-1 | 16-5 | 14-5 | 15-10 | 14-5 | 12-8 |
| | STANDARD | 2x4 | 14-7 | 13-3 | 11-8 | 12-9 | 11-8 | 10-3 | 11-8 | 10-7 | 9-4 | 10-3 | 9-4 | 8-2 |
| | No.2 | 2x4 | 14-11 | 13-7 | 11-11 | 13-1 | 11-11 | 10-6 | 11-11 | 10-11 | 9-7 | 10-6 | 9-7 | 8-5 |
| | | 2x6 | 23-3 | 21-2 | 18-7 | 20-5 | 18-7 | 16-3 | 18-7 | 16-11 | 14-10 | 16-3 | 14-10 | 13-0 |
| **Wood Studwalls subjected to 15 psf Wind Pressure** | | | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 13-5 | 12-3 | 10-9 | 11-9 | 10-9 | 9-5 | 10-9 | 9-9 | 8-7 | 9-5 | 8-7 | 7-7 |
| | | 3x4 | 15-10 | 14-5 | 12-8 | 13-11 | 12-8 | 11-1 | 12-8 | 11-6 | 10-1 | 11-1 | 10-1 | 8-11 |
| | | 2x6 | 20-11 | 19-0 | 16-8 | 18-3 | 16-8 | 14-7 | 16-8 | 15-2 | 13-4 | 14-7 | 13-4 | 11-8 |
| | STANDARD | 2x4 | 13-5 | 12-3 | 10-9 | 11-9 | 10-9 | 9-5 | 10-9 | 9-9 | 8-7 | 9-5 | 8-7 | 7-7 |
| | No.2 | 2x4 | 14-0 | 12-9 | 11-2 | 12-4 | 11-2 | 9-10 | 11-2 | 10-3 | 9-0 | 9-10 | 9-0 | 7-11 |
| | | 2x6 | 21-10 | 19-10 | 17-5 | 19-1 | 17-5 | 15-3 | 17-5 | 15-10 | 13-11 | 15-3 | 13-11 | 12-2 |
| HF | STUD | 2x4 | 12-9 | 11-8 | 10-3 | 11-2 | 10-3 | 9-0 | 10-3 | 9-4 | 8-2 | 9-0 | 8-2 | 7-2 |
| | | 3x4 | 15-1 | 13-9 | 12-1 | 13-3 | 12-1 | 10-7 | 12-1 | 11-0 | 9-8 | 10-7 | 9-8 | 8-6 |
| | | 2x6 | 19-10 | 18-1 | 15-10 | 17-5 | 15-10 | 13-11 | 15-10 | 14-5 | 12-8 | 13-11 | 12-8 | 11-1 |
| | STANDARD | 2x4 | 12-9 | 11-8 | 10-3 | 11-2 | 10-3 | 9-0 | 10-3 | 9-4 | 8-2 | 9-0 | 8-2 | 7-2 |
| | No.2 | 2x4 | 13-1 | 11-11 | 10-6 | 11-6 | 10-6 | 9-2 | 10-6 | 9-7 | 8-5 | 9-2 | 8-5 | 7-5 |
| | | 2x6 | 20-5 | 18-7 | 16-3 | 17-10 | 16-3 | 14-3 | 16-3 | 14-10 | 13-0 | 14-3 | 13-0 | 11-5 |
| **Wood Studwalls subjected to 20 psf Wind Pressure** | | | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 12-3 | 11-2 | 9-9 | 10-9 | 9-9 | 8-7 | 9-9 | 8-11 | 7-10 | 8-7 | 7-10 | 6-11 |
| | | 3x4 | 14-5 | 13-2 | 11-6 | 12-8 | 11-6 | 10-1 | 11-6 | 10-6 | 9-3 | 10-1 | 9-3 | 8-1 |
| | | 2x6 | 19-0 | 17-4 | 15-2 | 16-8 | 15-2 | 13-4 | 15-2 | 13-10 | 12-1 | 13-4 | 12-1 | 10-8 |
| | STANDARD | 2x4 | 12-3 | 11-2 | 9-9 | 10-9 | 9-9 | 8-7 | 9-9 | 8-11 | 7-10 | 8-7 | 7-10 | 6-11 |
| | No.2 | 2x4 | 12-9 | 11-8 | 10-3 | 11-2 | 10-3 | 9-0 | 10-3 | 9-4 | 8-2 | 9-0 | 8-2 | 7-2 |
| | | 2x6 | 19-10 | 18-1 | 15-10 | 17-5 | 15-10 | 13-11 | 15-10 | 14-5 | 12-8 | 13-11 | 12-8 | 11-1 |
| HF | STUD | 2x4 | 11-8 | 10-7 | 9-4 | 10-3 | 9-4 | 8-2 | 9-4 | 8-6 | 7-6 | 8-2 | 7-6 | 6-7 |
| | | 3x4 | 13-9 | 12-6 | 11-0 | 12-1 | 11-0 | 9-8 | 11-0 | 10-0 | 8-9 | 9-8 | 8-9 | 7-9 |
| | | 2x6 | 18-1 | 16-5 | 14-5 | 15-10 | 14-5 | 12-8 | 14-5 | 13-2 | 11-6 | 12-8 | 11-6 | 10-1 |
| | STANDARD | 2x4 | 11-8 | 10-7 | 9-4 | 10-3 | 9-4 | 8-2 | 9-4 | 8-6 | 7-6 | 8-2 | 7-6 | 6-7 |
| | No.2 | 2x4 | 11-11 | 10-11 | 9-7 | 10-6 | 9-7 | 8-5 | 9-7 | 8-9 | 7-8 | 8-5 | 7-8 | 6-9 |
| | | 2x6 | 18-7 | 16-11 | 14-10 | 16-3 | 14-10 | 13-0 | 14-10 | 13-6 | 11-10 | 13-0 | 11-10 | 10-5 |
| **Wood Studwalls subjected to 25 psf Wind Pressure** | | | | | | | | | | | | | | |
| DF-L | STUD | 2x4 | 11-5 | 10-5 | 9-1 | 10-0 | 9-1 | 8-0 | 9-1 | 8-4 | 7-4 | 8-0 | 7-4 | 6-5 |
| | | 3x4 | 13-5 | 12-3 | 10-9 | 11-9 | 10-9 | 9-5 | 10-9 | 9-9 | 8-7 | 9-5 | 8-7 | 7-7 |
| | | 2x6 | 17-8 | 16-1 | 14-1 | 15-6 | 14-1 | 12-4 | 14-1 | 12-10 | 11-3 | 12-4 | 11-3 | 9-11 |
| | STANDARD | 2x4 | 11-5 | 10-5 | 9-1 | 10-0 | 9-1 | 8-0 | 9-1 | 8-4 | 7-4 | 8-0 | 7-4 | 6-5 |
| | No.2 | 2x4 | 11-11 | 10-10 | 9-6 | 10-5 | 9-6 | 8-4 | 9-6 | 8-8 | 7-8 | 8-4 | 7-8 | 6-9 |
| | | 2x6 | 16-6 | 16-10 | 14-9 | 16-2 | 14-9 | 12-11 | 14-9 | 13-5 | 11-9 | 12-11 | 11-9 | 10-4 |
| HF | STUD | 2x4 | 10-10 | 9-11 | 8-8 | 9-6 | 8-8 | 7-8 | 8-8 | 7-11 | 7-0 | 7-8 | 7-0 | 6-2 |
| | | 3x4 | 12-9 | 11-8 | 10-3 | 11-2 | 10-3 | 9-0 | 10-3 | 9-4 | 8-2 | 7-0 | 8-2 | 7-2 |
| | | 2x6 | 16-10 | 15-4 | 13-5 | 14-9 | 13-5 | 11-9 | 13-5 | 12-3 | 10-9 | 11-9 | 10-9 | 9-5 |
| | STANDARD | 2x4 | 10-10 | 9-11 | 8-8 | 9-6 | 8-8 | 7-8 | 8-8 | 7-11 | 7-0 | 7-8 | 7-0 | 6-2 |
| | No.2 | 2x4 | 11-1 | 10-2 | 8-11 | 9-9 | 8-11 | 7-10 | 8-11 | 8-1 | 7-2 | 7-10 | 7-2 | 6-3 |
| | | 2x6 | 17-3 | 15-8 | 13-9 | 15-1 | 13-9 | 12-1 | 13-9 | 12-7 | 11-0 | 12-1 | 11-0 | 9-8 |