LP SolidStart®

ENGINEERED WOOD PRODUCTS

LP BUILDING PRODUCTS

LP SolidStart LSL & LVL
Wall Framing Technical Guide

$1730F_b$-1.35E, $2360F_b$-1.55E and $2500F_b$-1.75E LSL
$2250F_b$-1.5E and $2900F_b$-2.0E LVL

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A Word About Wall Framing

Architects are raising the roof and stretching walls beyond the reach of conventional lumber. LP® SolidStart® LSL and LVL studs redefine the standard for wall framing by providing structural walls that can be straighter, taller and stronger for both conventional and challenging engineered applications. Because LP manufactures its LSL and LVL to the highest standards, builders know that they'll get fewer callbacks and save themselves time and money.

Where traditional lumber studs warp, bow and twist as they dry, LP SolidStart LSL and LVL won't because they start dry from the mill. Having straight walls gives homeowners the peace of mind that their cabinets will stay flush to the wall, their tile and drywall will be less likely to crack and their windows and doors will function properly. That's performance you can count on. Using this technical guide, LP SolidStart LSL and LVL can be specified for use in conventional (prescriptive) and engineered wood-frame wall construction.

PRESCRIPTIVE CONSTRUCTION

Prescriptive construction provisions for wood-framed walls are included in Part 9 - Housing and Small Buildings of the 2010 National Building Code of Canada (NBC). Section 9.23 on Wood-Frame Construction covers buildings that are less than 3 stories in height and 6460 square feet [600 square meters] in area. Wall construction under this method is:

- Generally framed with lumber usually repetitive, spaced not more than 24 in [600 mm] on centers
- Wall planes are cladded, sheathed, braced at least on one side
- Specified floor live loads do not exceed 50 psf [2.4kPa]
- Spans of wood members do not exceed 40 feet [12.2 meters]

In prescriptive method, wall members and their connections are selected from tables in the NBC rather than being calculated such as the table below for exterior wall studs. LP Solidstart LSL and LVL can be substituted for lumber studs if the requirements for prescriptive construction are met. Wall studs under this method may be notched or drilled with holes up to 1/3 of the depth of the stud in accordance with Section 9.23.5.3 of the NBC. Refer to Drilling & Notching on page 20.

EXTERIOR WALL STUDS FOR PRESCRIPTIVE CONSTRUCTION (NBC TABLE 9.23.10.1)

Supported Loads (Dead Load Included)	Minimum Stud Size	Maximum Stud Spacing	Maximum Unsupported Height
Roof with or without attic storage	1-1/2" x 2-1/2"	16"	7'-10"
	1-1/2" x 3-1/2"	24"	9'-10"
Roof with or without attic storage plus 1 floor	1-1/2" x 3-1/2"	16"	9'-10"
	1-1/2" x 5-1/2"	24"	9'-10"
Roof with or without attic storage plus 2 floors	1-1/2" x 3-1/2"	12"	9'-10"
	2-1/2" x 3-1/2"	16"	9'-10"
	1-1/2" x 5-1/2"	16"	11'-10"
Roof with or without attic storage plus 3 floors	1-1/2" x 5-1/2"	12"	5'-11"

ENGINEERED DESIGN CONSTRUCTION

Wall construction beyond the prescriptive method is designed in accordance with Part 4 of the NBC. For most design provisions related to wood, the NBC refers to CSA Standard O86-09 – Engineering Design in Wood. This guide follows the Limit States Design Method and relevant provisions for wind load design in the NBC and User's Guide – NBC 2005 Structural Commentaries (Part 4 of Division B).

In this guide, the user needs only to select the appropriate wind pressure and terrain condition of the locality. With known wall framing design dimensions, factored vertical resistance and deflection limit are calculated using Ultimate Limit States Design (ULS) and Serviceability Limit States Design (SLS) respectively. They are shown in the tables for extensive LP SolidStart LSL and LVL grades and sizes. Design examples are provided on pages 16-19 to aid in using the tables.

Notches and holes in LP SolidStart LSL and LVL wall framing with some restrictions, are permitted when designed in accordance with the provisions of CSA Standard O86-09, with additional adjustments as prescribed herein. The wall stud and exterior wall column tables in this guide include the effects of a hole on their capacity. Refer to Drilling & Notching on page 20 for the limitations of hole size and location.

LIFETIME LIMITED WARRANTY

LP SolidStart Engineered Wood Products are backed by a lifetime limited warranty. Visit LPCorp.com or call 1.888.820.0325 for a copy of the warranty.

DEFLECTION LIMITS

Deflections are calculated due to lateral wind loads and include eccentric axial Live and Snow Loads (excluding Dead Load). This deflection is amplified to account for PΔ effect.

Like floor and roof systems, walls are subject to code-prescribed deflection limits as well as industry recommendations. Always verify the deflection requirements. They are commonly prescribed by codes, design professionals or manufacturer of wall finishes. The table below shows the common deflection limits.

COMMON DEFLECTION LIMITS

Condition	Deflection
Masonry veneer	L/360[1], [2]
All other wall members	L/180[1]

[1] Table D-1 of the NBC User's Guide
[2] Clause A.4.5.2 of CSA Standard O86-09

FIRE-RATED WALL CONSTRUCTION

For engineered wall construction, LP SolidStart LSL and LVL (1.5E and higher) can be used for fire-rated wall assemblies. Contact your LP SolidStart Products distributor for assistance in designing wall studs and exterior columns for fire-rated walls.

Product Specifications and Design Values

SPECIFIED STRENGTH AND STIFFNESS (PSI)

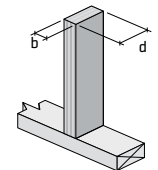| Material	Grade	Beam Orientation				Plank Orientation				Axial	
		Bending (f_b)	Modulus of Elasticity (MOE) ($\times10^6$ psi)	Shear (f_v)	Compression perpendicular to the grain (f_{cp})	Bending (f_b)	Modulus of Elasticity (MOE) ($\times10^6$ psi)	Shear (f_v)	Compression perpendicular to the grain (f_{cp})	Tension (f_t)	Compression (f_c)
LP® SolidStart® LSL	1730F_b-1.35E	3195	1.35	760	1365	3530	1.35	290	800	2020	2635
	2360F_b-1.55E	4360	1.55	760	1595	4820	1.55	290	800	2715	3470
	2500F_b-1.75E	4620	1.75	760	1730	5170	1.75	290	800	3350	3910
LP SolidStart LVL	2250F_b-1.5E	4158	1.5	530	1365	4066	1.4	260	820	2021	3751
	2900F_b-2.0E	5359	2.0	530	1365	5452	2.0	260	1001	2694	5107

NOTES:

1. LP SolidStart LSL and LVL shall be designed for dry-use conditions only. Dry-use applies to products installed in dry, covered and well ventilated interior conditions in which the equivalent moisture content in lumber will not exceed 15% nor a maximum of 19%.
2. The specified strengths and stiffness are for standard load duration. Bending, shear and axial tension and both compression parallel-to-grain and perpendicular-to-grain shall be adjusted according to code. Modulus of elasticity shall not be adjusted for load duration.
3. The specified bending strength, f_b, for LP SolidStart LSL in the Beam orientation is tabulated for a standard 12" depth. For depths other than 12", multiply f_b by $(12/\text{depth})^{0.143}$. For depths less than 3-1/2", adjust f_b by 1.193.
4. The specified bending, f_b, for LP SolidStart LVL in the Beam orientation is tabulated for a standard 12" depth. For depths less than 12", multiply f_b by $(12/\text{depth})^{0.111}$, for depths less than 3-1/2", multiply f_b by 1.147. For depths greater than 12", multiply f_b by $(12/\text{depth})^{0.143}$.
5. The specified Bending, f_b, in the Plank orientation shall not be adjusted for depth (thickness).
6. The specified edgewise bending shall also be multiplied by the system factor, $K_H = 1.04$, when 3 or more pieces are properly connected in direct contact or are used as wall studs spaced no more than 24" oc and properly connected together by an adequate wall sheathing.
7. The specified tension strength, f_t, for LP SolidStart LSL is assigned for a standard length of 20 feet. For other lengths, multiply f_t by $(20/\text{length})^{0.092}$. For lengths less than 3 feet, use the design tensile stresses adjusted to 3 feet.
8. The specified tension strength, f_t, for LP SolidStart LVL is assigned for a standard length of 20 feet. For lengths other than 20 feet, multiply f_t by $(20/\text{length})^{0.111}$. For lengths less than 3 feet, use the value adjusted for 3 feet.
9. Deflection calculations for LP SolidStart LSL and LVL shall include both bending and shear deformations.

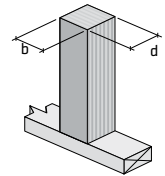Deflection for wall framing, uniform load: $\Delta = \dfrac{270wL^4}{Ebd^3} + \dfrac{28.8wL^2}{Ebd}$

Where:
- Δ = deflection (in)
- w = uniform load (plf)
- L = design span (ft)
- E = modulus of elasticty (from table)
- b = width (in)
- d = depth (in direction of bending) (in)

Equations for other conditions can be found in engineering references.

PRODUCT ORIENTATION

Beam (Edgewise)

Plank (Flatwise)

FACTORED BEARING RESISTANCE

Stud or Column Size	Column Bearing (lbs)					Stud Bearing (plf)					
	Hem-Fir f_{cp}=667psi	S-P-F f_{cp}=768 psi	D Fir-L f_{cp}=1015 psi	LP LSL/LVL f_{cp}=800psi	Concrete f_{cp}=2100psi	Hem-Fir f_{cp}=667psi		S-P-F f_{cp}=768psi		D Fir-L f_{cp}=1015psi	
						12" oc	16" oc	12" oc	16" oc	12" oc	16" oc
1-1/2" x 3-1/2"	3220	3710	4900	3860	6090	3220	2410	3700	2780	4900	3670
1-1/2" x 5-1/2"	5060	5830	7700	6070	9570	5060	3790	5820	4370	7700	5770
1-1/2" x 7-1/4"	6670	7680	10150	8000	12610	6670	5000	7680	5760	10150	7610
1-1/2" x 9-1/4"	8510	9800	12950	10210	16090	8510	6380	9800	7350	12950	9710
1-3/4" x 3-1/2"	3750	4330	5710	4500	7100	3750	2810	4320	3240	5710	4280
1-3/4" x 5-1/2"	5900	6800	8980	7080	11160	5900	4420	6800	5100	8980	6740
1-3/4" x 7-1/4"	7780	8970	11840	9330	14720	7780	5830	8960	6720	11840	8880
1-3/4" x 9-1/4"	9930	11440	15110	11910	18780	9930	7440	11430	8580	15110	11330
3-1/2" x 3-1/2"	7510	8660	11430	9010	14210	n/a					
3-1/2" x 5-1/2"	11810	13610	17970	14160	22330						
3-1/2" x 7-1/4"	15570	17940	23690	18670	29440						
3-1/2" x 9-1/4"	19860	22880	30230	23820	37560						
5-1/4" x 5-1/2"	18560	21380	28240	22260	35090						
5-1/4" x 7-1/4"	24460	28190	37230	29340	46260						
5-1/4" x 9-1/4"	31210	35960	47500	37440	59020						
7" x 5-1/2"	23620	27220	35950	28330	44660						
7" x 7-1/4"	31140	35880	47390	37350	58880						
7" x 9-1/4"	39730	45770	60460	47650	75120						

NOTES:

1. The resistance for wood bearing is based on the compression strength, perpendicular to grain, of the bearing plate based on standard term load duration and dry service conditions in accordance with CSA Standard O86-09. The tabulated values assume that the wall plate thickness is 1-3/4" thick or less, such that the size factor for bearing, K_{Zcp}, is equal to 1.15.
2. The bearing resistance for concrete is based on CSA Standard A23.3-04. The compressive strength of concrete is to be at least 2100 psi at 28 days.
3. To determine the bearing resistance of a mutiple-ply member (such as a double 2x4 stud), multiply the bearing resistance from the table by the number of plies. The resistance is additive and may be increased for wood bearing on wood plates as per note 4.
4. When a stud or column is located at least 3" from the end of a wall plate, the bearing resistance above are permitted to be increased by the length of bearing factor K_B per Clause 5.5.7.6 of CSA Standard O86-09.

Code Provisions for Wind Loads

Using Static Procedure excluding any adjustments for speed-up over hills and escarpments, all wind loads for walls in this guide are calculated based on the following:

$$p = I_w * q_{1/50} * C_e * (C_p C_g - C_{pi} * C_{gi})$$

Where:
- p = Design wind pressure (kPa)
- I_w = Importance factor for wind loads
- $q_{1/50}$ = Houly wind pressure (kPa) based on Table C-2 of Appendix C of the NBC
- C_e = Exposure factor based on Exposure categories below
- $C_p C_g$ = External peak composite pressure-gust coefficient based on Figure I-7 and I-8 of the NBC User's Guide
- C_{pi} = Internal pressure coefficient
- C_{gi} = Internal gust effect factor

DEFINITIONS

Mean roof height - is the mean height of the roof or 6 m [19.7 ft], whichever is greater. The height of the eaves may be substituted for the mean height if the slope of the roof is less than 7° (NBC User's Guide Commentary I, 7(a)).

Exposure Categories:

Open terrain - is level terrain with only scattered buildings, trees and other obstructions, open water or shorelines (NBC Section 4.1.7.1, 4(a)).

Rough terrain - is suburban, urban or wooded terrain extending upwind from the building uninterrupted for at least 1 km [0.62 mi] or 20 times the building height, whichever is greater (NBC Section 4.1.7.1, 4(b)).

For more relevant code provisions refer to:
1. Section 4.1.7 (Wind Load) of the NBC, and
2. Commentary I (Wind Loads and Effects) of the NBC User's Guide.

TO USE:

1. Determine the height of the column. If not listed, select the next tallest height in the table.
2. Select the LP® SolidStart® LSL or LVL grade and size where the factored axial resistance meets or exceeds the applied factored vertical load.
3. Verify the bearing resistance of the support for the selected column See Design Assumption 6 below.

SOLID SECTIONS

Height	1.35E LP LSL				1.55E LP LSL or 1.5E LP LVL			
	3-1/2" x 3-1/2"	3-1/2" x 5-1/2"	3-1/2" x 7-1/4"	3-1/2" x 9-1/2"	3-1/2" x 3-1/2"	3-1/2" x 5-1/2"	3-1/2" x 7-1/4"	3-1/2" x 9-1/2"
4'	14210	22330	29440	38570	14210	22330	29440	38570
5'	13370	21030	27720	36320	14210	22330	29440	38570
6'	11470	18020	23760	31140	13430	21090	27820	36450
7'	9690	15230	20070	26310	11110	17460	23010	30160
8'	8130	12770	16840	22060	9170	14410	19000	24900
9'	6800	10680	14090	18460	7580	11910	15700	20570
10'	5680	8940	11770	15430	6270	9860	13000	17040
12'	3990	6270	8270	10840	4340	6820	9000	11780
14'	2830	4450	5870	7690	3040	4780	6310	8260

Height	1.75E LP LSL			
	3-1/2" x 3-1/2"	3-1/2" x 5-1/2"	3-1/2" x 7-1/4"	3-1/2" x 9-1/2"
4'	14210	22330	29440	38570
5'	14210	22330	29440	38570
6'	14210	22330	29440	38570
7'	13400	21060	27760	36380
8'	11130	17490	23060	30220
9'	9240	14520	19140	25080
10'	7680	12070	15900	20840
12'	5330	8390	11050	14490
14'	3750	5900	7780	10200

Height	2.0E LP LVL								
	3-1/2" x 3-1/2"	3-1/2" x 5-1/2"	3-1/2" x 7-1/4"	3-1/2" x 9-1/2"	5-1/4" x 5-1/2"	5-1/4" x 7-1/4"	5-1/4" x 9-1/2"	7 x 7-1/4	7 x 9-1/2
4'	14210	22330	29440	38570	33500	44160	57860	58880	77150
5'	14210	22330	29440	38570	33500	44160	57860	58880	77150
6'	14210	22330	29440	38570	33500	44160	57860	58880	77150
7'	14210	22330	29440	38570	33500	44160	57860	58880	77150
8'	12810	20140	26550	34790	33500	44160	57860	58880	77150
9'	10620	16690	22000	28840	33500	44160	57860	58880	77150
10'	8820	13870	18280	23950	33500	44160	57860	58880	77150
12'	6130	9630	12700	16640	30210	39810	52190	58880	77150
14'	4310	6770	8930	11700	23530	31020	40650	58880	77150
16'	-	-	-	-	18400	24250	31770	53110	69580
18'	-	-	-	-	14450	19050	24960	44010	57680
20'	-	-	-	-	11410	15050	19710	36560	47900

BUILT-UP SECTIONS

Height	2.0E LP LVL						
	Double 1-3/4" x 3-1/2"	Double 1-3/4" x 5-1/2"	Double 1-3/4" x 7-1/4"	Double 1-3/4" x 9-1/2"	Triple 1-3/4" x 5-1/2"	Triple 1-3/4" x 7-1/4"	Triple 1-3/4" x 9-1/2"
4'	14210	22330	29440	38570	33500	44160	57860
5'	13280	20880	27510	36070	33500	44160	57860
6'	11160	17540	23120	30290	33500	44160	57860
7'	9280	14580	19220	25190	33050	43590	57110
8'	7690	12080	15930	20870	29600	39020	51120
9'	6370	10010	13200	17300	26310	34680	45450
10'	5290	8320	10960	14360	23280	30680	40210
12'	3670	5780	7620	9980	18130	23900	31310
14'	2580	4060	5360	7020	14120	18610	24390
16'	-	-	-	-	11030	14540	19060
18'	-	-	-	-	8670	11430	14970
20'	-	-	-	-	6840	9020	11830

DESIGN ASSUMPTIONS:

1. Height is the clear height of the column between the top and bottom supports.
2. The axial resistance is the total factored vertical load applied to the column, including all dead loads. No lateral loads have been applied.
3. The factored axial resistance is for a full cross-section only. Notching and drilling are not allowed without further analysis by a design professional except as required for the proper installation of column caps, bases and other hold-downs. Bolts, lag screws and self-tapping screws shall only be inserted through the face of the column, perpendicular to the face of the strands in LP LSL and the veneers in LP LVL.
4. The factored axial resistance assumes an eccentricity of 1/6 of the column width or depth, whichever controls.
5. Interior columns are assumed to be braced in both directions at the top and bottom supports.
6. The axial resistance has been limited by the factored bearing resistance of 2100 psi concrete. For bearing on a wood plate, the designer shall check the factored vertical load against the factored bearing resistance of the plate and increase the column size accordingly. Refer to the Bearing Resistance table on page 4 for column bearing on LP SolidStart LSL and LVL, or for the common species of Hem-Fir, S-P-F and D Fir-L. No increase is allowed without a complete analysis of the resistance of the column.

ADDITIONAL NOTES:

1. The value in each cell represents the factored axial compressive resistance of the column, in pounds (lbs).
2. Refer to page 23 for connection design of built-up sections.
3. For columns embedded in interior walls where drilling or notching may be required use the Factored Exterior Wall Column Resistance table for 0.45 kPa.

HOURLY WIND PRESSURE: ≤0.45 KPA (9.4 PSF) FOR OPEN TERRAIN; ≤0.64 KPA (13.4 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall stud. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the wall based on the greater of 1.25D + 1.5S + 0.5L, or 1.25D + 0.5S + 1.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected stud. See Design Assumption 9 below.

LP SOLIDSTART LSL & VLV

Height	Stud Spacing	1.35E LP LSL			1.55E LP LSL or 1.5E LP LVL		
		1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"	1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"
8'	12"	3700 L/374	5820 L/999	7680 L/999	3700 L/421	5820 L/999	7680 L/999
	16"	2780 L/296	4370 L/955	5760 L/999	2780 L/333	4370 L/999	5760 L/999
9'	12"	3650 L/268	5820 L/855	7680 L/999	3700 L/302	5820 L/962	7680 L/999
	16"	2650 L/213	4370 L/722	5760 L/999	2780 L/237	4370 L/807	5760 L/999
10'	12"	3040 L/207	5820 L/681	7680 L/999	3680 L/221	5820 L/763	7680 L/999
	16"	-	4370 L/553	5760 L/999	2340 L/180	4370 L/619	5760 L/999
11'	12"	-	5820 L/535	7680 L/967	2720 L/180	5820 L/600	7680 L/999
	16"	-	4370 L/430	5760 L/865	-	4370 L/482	5760 L/966
12'	12"	-	5820 L/425	7680 L/839	-	5820 L/477	7680 L/944
	16"	-	4370 L/338	5760 L/702	-	4370 L/380	5760 L/784
13'	12"	-	5820 L/340	7680 L/705	-	5820 L/383	7680 L/789
	16"	-	4370 L/269	5760 L/573	-	4370 L/303	5760 L/642
14'	12"	-	5760 L/276	7680 L/586	-	5820 L/311	7680 L/657
	16"	-	4180 L/219	5760 L/472	-	4370 L/244	5760 L/529
15'	12"	-	5120 L/234	7680 L/490	-	5820 L/254	7680 L/550
	16"	-	3580 L/185	5760 L/392	-	4370 L/198	5760 L/440
16'	12"	-	4530 L/199	7680 L/412	-	5510 L/212	7680 L/463
	16"	-	-	5760 L/327	-	2880 L/180	5760 L/368
18'	12"	-	-	7680 L/296	-	-	7680 L/334
	16"	-	-	5670 L/234	-	-	5760 L/263
20'	12"	-	-	6530 L/228	-	-	7680 L/245
	16"	-	-	4350 L/183	-	-	5760 L/191
22'	12"	-	-	5360 L/180	-	-	6620 L/192
	16"	-	-	-	-	-	-
24'	12"	-	-	-	-	-	-
	16"	-	-	-	-	-	-

LP SOLIDSTART LSL & LVL

Height	Stud Spacing	1.75E LP LSL			2.0E LP LVL		
		1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"	1-3/4" x 3-1/2"	1-3/4" x 5-1/2"	1-3/4" x 7-1/4"
8'	12"	3700 L/499	5820 L/999	7680 L/999	4320 L/650	6800 L/999	8960 L/999
	16"	2780 L/395	4370 L/999	5760 L/999	3240 L/519	5100 L/999	6720 L/999
9'	12"	3700 L/359	5820 L/999	7680 L/999	4320 L/472	6800 L/999	8960 L/999
	16"	2780 L/282	4370 L/948	5760 L/999	3240 L/373	5100 L/999	6720 L/999
10'	12"	3700 L/264	5820 L/899	7680 L/999	4320 L/350	6800 L/999	8960 L/999
	16"	2780 L/206	4370 L/730	5760 L/999	3240 L/274	5100 L/941	6720 L/999
11'	12"	3540 L/200	5820 L/709	7680 L/999	4320 L/264	6800 L/999	8960 L/999
	16"	-	4370 L/569	5760 L/999	3240 L/206	5100 L/740	6720 L/999
12'	12"	-	5820 L/565	7680 L/999	4080 L/206	6800 L/733	8960 L/999
	16"	-	4370 L/450	5760 L/922	-	5100 L/588	6720 L/999
13'	12"	-	5820 L/455	7680 L/930	2570 L/180	6800 L/594	8960 L/999
	16"	-	4370 L/360	5760 L/756	-	5100 L/473	6720 L/974
14'	12"	-	5820 L/370	7680 L/775	-	6800 L/486	8960 L/995
	16"	-	4370 L/290	5760 L/625	-	5100 L/384	6720 L/809
15'	12"	-	5820 L/303	7680 L/650	-	6800 L/400	8960 L/839
	16"	-	4370 L/237	5760 L/520	-	5100 L/315	6720 L/677
16'	12"	-	5820 L/250	7680 L/548	-	6800 L/332	8960 L/712
	16"	-	4370 L/195	5760 L/436	-	5100 L/260	6720 L/570
18'	12"	-	5030 L/182	7680 L/397	-	6800 L/233	8960 L/520
	16"	-	-	5760 L/312	-	5100 L/181	6720 L/412
20'	12"	-	-	7680 L/293	-	5370 L/180	8960 L/388
	16"	-	-	5760 L/229	-	-	6720 L/304
22'	12"	-	-	7670 L/220	-	-	8960 L/293
	16"	-	-	4690 L/180	-	-	6720 L/229
24'	12"	-	-	6040 L/180	-	-	8960 L/225
	16"	-	-	-	-	-	6040 L/180

ADDITIONAL NOTES:

1. Height is the clear height of the wall stud between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the studs in pounds per lineal foot (plf) of wall length. These factored vertical resistances are the resistances of the stud based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. Install full-width blocking per local code requirements, normally not more than every 8' along the height of the stud.

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the stud. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the stud depth.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. A system factor of 1.04 has been applied for bending resistance for three or more studs spaced no more than 24" o.c, properly connected by a suitable exterior sheathing. No increase in stiffness has been assumed for the wall sheathing.
7. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
8. Gypsum wall board is assumed attached to the interior side of the studs.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the stud size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the wall stud.

HOURLY WIND PRESSURE: ≤0.60 KPA (12.5 PSF) FOR OPEN TERRAIN; ≤0.85 KPA (17.8 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall stud. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the wall based on the greater of 1.25D + 1.5S + 0.5L, or 1.25D + 0.5S + 1.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected stud. See Design Assumption 9 below.

LP SOLIDSTART LSL & VLV

Height	Stud Spacing	1.35E LP LSL			1.55E LP LSL or 1.5E LP LVL		
		1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"	1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"
8'	12"	3700 L/296	5820 L/955	7680 L/999	3700 L/333	5820 L/999	7680 L/999
	16"	2780 L/232	4370 L/783	5760 L/999	2780 L/261	4370 L/874	5760 L/999
9'	12"	3530 L/213	5820 L/722	7680 L/999	3700 L/237	5820 L/807	7680 L/999
	16"	-	4370 L/583	5760 L/999	2780 L/184	4370 L/652	5760 L/999
10'	12"	-	5820 L/553	7680 L/999	3130 L/180	5820 L/619	7680 L/999
	16"	-	4370 L/442	5760 L/889	-	4370 L/495	5760 L/992
11'	12"	-	5820 L/430	7680 L/865	-	5820 L/482	7680 L/966
	16"	-	4370 L/341	5760 L/706	-	4370 L/382	5760 L/788
12'	12"	-	5820 L/338	7680 L/702	-	5820 L/380	7680 L/784
	16"	-	4370 L/266	5760 L/566	-	4370 L/299	5760 L/633
13'	12"	-	5820 L/269	7680 L/573	-	5820 L/303	7680 L/642
	16"	-	4370 L/210	5760 L/459	-	4370 L/237	5760 L/514
14'	12"	-	5570 L/219	7680 L/472	-	5820 L/244	7680 L/529
	16"	-	3260 L/180	5760 L/375	-	4370 L/190	5760 L/421
15'	12"	-	4770 L/185	7680 L/392	-	5820 L/198	7680 L/440
	16"	-	-	5760 L/310	-	-	5760 L/347
16'	12"	-	-	7680 L/327	-	3850 L/180	7680 L/368
	16"	-	-	5760 L/257	-	-	5760 L/289
18'	12"	-	-	7560 L/234	-	-	7680 L/263
	16"	-	-	4720 L/190	-	-	5760 L/205
20'	12"	-	-	5800 L/183	-	-	7680 L/191
	16"	-	-	-	-	-	-
22'	12"	-	-	-	-	-	-
	16"	-	-	-	-	-	-
24'	12"	-	-	-	-	-	-
	16"	-	-	-	-	-	-

LP SOLIDSTART LSL & VLV

Height	Stud Spacing	1.75E LP LSL			2.0E LP LVL		
		1-1/2" x 3-1/2"	1-1/2" x 5-1/2"	1-1/2" x 7-1/4"	1-3/4" x 3-1/2"	1-3/4" x 5-1/2"	1-3/4" x 7-1/4"
8'	12"	3700 L/395	5820 L/999	7680 L/999	4320 L/519	6800 L/999	8960 L/999
	16"	2780 L/310	4370 L/999	5760 L/999	3240 L/409	5100 L/999	6720 L/999
9'	12"	3700 L/282	5820 L/948	7680 L/999	4320 L/373	6800 L/999	8960 L/999
	16"	2780 L/219	4370 L/767	5760 L/999	3240 L/291	5100 L/990	6720 L/999
10'	12"	3700 L/206	5820 L/730	7680 L/999	4320 L/274	6800 L/941	8960 L/999
	16"	-	4370 L/583	5760 L/999	3240 L/213	5100 L/759	6720 L/999
11'	12"	-	5820 L/569	7680 L/999	4320 L/206	6800 L/740	8960 L/999
	16"	-	4370 L/451	5760 L/926	-	5100 L/590	6720 L/999
12'	12"	-	5820 L/450	7680 L/922	-	6800 L/588	8960 L/999
	16"	-	4370 L/354	5760 L/745	-	5100 L/466	6720 L/962
13'	12"	-	5820 L/360	7680 L/756	-	6800 L/473	8960 L/974
	16"	-	4370 L/281	5760 L/605	-	5100 L/372	6720 L/786
14'	12"	-	5820 L/290	7680 L/625	-	6800 L/384	8960 L/809
	16"	-	4370 L/226	5760 L/496	-	5100 L/300	6720 L/648
15'	12"	-	5820 L/237	7680 L/520	-	6800 L/315	8960 L/677
	16"	-	4370 L/183	5760 L/411	-	5100 L/245	6720 L/539
16'	12"	-	5820 L/195	7680 L/436	-	6800 L/260	8960 L/570
	16"	-	-	5760 L/342	-	5100 L/201	6720 L/451
18'	12"	-	-	7680 L/312	-	6800 L/181	8960 L/412
	16"	-	-	5760 L/243	-	-	6720 L/323
20'	12"	-	-	7680 L/229	-	-	8960 L/304
	16"	-	-	5370 L/180	-	-	6720 L/237
22'	12"	-	-	6250 L/180	-	-	8960 L/229
	16"	-	-	-	-	-	6250 L/180
24'	12"	-	-	-	-	-	8050 L/180
	16"	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the stud. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the stud depth.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. A system factor of 1.04 has been applied for bending resistance for three or more studs spaced no more than 24" o.c, properly connected by a suitable exterior sheathing. No increase in stiffness has been assumed for the wall sheathing.
7. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
8. Gypsum wall board is assumed attached to the interior side of the studs.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the stud size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the wall stud.

ADDITIONAL NOTES:

1. Height is the clear height of the wall stud between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the studs in pounds per lineal foot (plf) of wall length. These factored vertical resistances are the resistances of the stud based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. Install full-width blocking per local code requirements, normally not more than every 8' along the height of the stud.

HOURLY WIND PRESSURE: ≤0.45 KPA (9.4 PSF) FOR OPEN TERRAIN; ≤0.64 KPA (13.4 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X4 WALLS

Height	Tributary Width	1.35E LP LSL			1.55E LP LSL or 1.5E LVL		
		Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank	Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank
8'	16"	2960 L/661	7260 L/603	13600 L/598	3310 L/722	8250 L/560	13600 L/627
	24"	2900 L/451	7080 L/449	13600 L/541	3260 L/501	8100 L/439	13600 L/567
	36"	2790 L/304	6810 L/325	13450 L/438	3170 L/338	7860 L/322	13600 L/454
	48"	2450 L/230	5970 L/258	12990 L/354	3080 L/255	7630 L/256	13600 L/364
9'	16"	2920 L/473	6990 L/446	12970 L/493	3280 L/521	7970 L/436	13600 L/492
	24"	2820 L/319	6750 L/327	12540 L/441	3200 L/354	7740 L/323	13600 L/437
	36"	2520 L/215	5790 L/237	11930 L/329	3080 L/239	7190 L/237	13600 L/327
	48"	-	4010 L/190	10780 L/266	2600 L/181	5260 L/195	13250 L/261
10'	16"	2860 L/347	6460 L/342	11380 L/445	3230 L/385	7580 L/337	13100 L/400
	24"	2740 L/234	6130 L/247	10890 L/347	3120 L/260	7190 L/246	12690 L/341
	36"	-	4160 L/183	10130 L/254	-	5510 L/183	11960 L/251
	48"	-	-	7970 L/208	-	-	10180 L/205
11'	16"	2790 L/262	5530 L/271	9560 L/381	3160 L/291	6380 L/271	10950 L/376
	24"	-	4490 L/197	9060 L/279	3030 L/196	5610 L/197	10410 L/278
	36"	-	-	7390 L/206	-	-	9180 L/203
	48"	-	-	-	-	-	-
12'	16"	2700 L/203	4600 L/218	7980 L/315	3090 L/225	5290 L/220	9040 L/315
	24"	-	-	7480 L/226	-	-	8520 L/227
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-
14'	16"	-	-	5550 L/218	-	-	6180 L/221
	24"	-	-	-	-	-	-
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-

2X4 WALLS

Height	Tributary Width	1.75E LP LSL			2.0E LP LVL		
		Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank	Double 1-3/4" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank
8'	16"	4080 L/811	8650 L/739	13600 L/827	7000 L/941	8650 L/866	13600 L/970
	24"	4020 L/578	8650 L/562	13600 L/749	6920 L/694	8650 L/650	13600 L/878
	36"	3920 L/394	8650 L/407	13600 L/582	6790 L/498	8650 L/471	13600 L/673
	48"	3820 L/298	8650 L/320	13600 L/466	6650 L/389	8650 L/370	13600 L/538
9'	16"	4040 L/588	8650 L/555	13600 L/661	6790 L/700	8650 L/644	13600 L/783
	24"	3950 L/413	8650 L/407	13600 L/573	6670 L/507	8650 L/472	13600 L/666
	36"	3820 L/279	8650 L/291	13600 L/422	6490 L/360	8650 L/338	13600 L/490
	48"	3670 L/211	8640 L/226	13600 L/334	6310 L/279	8650 L/263	13600 L/388
10'	16"	3980 L/438	8650 L/416	13600 L/527	6720 L/526	8650 L/484	13600 L/631
	24"	3870 L/303	8650 L/301	13600 L/431	6570 L/377	8650 L/350	13600 L/502
	36"	3700 L/204	8160 L/215	13600 L/312	6340 L/248	8650 L/248	13600 L/364
	48"	-	5450 L/180	13600 L/245	6040 L/205	7740 L/192	13600 L/286
11'	16"	3910 L/332	7820 L/327	13390 L/425	6640 L/403	8650 L/370	13600 L/506
	24"	3770 L/229	7440 L/236	12860 L/335	6450 L/286	8650 L/264	13600 L/383
	36"	-	4790 L/180	12150 L/243	6170 L/200	7160 L/190	13600 L/275
	48"	-	-	10700 L/195	-	-	12940 L/217
12'	16"	3820 L/257	6620 L/267	11190 L/378	6490 L/314	7700 L/297	13070 L/415
	24"	-	6030 L/190	10660 L/276	6220 L/221	7240 L/213	12490 L/306
	36"	-	-	9800 L/198	-	-	11710 L/220
	48"	-	-	-	-	-	9130 L/180
14'	16"	-	4610 L/182	7790 L/269	4920 L/210	5380 L/205	9080 L/300
	24"	-	-	7330 L/190	-	-	8560 L/214
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation except for the 3-1/2" x 3-1/2" and 5-1/2" x 3-1/2" column sizes as noted in the table. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for Rough terrain; C_e = 1.0 for Open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - C_pC_g is based on worst-case wall zone for ULS; C_pC_g is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (as f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

HOURLY WIND PRESSURE: ≤0.60 KPA (12.5 PSF) FOR OPEN TERRAIN; ≤0.85 KPA (17.8 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X4 WALLS

Height	Tributary Width	1.35E LP LSL			1.55E LP LSL or 1.5E LVL		
		Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank	Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank
8'	16"	2920 L/502	7150 L/491	13600 L/559	3280 L/557	8150 L/479	13600 L/586
	24"	2820 L/338	6900 L/358	13600 L/476	3200 L/376	7940 L/353	13600 L/495
	36"	2450 L/228	5970 L/258	12990 L/354	3080 L/253	7630 L/256	13600 L/364
	48"	-	4130 L/201	11670 L/287	2570 L/191	5610 L/208	13600 L/287
9'	16"	2850 L/355	6830 L/359	12690 L/464	3220 L/394	7820 L/354	13600 L/454
	24"	2730 L/239	6410 L/259	12130 L/359	3120 L/266	7520 L/258	13600 L/359
	36"	-	4010 L/188	10780 L/266	-	5260 L/195	13250 L/261
	48"	-	-	8120 L/219	-	-	10320 L/217
10'	16"	2780 L/260	6240 L/272	11040 L/379	3160 L/289	7320 L/270	12870 L/371
	24"	-	4800 L/199	10440 L/278	3020 L/195	6160 L/199	12190 L/275
	36"	-	-	7970 L/208	-	-	10180 L/205
	48"	-	-	-	-	-	-
11'	16"	2640 L/196	4970 L/214	9220 L/306	3070 L/218	6090 L/214	10580 L/304
	24"	-	-	8140 L/224	-	-	9910 L/221
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-
12'	16"	-	-	7650 L/249	-	4110 L/180	8680 L/250
	24"	-	-	5940 L/183	-	-	7370 L/183
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-
14'	16"	-	-	-	-	-	4810 L/180
	24"	-	-	-	-	-	-
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-

2X4 WALLS

Height	Tributary Width	1.75E LP LSL			2.0E LP LVL		
		Double 1-1/2" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank	Double 1-3/4" x 3-1/2"	3-1/2" x 3-1/2" Beam or Plank	5-1/2" x 3-1/2" Plank
8'	16"	4040 L/639	8650 L/613	13600 L/773	6940 L/760	8650 L/709	13600 L/907
	24"	3950 L/438	8650 L/448	13600 L/634	6830 L/550	8650 L/519	13600 L/734
	36"	3820 L/295	8650 L/320	13600 L/466	6650 L/389	8650 L/370	13600 L/538
	48"	3600 L/223	8650 L/248	13600 L/368	6480 L/298	8650 L/287	13600 L/425
9'	16"	3980 L/460	8650 L/447	13600 L/610	6710 L/558	8650 L/518	13600 L/722
	24"	3860 L/310	8650 L/321	13600 L/463	6550 L/398	8650 L/373	13600 L/537
	36"	3670 L/209	8640 L/226	13600 L/334	6310 L/279	8650 L/263	13600 L/388
	48"	-	6360 L/183	13600 L/262	5560 L/211	7320 L/204	13600 L/304
10'	16"	3910 L/337	8650 L/331	13600 L/470	6620 L/416	8650 L/386	13600 L/548
	24"	3750 L/227	8450 L/237	13600 L/344	6420 L/294	8650 L/274	13600 L/401
	36"	-	-	13600 L/245	6040 L/204	7740 L/192	13600 L/286
	48"	-	-	11740 L/197	-	-	13600 L/222
11'	16"	3810 L/255	7570 L/260	13030 L/365	6510 L/317	8650 L/292	13600 L/420
	24"	-	6530 L/187	12380 L/268	6260 L/222	7890 L/208	13600 L/303
	36"	-	-	10700 L/195	-	-	12940 L/217
	48"	-	-	-	-	-	9110 L/180
12'	16"	3700 L/197	6330 L/210	10830 L/303	6310 L/245	7400 L/235	12670 L/335
	24"	-	-	10200 L/218	-	-	11960 L/243
	36"	-	-	-	-	-	9130 L/180
	48"	-	-	-	-	-	-
14'	16"	-	-	7480 L/211	-	-	8720 L/236
	24"	-	-	-	-	-	-
	36"	-	-	-	-	-	-
	48"	-	-	-	-	-	-

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation except for the 3-1/2" x 3-1/2" and 5-1/2" x 3-1/2" column sizes as noted in the table. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for Rough terrain; C_e = 1.0 for Open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

Factored Exterior Wall Column Resistance (lbs): 2x6 Walls for $q_{1/50} \cdot C_e$ = 0.45 kPa (9.4 psf)

HOURLY WIND PRESSURE: ≤0.45 KPA (9.4 PSF) FOR OPEN TERRAIN; ≤0.64 KPA (13.4 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X6 WALLS

Height	Tributary Width	1.35E LP LSL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	1.55E LP LSL or 1.5E LP LVL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	1.75E LP LSL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	2.0E LP LVL Double 1-3/4" x 5-1/2"	Triple 1-3/4" x 5-1/2"	3-1/2" x 5-1/2"	5-1/4" x 5-1/2"
8'	16"	4790 L/999	11610 L/999	11800 L/999	5320 L/999	13540 L/999	13300 L/999	6530 L/999	16490 L/999	13600 L/999	11170 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4750 L/999	11530 L/999	11710 L/999	5290 L/999	13480 L/999	13220 L/999	6500 L/999	16420 L/999	13600 L/999	11120 L/999	20400 L/999	13600 L/999	20400 L/999
	36"	4690 L/999	11420 L/999	11560 L/999	5240 L/999	13380 L/999	13110 L/999	6440 L/999	16320 L/999	13600 L/999	11050 L/999	20400 L/999	13600 L/999	20400 L/999
	48"	4620 L/866	11310 L/999	11420 L/849	5180 L/957	13270 L/999	12990 L/910	6380 L/999	16210 L/999	13600 L/999	10980 L/999	20400 L/999	13600 L/999	20400 L/999
9'	16"	4770 L/999	11210 L/999	11560 L/999	5300 L/999	13040 L/999	13040 L/999	6510 L/999	15920 L/999	13600 L/999	10910 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4710 L/999	11110 L/999	11440 L/999	5260 L/999	12960 L/999	12930 L/999	6460 L/999	15830 L/999	13600 L/999	10840 L/999	20400 L/999	13600 L/999	20400 L/999
	36"	4630 L/815	10970 L/999	11260 L/788	5190 L/895	12820 L/999	12780 L/945	6390 L/999	15690 L/999	13600 L/973	10750 L/999	20400 L/999	13600 L/999	20400 L/999
	48"	4550 L/617	10820 L/830	11080 L/635	5120 L/685	12690 L/889	12620 L/685	6320 L/792	15550 L/985	13600 L/788	10650 L/964	20400 L/999	13600 L/906	20400 L/999
10'	16"	4740 L/999	11160 L/999	11500 L/957	5280 L/999	13010 L/999	12990 L/961	6490 L/999	15880 L/999	13600 L/999	10880 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4670 L/872	11050 L/999	11360 L/811	5220 L/952	12900 L/999	12860 L/866	6430 L/999	15770 L/999	13600 L/998	10810 L/999	20400 L/999	13600 L/999	20400 L/999
	36"	4570 L/601	10880 L/792	11130 L/604	5140 L/667	12740 L/847	12670 L/651	6330 L/764	15600 L/935	13600 L/750	10690 L/923	20400 L/999	13600 L/863	20400 L/999
	48"	4460 L/454	10700 L/630	10900 L/482	5050 L/505	12580 L/678	12460 L/522	6240 L/589	15430 L/757	13600 L/601	10580 L/732	20400 L/941	13600 L/691	20400 L/941
12'	16"	4670 L/750	11070 L/907	11370 L/684	5220 L/819	12920 L/903	12870 L/697	6420 L/917	15790 L/946	13600 L/807	10820 L/999	20400 L/999	13600 L/944	20400 L/999
	24"	4570 L/523	10910 L/675	11150 L/511	5130 L/580	12770 L/720	12680 L/550	6330 L/657	15630 L/793	13600 L/635	10720 L/788	20400 L/944	13600 L/733	20400 L/944
	36"	4410 L/353	10670 L/488	10790 L/371	5000 L/392	12540 L/526	12540 L/402	6180 L/457	15390 L/587	13600 L/463	10560 L/568	20400 L/733	13600 L/535	20400 L/733
	48"	4000 L/267	10420 L/382	10320 L/292	4870 L/296	12310 L/414	12100 L/317	6030 L/346	15160 L/467	13600 L/365	10390 L/445	20400 L/588	13600 L/422	20400 L/588
14'	16"	4580 L/490	10950 L/611	11120 L/460	5140 L/536	12800 L/649	12700 L/492	6340 L/606	15660 L/711	13600 L/570	10750 L/717	20400 L/789	13600 L/661	20400 L/789
	24"	4420 L/333	10730 L/445	10710 L/337	5010 L/370	12600 L/478	12370 L/363	6200 L/427	15440 L/531	13600 L/419	10610 L/520	20400 L/661	13600 L/486	20400 L/661
	36"	3800 L/224	10400 L/316	9520 L/245	4820 L/249	12290 L/342	11840 L/261	5980 L/291	15120 L/385	13600 L/300	10390 L/369	20400 L/486	13600 L/348	20400 L/486
	48"	-	10030 L/246	6920 L/198	4040 L/189	11980 L/267	10370 L/208	5570 L/220	14790 L/303	13600 L/233	10140 L/286	20400 L/384	13600 L/271	20400 L/384
16'	16"	4450 L/333	10780 L/425	9820 L/329	5040 L/366	12640 L/454	11590 L/351	6220 L/416	15480 L/502	13600 L/395	10660 L/499	20400 L/598	13600 L/461	20400 L/598
	24"	4160 L/225	10490 L/304	9140 L/237	4860 L/250	12360 L/328	11080 L/254	6020 L/290	15180 L/367	13290 L/287	10440 L/357	20400 L/461	13600 L/332	20400 L/461
	36"	-	9460 L/217	-	-	11940 L/232	9230 L/185	5460 L/196	14730 L/263	12000 L/208	10030 L/251	20400 L/332	13600 L/234	20400 L/332
	48"	-	-	-	-	10450 L/183	-	-	13740 L/206	-	8970 L/196	20400 L/260	12000 L/186	20400 L/260
18'	16"	4290 L/235	9600 L/312	7970 L/246	4900 L/259	11300 L/335	9500 L/264	6060 L/296	13550 L/377	11320 L/299	10460 L/358	19010 L/463	13190 L/332	20400 L/450
	24"	-	9000 L/222	6070 L/181	-	10790 L/239	8600 L/189	5780 L/205	12990 L/272	10680 L/214	10070 L/253	18370 L/340	12530 L/239	20400 L/328
	36"	-	-	-	-	-	-	-	11810 L/193	-	8660 L/180	17470 L/244	8660 L/180	19560 L/236
	48"	-	-	-	-	-	-	-	-	-	-	15810 L/193	-	17110 L/190
20'	16"	-	7900 L/239	5910 L/191	4710 L/189	9340 L/258	7600 L/203	5840 L/216	11170 L/293	9070 L/232	9250 L/270	15620 L/368	10610 L/259	17160 L/355
	24"	-	-	-	-	8710 L/182	-	-	10580 L/207	-	8760 L/189	14940 L/264	9660 L/185	16330 L/257
	36"	-	-	-	-	-	-	-	-	-	-	13740 L/187	-	14630 L/185
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-
22'	16"	-	6230 L/187	-	-	7610 L/202	-	-	9100 L/231	7210 L/183	7660 L/210	12720 L/295	8450 L/205	13650 L/288
	24"	-	-	-	-	-	-	-	-	-	-	12050 L/208	-	12880 L/205
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for Rough terrain; C_e = 1.0 for Open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

HOURLY WIND PRESSURE: ≤0.06 KPA (12.5 PSF) FOR OPEN TERRAIN; ≤0.85 KPA (17.8 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X6 WALLS

Height	Tributary Width	1.35E LP LSL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	1.55E LP LSL or 1.5E LP LVL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	1.75E LP LSL Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	2.0E LP LVL Double 1-3/4" x 5-1/2"	Triple 1-3/4" x 5-1/2"	3-1/2" x 5-1/2"	5-1/4" x 5-1/2"
8'	16"	4760 L/999	11560 L/999	11740 L/999	5300 L/999	13500 L/999	13250 L/999	6510 L/999	16450 L/999	13600 L/999	11140 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4710 L/999	11460 L/999	11610 L/999	5250 L/999	13410 L/999	13140 L/999	6460 L/999	16350 L/999	13600 L/999	11080 L/999	20400 L/999	13600 L/999	20400 L/999
	36"	4620 L/859	11310 L/999	11420 L/849	5180 L/955	13270 L/999	12990 L/910	6380 L/999	16210 L/999	13600 L/999	10980 L/999	20400 L/999	13600 L/999	20400 L/999
	48"	4540 L/650	11160 L/886	11230 L/682	5110 L/722	13140 L/949	12830 L/736	6310 L/842	16070 L/999	13600 L/851	10880 L/999	20400 L/999	13600 L/977	20400 L/999
9'	16"	4730 L/999	11140 L/999	11480 L/999	5270 L/999	12980 L/999	12970 L/999	6480 L/999	15860 L/999	13600 L/999	10870 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4660 L/905	11010 L/999	11320 L/858	5210 L/989	12870 L/999	12830 L/917	6410 L/999	15740 L/999	13600 L/999	10780 L/999	20400 L/999	13600 L/999	20400 L/999
	36"	4550 L/612	10820 L/830	11080 L/635	5120 L/680	12720 L/999	12620 L/685	6320 L/792	15550 L/985	13600 L/788	10560 L/964	20400 L/999	13600 L/906	20400 L/999
	48"	4440 L/462	10630 L/658	10820 L/504	5030 L/514	12520 L/709	12390 L/547	6220 L/599	15370 L/794	13600 L/629	10520 L/763	20400 L/990	13600 L/723	20400 L/990
10'	16"	4690 L/962	11090 L/999	11410 L/879	5240 L/999	12930 L/999	12910 L/899	6450 L/999	15810 L/999	13600 L/999	10830 L/999	20400 L/999	13600 L/999	20400 L/999
	24"	4600 L/668	10930 L/867	11210 L/660	5170 L/742	12790 L/924	12730 L/710	6360 L/844	15660 L/999	13600 L/818	10730 L/999	20400 L/999	13600 L/941	20400 L/999
	36"	4460 L/450	10700 L/630	10900 L/482	5050 L/500	12580 L/678	12460 L/522	6240 L/584	15430 L/757	13600 L/601	10580 L/732	20400 L/941	13600 L/691	20400 L/941
	48"	4320 L/341	10470 L/495	10600 L/379	4930 L/378	12360 L/536	12200 L/413	6110 L/441	15210 L/603	13600 L/475	10410 L/574	20400 L/759	13600 L/546	20400 L/759
12'	16"	4600 L/582	10960 L/737	11220 L/558	5160 L/642	12820 L/784	12750 L/599	6360 L/726	15680 L/860	13600 L/691	10750 L/862	20400 L/974	13600 L/799	20400 L/974
	24"	4460 L/392	10750 L/537	10920 L/408	5040 L/436	12620 L/577	12480 L/441	6230 L/509	15470 L/643	13600 L/509	10610 L/627	20400 L/799	13600 L/588	20400 L/799
	36"	4000 L/265	10420 L/382	10320 L/292	4870 L/294	12310 L/414	12120 L/317	6030 L/343	15160 L/467	13600 L/365	10390 L/445	20400 L/588	13600 L/422	20400 L/588
	48"	2730 L/200	10100 L/297	7680 L/233	4280 L/222	12010 L/323	11300 L/249	5830 L/259	14840 L/366	13600 L/284	10170 L/345	20400 L/466	13600 L/328	20400 L/466
14'	16"	4470 L/370	10800 L/489	10850 L/370	5060 L/411	12670 L/524	12490 L/398	6240 L/473	15510 L/580	13600 L/459	10660 L/573	20400 L/719	13600 L/533	20400 L/719
	24"	4240 L/250	10510 L/350	10310 L/266	4890 L/277	12390 L/378	12010 L/288	6050 L/324	15220 L/424	13600 L/331	10470 L/409	20400 L/533	13600 L/384	20400 L/533
	36"	-	10030 L/246	6920 L/196	4040 L/187	11980 L/267	10370 L/208	5570 L/218	14790 L/303	13600 L/233	10140 L/286	20400 L/384	13600 L/271	20400 L/384
	48"	-	7180 L/191	-	-	11230 L/208	-	-	14360 L/235	13600 L/189	10460 L/189	20400 L/300	13600 L/209	20400 L/300
16'	16"	4310 L/250	10580 L/336	9440 L/261	4920 L/278	12460 L/361	11250 L/280	6080 L/323	15280 L/403	13480 L/315	10530 L/394	20400 L/504	13600 L/366	20400 L/504
	24"	-	10200 L/238	7050 L/193	4480 L/187	12080 L/257	10190 L/202	5820 L/218	14880 L/290	12750 L/227	10170 L/278	20400 L/366	13600 L/260	20400 L/366
	36"	-	-	-	-	10450 L/183	-	-	13740 L/206	-	8970 L/196	-	12000 L/186	20400 L/260
	48"	-	-	-	-	-	-	-	-	-	-	18480 L/206	-	20400 L/201
18'	16"	-	9240 L/245	6790 L/197	4730 L/196	10960 L/264	9100 L/208	5870 L/228	13170 L/299	10890 L/237	10200 L/281	18580 L/373	12740 L/264	20400 L/361
	24"	-	-	-	-	9970 L/188	-	-	12460 L/213	-	9690 L/197	17760 L/270	11240 L/190	19930 L/260
	36"	-	-	-	-	-	-	-	-	-	-	15810 L/193	-	17110 L/190
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-
20'	16"	-	6960 L/188	-	-	8970 L/201	-	-	10770 L/230	8360 L/183	8920 L/210	15160 L/291	10150 L/203	16590 L/283
	24"	-	-	-	-	-	-	-	-	-	-	14310 L/207	-	15580 L/202
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-
22'	16"	-	-	-	-	-	-	-	8560 L/180	-	-	12270 L/230	-	13130 L/226
	24"	-	-	-	-	-	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for Rough terrain; C_e = 1.0 for Open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

HOURLY WIND PRESSURE: ≤0.45 KPA (9.4 PSF) FOR OPEN TERRAIN; ≤0.64 KPA (13.4 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS

Height	Tributary Width	1.35E LP LSL Double 1-1/2" x 7-1/4"	1.35E LP LSL Triple 1-1/2" x 7-1/4"	1.35E LP LSL Quadruple 1-1/2" x 7-1/4"	1.35E LP LSL 3-1/2" x 7-1/4"	1.55E LP LSL or 1.5E LP LVL Double 1-1/2" x 7-1/4"	1.55E LP LSL or 1.5E LP LVL Triple 1-1/2" x 7-1/4"	1.55E LP LSL or 1.5E LP LVL Quadruple 1-1/2" x 7-1/4"	1.55E LP LSL or 1.5E LP LVL 3-1/2" x 7-1/4"
8'	16"	6360 L/999	15390 L/999	23860 L/999	15660 L/999	7050 L/999	17930 L/999	28700 L/999	17620 L/999
	24"	6330 L/999	15330 L/999	23790 L/999	15590 L/999	7030 L/999	17880 L/999	28630 L/999	17570 L/999
	36"	6280 L/999	15250 L/999	23680 L/999	15490 L/999	6990 L/999	17810 L/999	28530 L/999	17480 L/999
	48"	6230 L/999	15160 L/999	23550 L/999	15390 L/999	6950 L/999	17730 L/999	28420 L/999	17400 L/999
9'	16"	6340 L/999	14880 L/999	23410 L/999	15380 L/999	7040 L/999	17300 L/999	28090 L/999	17310 L/999
	24"	6300 L/999	14810 L/999	23320 L/999	15290 L/999	7010 L/999	17230 L/999	28000 L/999	17240 L/999
	36"	6240 L/999	14710 L/999	23180 L/999	15160 L/999	6960 L/999	17140 L/999	27870 L/999	17130 L/999
	48"	6180 L/999	14600 L/999	23020 L/999	15030 L/999	6910 L/999	17040 L/999	27740 L/999	17020 L/999
10'	16"	6320 L/999	14860 L/999	23380 L/999	15340 L/999	7020 L/999	17270 L/999	28060 L/999	17280 L/999
	24"	6270 L/999	14770 L/999	23270 L/999	15240 L/999	6980 L/999	17200 L/999	27950 L/999	17200 L/999
	36"	6200 L/999	14640 L/999	23080 L/999	15090 L/999	6920 L/999	17080 L/999	27790 L/999	17060 L/999
	48"	6120 L/999	14520 L/999	22910 L/999	14930 L/968	6860 L/999	16970 L/999	27630 L/999	16930 L/999
12'	16"	6270 L/999	14800 L/999	23300 L/999	15270 L/999	6980 L/999	17220 L/999	27980 L/999	17220 L/999
	24"	6200 L/999	14680 L/999	23130 L/999	15130 L/999	6920 L/999	17120 L/999	27830 L/999	17090 L/999
	36"	6090 L/794	14510 L/999	22900 L/999	14910 L/765	6830 L/869	16960 L/999	27610 L/999	16910 L/821
	48"	5970 L/601	14340 L/805	22670 L/955	14690 L/615	6730 L/668	16810 L/863	27400 L/999	16720 L/664
14'	16"	6210 L/999	14730 L/999	23200 L/999	15170 L/863	6930 L/999	17160 L/999	27880 L/976	17140 L/870
	24"	6110 L/741	14580 L/920	22990 L/997	14990 L/698	6850 L/811	17020 L/975	27690 L/914	16970 L/747
	36"	5940 L/508	14360 L/676	22690 L/803	14630 L/516	6710 L/564	16820 L/725	27400 L/834	16730 L/556
	48"	5780 L/384	14140 L/535	22390 L/649	14230 L/409	6570 L/427	16620 L/577	27120 L/685	16430 L/443
16'	16"	6140 L/728	14650 L/880	23070 L/870	15050 L/663	6870 L/794	17080 L/883	27770 L/787	17030 L/682
	24"	5990 L/510	14460 L/653	22810 L/764	14670 L/496	6750 L/562	16910 L/698	27520 L/726	16800 L/532
	36"	5770 L/344	14180 L/472	22430 L/570	14110 L/360	6560 L/382	16660 L/508	27140 L/600	16320 L/389
	48"	4940 L/260	13900 L/369	22060 L/455	12870 L/286	6380 L/289	16410 L/400	26780 L/483	15850 L/307
18'	16"	6040 L/526	14550 L/651	22920 L/701	14710 L/491	6790 L/575	16990 L/691	27610 L/636	16840 L/525
	24"	5840 L/361	14320 L/475	22590 L/565	14190 L/361	6630 L/401	16780 L/510	27290 L/577	16380 L/389
	36"	5100 L/243	13980 L/339	22110 L/414	12810 L/262	6380 L/270	16460 L/366	26810 L/439	15710 L/281
	48"	3400 L/184	13470 L/264	21650 L/327	9380 L/213	5480 L/204	16130 L/286	26350 L/350	14080 L/223
20'	16"	5920 L/390	14430 L/491	22720 L/566	13910 L/374	6690 L/427	16870 L/523	27400 L/513	16370 L/398
	24"	5670 L/265	14140 L/354	22310 L/426	13210 L/271	6480 L/294	16600 L/381	26980 L/447	15750 L/291
	36"	-	13710 L/250	21710 L/308	9530 L/203	5770 L/198	16200 L/270	26150 L/328	14160 L/210
	48"		10280 L/201	19480 L/246	-	-	15530 L/211	25180 L/260	
22'	16"	5770 L/296	14170 L/377	20580 L/459	12020 L/297	6570 L/324	16620 L/403	24360 L/477	14280 L/317
	24"	4830 L/200	13490 L/270	19730 L/337	10190 L/217	6300 L/222	16010 L/291	23560 L/359	13530 L/228
	36"	-	10360 L/197	18170 L/243	-	-	14920 L/207	22420 L/259	-
	48"	-	-	14040 L/197	-	-	-	20400 L/206	-
24'	16"	5590 L/229	12360 L/303	17760 L/378	10200 L/240	6410 L/251	14580 L/326	21030 L/402	12200 L/257
	24"	-	11120 L/217	16860 L/272	6660 L/180	-	13880 L/232	20160 L/292	10650 L/186
	36"	-	-	13610 L/198	-	-	-	18970 L/208	-
	48"	-	-	-	-	-	-	-	-
26'	16"	4840 L/181	10640 L/248	15200 L/313	7940 L/199	6230 L/198	12610 L/267	18000 L/335	10290 L/211
	24"	-	8110 L/180	14280 L/222	-	-	11770 L/189	17120 L/240	-
	36"	-	-	-	-	-	-	11150 L/180	-
	48"	-	-	-	-	-	-	-	-
28'	16"	-	9000 L/205	12960 L/261	-	-	10810 L/221	15340 L/281	7540 L/180
	24"	-	-	11070 L/187	-	-	-	14470 L/199	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-
30'	16"	-	-	11020 L/219	-	-	9220 L/185	13060 L/238	-
	24"	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - C_pC_g is based on worst-case wall zone for ULS; C_pC_g is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

HOURLY WIND PRESSURE: ≤0.45 KPA (9.4 PSF) FOR OPEN TERRAIN; ≤0.64 KPA (13.4 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS

| Height | Tributary Width | 1.75E LP LSL | | | | 2.0E LP LVL | | | | |
		Double 1-1/2" x 7-1/4"	Triple 1-1/2" x 7-1/4"	Quadruple 1-1/2" x 7-1/4"	3-1/2" x 7-1/4"	Double 1-3/4" x 7-1/4"	Triple 1-3/4" x 7-1/4"	Quadruple 1-3/4" x 7-1/4"	3-1/2" x 7-1/4"	5-1/4" x 7-1/4"
8'	16"	8660 L/999	21820 L/999	30730 L/999	17920 L/999	14780 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8630 L/999	21770 L/999	30730 L/999	17920 L/999	14750 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8580 L/999	21690 L/999	30730 L/999	17920 L/999	14690 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8540 L/999	21610 L/999	30730 L/999	17920 L/999	14640 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
9'	16"	8640 L/999	21090 L/999	30730 L/999	17920 L/999	14450 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8600 L/999	21020 L/999	30730 L/999	17920 L/999	14410 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8550 L/999	20920 L/999	30730 L/999	17920 L/999	14340 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8490 L/999	20820 L/999	30730 L/999	17920 L/999	14260 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
10'	16"	8620 L/999	21070 L/999	30730 L/999	17920 L/999	14430 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8580 L/999	20990 L/999	30730 L/999	17920 L/999	14380 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8510 L/999	20870 L/999	30730 L/999	17920 L/999	14300 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8440 L/999	20750 L/999	30730 L/999	17920 L/999	14210 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
12'	16"	8580 L/999	21010 L/999	30730 L/999	17920 L/999	14400 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8510 L/999	20900 L/999	30730 L/999	17920 L/999	14320 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8410 L/981	20740 L/999	30730 L/999	17920 L/947	14210 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8300 L/768	20570 L/956	30730 L/999	17920 L/766	14100 L/936	26890 L/999	35850 L/999	17920 L/881	26890 L/999
14'	16"	8520 L/999	20940 L/999	30730 L/999	17920 L/999	14360 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8420 L/913	20800 L/999	30730 L/999	17920 L/864	14260 L/999	26890 L/999	35850 L/999	17920 L/995	26890 L/999
	36"	8280 L/648	20590 L/804	30730 L/934	17920 L/642	14120 L/788	26890 L/995	35850 L/999	17920 L/740	26890 L/995
	48"	8120 L/498	20380 L/646	30730 L/775	17920 L/511	13970 L/622	26890 L/809	35850 L/995	17920 L/589	26890 L/809
16'	16"	8450 L/890	20860 L/925	30730 L/894	17920 L/790	14310 L/999	26890 L/999	35850 L/999	17920 L/925	26890 L/999
	24"	8320 L/637	20680 L/769	30730 L/819	17920 L/616	14190 L/764	26890 L/925	35850 L/994	17920 L/712	26890 L/925
	36"	8110 L/446	20410 L/568	30730 L/679	17920 L/449	14010 L/550	26890 L/712	35850 L/874	17920 L/519	26890 L/712
	48"	7900 L/337	20140 L/451	30730 L/548	17920 L/353	13800 L/430	26890 L/570	35850 L/712	17920 L/408	26890 L/570
18'	16"	8360 L/649	20760 L/744	30730 L/723	17920 L/608	14250 L/765	26890 L/827	35850 L/882	17920 L/705	26890 L/827
	24"	8180 L/459	20530 L/567	30730 L/651	17920 L/449	14100 L/557	26890 L/705	35850 L/802	17920 L/520	26890 L/705
	36"	7900 L/315	20190 L/412	30730 L/498	17920 L/322	13780 L/396	26890 L/520	35850 L/648	17920 L/373	26890 L/520
	48"	7450 L/239	19860 L/324	30730 L/397	17920 L/251	13420 L/308	26890 L/412	35850 L/520	17920 L/291	26890 L/412
20'	16"	8250 L/484	20630 L/577	30730 L/584	17920 L/458	14180 L/577	26890 L/671	35850 L/723	17920 L/533	26890 L/671
	24"	8010 L/339	20340 L/425	30730 L/506	17920 L/333	13890 L/415	26890 L/533	35850 L/647	17920 L/388	26890 L/533
	36"	7650 L/231	19910 L/305	30730 L/371	17900 L/236	13410 L/293	26890 L/388	35850 L/488	17920 L/275	26890 L/388
	48"	-	19470 L/239	30230 L/294	14150 L/193	12870 L/227	26890 L/304	35850 L/388	17920 L/213	26890 L/304
22'	16"	8110 L/369	19960 L/450	28950 L/501	17030 L/357	14000 L/443	26890 L/542	35850 L/591	17920 L/409	26890 L/542
	24"	7800 L/257	19270 L/329	28060 L/402	16210 L/259	13580 L/316	26890 L/409	35850 L/509	17920 L/293	26890 L/409
	36"	-	18300 L/235	26830 L/294	13250 L/190	12950 L/222	26260 L/296	35850 L/372	17050 L/209	26890 L/293
	48"	-	15230 L/188	25680 L/232	-	-	25190 L/233	35850 L/293	-	26890 L/229
24'	16"	7930 L/286	17460 L/368	24970 L/449	14530 L/292	13710 L/346	24520 L/453	34500 L/502	16960 L/324	26890 L/435
	24"	7510 L/198	16690 L/264	24010 L/330	13560 L/209	13160 L/245	23640 L/332	33450 L/410	16050 L/233	26550 L/319
	36"	-	14530 L/189	22720 L/237	-	9100 L/180	22420 L/238	32020 L/279	9100 L/180	24990 L/230
	48"	-	-	19650 L/189	-	-	19570 L/189	30700 L/236	-	21110 L/186
26'	16"	7710 L/225	15080 L/304	21350 L/378	12260 L/241	12440 L/280	21110 L/380	29520 L/468	14360 L/268	23270 L/366
	24"	-	14260 L/215	20400 L/273	8560 L/180	11790 L/197	20200 L/274	28460 L/344	13070 L/192	22140 L/266
	36"	-	-	18630 L/194	-	-	18570 L/194	27030 L/247	-	19820 L/191
	48"	-	-	-	-	-	-	24980 L/194	-	-
28'	16"	7430 L/181	12920 L/253	18210 L/320	10300 L/200	10850 L/231	18080 L/321	25190 L/401	12100 L/224	19550 L/312
	24"	-	11310 L/180	17270 L/227	-	-	17170 L/228	24150 L/289	-	18480 L/223
	36"	-	-	-	-	-	-	22770 L/205	-	-
	48"	-	-	-	-	-	-	-	-	-
30'	16"	-	11020 L/212	15510 L/271	-	9360 L/192	15440 L/272	21500 L/345	10180 L/189	16450 L/267
	24"	-	-	14610 L/191	-	-	14560 L/191	20500 L/245	-	15460 L/188
	36"	-	-	-	-	-	-	14900 L/180	-	-
	48"	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - $C_p C_g$ is based on worst-case wall zone for ULS; $C_p C_g$ is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

Factored Exterior Wall Column Resistance (lbs): 2x8 Walls for $q_{1/50}*C_e=0.60$ kPa (12.5 psf)

HOURLY WIND PRESSURE: ≤0.60 KPA (12.5 PSF) FOR OPEN TERRAIN; ≤0.85 KPA (17.8 PSF) FOR ROUGH TERRAIN

TO USE:
1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS

Height	Tributary Width	1.35E LP LSL				1.55E LP LSL or 1.5E LP LVL			
		Double 1-1/2" x 7-1/4"	Triple 1-1/2" x 7-1/4"	Quadruple 1-1/2" x 7-1/4"	3-1/2" x 7-1/4"	Double 1-1/2" x 7-1/4"	Triple 1-1/2" x 7-1/4"	Quadruple 1-1/2" x 7-1/4"	3-1/2" x 7-1/4"
8'	16"	6340 L/999	15350 L/999	23810 L/999	15620 L/999	7040 L/999	17900 L/999	28650 L/999	17590 L/999
	24"	6300 L/999	15280 L/999	23710 L/999	15530 L/999	7000 L/999	17830 L/999	28560 L/999	17510 L/999
	36"	6230 L/999	15160 L/999	23550 L/999	15390 L/999	6950 L/999	17730 L/999	28420 L/999	17400 L/999
	48"	6170 L/999	15050 L/999	23400 L/999	15250 L/999	6900 L/999	17630 L/999	28280 L/999	17280 L/999
9'	16"	6320 L/999	14840 L/999	23350 L/999	15320 L/999	7020 L/999	17250 L/999	28030 L/999	17260 L/999
	24"	6260 L/999	14740 L/999	23230 L/999	15210 L/999	6970 L/999	17170 L/999	27910 L/999	17170 L/999
	36"	6180 L/999	14600 L/999	23020 L/999	15030 L/999	6910 L/999	17040 L/999	27740 L/999	17020 L/999
	48"	6100 L/999	14460 L/999	22840 L/999	14860 L/999	6840 L/999	16910 L/999	27560 L/999	16870 L/999
10'	16"	6290 L/999	14800 L/999	23300 L/999	15280 L/999	6990 L/999	17220 L/999	27990 L/999	17220 L/999
	24"	6220 L/999	14690 L/999	23140 L/999	15140 L/999	6940 L/999	17120 L/999	27840 L/999	17110 L/999
	36"	6120 L/999	14520 L/999	22910 L/999	14930 L/968	6860 L/999	16970 L/999	27630 L/999	16930 L/999
	48"	6020 L/762	14350 L/999	22690 L/999	14720 L/782	6770 L/847	16810 L/999	27420 L/999	16750 L/843
12'	16"	6220 L/999	14720 L/999	23200 L/999	15170 L/999	6940 L/999	17150 L/999	27880 L/999	17140 L/999
	24"	6120 L/878	14570 L/999	22980 L/999	14980 L/833	6860 L/999	17010 L/999	27690 L/999	16970 L/891
	36"	5970 L/596	14340 L/805	22670 L/955	14690 L/615	6730 L/662	16810 L/863	27400 L/999	16720 L/664
	48"	5810 L/451	14110 L/637	22370 L/773	14380 L/488	6600 L/501	16600 L/688	27110 L/817	16460 L/530
14'	16"	6140 L/820	14630 L/999	23050 L/999	15050 L/758	6870 L/895	17070 L/999	27760 L/933	17030 L/808
	24"	6000 L/565	14440 L/742	22790 L/871	14760 L/565	6760 L/628	16890 L/793	27500 L/859	16810 L/608
	36"	5780 L/381	14140 L/535	22390 L/649	14230 L/409	6570 L/423	16620 L/577	27120 L/685	16430 L/443
	48"	4940 L/288	13840 L/418	22000 L/517	13190 L/323	6390 L/320	16360 L/454	26740 L/551	15990 L/349
16'	16"	6040 L/567	14530 L/715	22900 L/813	14810 L/541	6790 L/623	16970 L/761	27600 L/745	16890 L/580
	24"	5840 L/382	14280 L/520	22560 L/623	14300 L/396	6620 L/425	16740 L/559	27270 L/653	16480 L/428
	36"	4940 L/258	13900 L/369	22060 L/455	12870 L/286	6380 L/286	16410 L/400	26780 L/483	15850 L/307
	48"	3140 L/195	13380 L/287	21570 L/358	9210 L/227	5300 L/217	16050 L/312	26300 L/384	14140 L/243
18'	16"	5910 L/401	14400 L/522	22700 L/615	14360 L/396	6690 L/446	16850 L/559	27400 L/596	16530 L/426
	24"	5650 L/271	14090 L/375	22270 L/455	13670 L/286	6460 L/301	16560 L/404	26970 L/480	15930 L/309
	36"	3410 L/183	13470 L/264	21650 L/327	9380 L/213	5480 L/203	16130 L/286	26350 L/350	14080 L/223
	48"	-	9720 L/207	20980 L/256	-	-	15230 L/223	25710 L/275	-
20'	16"	5750 L/294	14240 L/390	22440 L/465	13440 L/299	6550 L/327	16690 L/419	27120 L/479	15950 L/319
	24"	4470 L/199	13850 L/277	21910 L/339	10860 L/220	6270 L/221	16330 L/299	26480 L/360	15150 L/230
	36"	-	10280 L/201	19480 L/246	-	-	15530 L/211	25180 L/260	-
	48"	-	-	14450 L/200	-	-	-	21900 L/208	-
22'	16"	5390 L/222	13710 L/298	20010 L/370	11190 L/236	6390 L/247	16210 L/321	23820 L/392	13780 L/252
	24"	-	11650 L/215	18940 L/267	-	-	15410 L/228	22790 L/286	11340 L/184
	36"	-	-	14040 L/197	-	-	-	20390 L/206	-
	48"	-	-	-	-	-	-	-	-
24'	16"	-	11860 L/238	17150 L/300	8280 L/194	6190 L/191	14110 L/257	20440 L/321	11610 L/202
	24"	-	-	15050 L/216	-	-	12360 L/183	19360 L/230	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-
26'	16"	-	9320 L/196	14590 L/246	-	-	12110 L/209	17400 L/265	-
	24"	-	-	10810 L/180	-	-	-	15900 L/188	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-
28'	16"	-	-	12100 L/204	-	-	8050 L/180	14750 L/220	-
	24"	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-
30'	16"	-	-	-	-	-	-	12490 L/184	-
	24"	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:
1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - C_pC_g is based on worst-case wall zone for ULS; C_pC_g is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.

ADDITIONAL NOTES:
1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

HOURLY WIND PRESSURE: ≤0.60 KPA (12.5 PSF) FOR OPEN TERRAIN; ≤0.85 KPA (17.8 PSF) FOR ROUGH TERRAIN

TO USE:

1. Determine the height of the wall column. If not listed, select the next tallest height in the table.
2. Select the row for the desired spacing.
3. Calculate factored vertical load applied to the top of the column based on the greater of 1.25D + 1.5L + 0.5S, or 1.25D + 1.5S + 0.5L.
   Note that the tables are valid only for D ≤ L + 0.5S or D ≤ S + 0.5L where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
4. Select the LP® SolidStart® LSL or LVL grade and size where the factored vertical resistance and deflection ratio meet or exceed the applied factored vertical load and the required deflection limit.
5. Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS

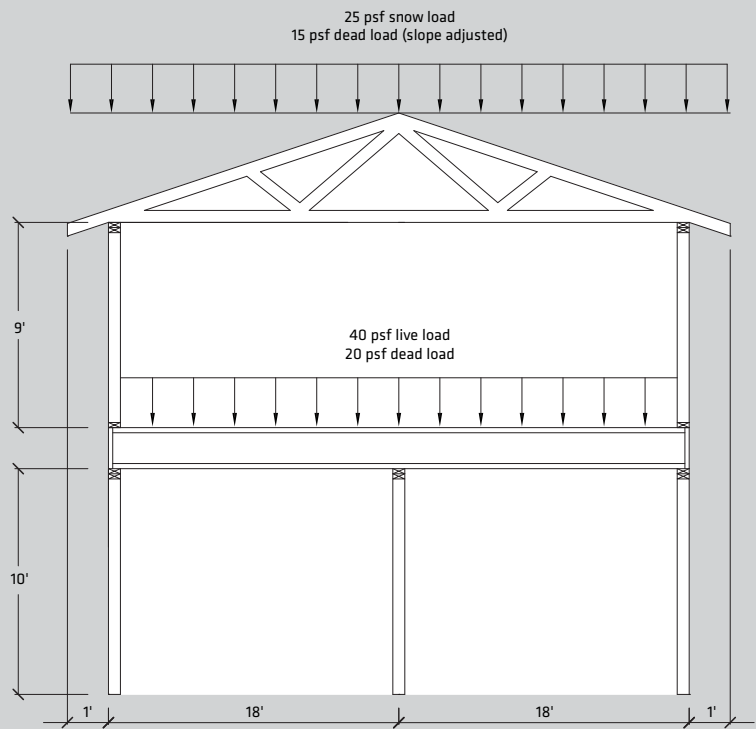| Height	Tributary Width	1.75E LP LSL Double 1-1/2" x 7-1/4"	1.75E LP LSL Triple 1-1/2" x 7-1/4"	1.75E LP LSL Quadruple 1-1/2" x 7-1/4"	1.75E LP LSL 3-1/2" x 7-1/4"	2.0E LP LVL Double 1-3/4" x 7-1/4"	2.0E LP LVL Triple 1-3/4" x 7-1/4"	2.0E LP LVL Quadruple 1-3/4" x 7-1/4"	2.0E LP LVL 3-1/2" x 7-1/4"	2.0E LP LVL 5-1/4" x 7-1/4"
8'	16"	8640 L/999	21790 L/999	30730 L/999	17920 L/999	14760 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8600 L/999	21720 L/999	30730 L/999	17920 L/999	14710 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8540 L/999	21610 L/999	30730 L/999	17920 L/999	14640 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8480 L/999	21510 L/999	30730 L/999	17920 L/999	14570 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
9'	16"	8620 L/999	21050 L/999	30730 L/999	17920 L/999	14420 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8570 L/999	20960 L/999	30730 L/999	17920 L/999	14360 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8490 L/999	20820 L/999	30730 L/999	17920 L/999	14260 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8420 L/999	20690 L/999	30730 L/999	17920 L/999	14170 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
10'	16"	8590 L/999	21010 L/999	30730 L/999	17920 L/999	14400 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8530 L/999	20910 L/999	30730 L/999	17920 L/999	14320 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8440 L/999	20750 L/999	30730 L/999	17920 L/999	14210 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	48"	8340 L/975	20580 L/999	30730 L/999	17920 L/970	14100 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
12'	16"	8530 L/999	20940 L/999	30730 L/999	17920 L/999	14350 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8440 L/999	20790 L/999	30730 L/999	17920 L/999	14250 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	36"	8300 L/768	20570 L/956	30730 L/999	17920 L/766	14100 L/936	26890 L/999	35850 L/999	17920 L/881	26890 L/999
	48"	8160 L/584	20360 L/770	30730 L/922	17920 L/611	13950 L/739	26890 L/962	35850 L/999	17920 L/702	26890 L/962
14'	16"	8460 L/999	20850 L/999	30730 L/999	17920 L/930	14290 L/999	26890 L/999	35850 L/999	17920 L/999	26890 L/999
	24"	8330 L/718	20660 L/875	30730 L/964	17920 L/702	14160 L/865	26890 L/999	35850 L/999	17920 L/809	26890 L/999
	36"	8120 L/494	20380 L/646	30730 L/775	17920 L/511	13970 L/622	26890 L/809	35850 L/995	17920 L/589	26890 L/809
	48"	7920 L/373	20090 L/512	30730 L/625	17920 L/402	13780 L/486	26890 L/648	35850 L/809	17920 L/463	26890 L/648
16'	16"	8360 L/704	20740 L/834	30730 L/842	17920 L/672	14230 L/836	26890 L/954	35850 L/999	17920 L/776	26890 L/954
	24"	8180 L/496	20500 L/623	30730 L/738	17920 L/494	14070 L/607	26890 L/776	35850 L/925	17920 L/570	26890 L/776
	36"	7900 L/334	20140 L/451	30730 L/548	17920 L/353	13800 L/430	26890 L/570	35850 L/712	17920 L/408	26890 L/570
	48"	7280 L/253	19770 L/354	30730 L/436	17920 L/275	13440 L/333	26890 L/451	35850 L/570	17920 L/318	26890 L/451
18'	16"	8240 L/508	20610 L/618	30730 L/673	17920 L/492	14150 L/612	26890 L/764	35850 L/827	17920 L/570	26890 L/764
	24"	8000 L/351	20300 L/453	30730 L/544	17920 L/356	13900 L/438	26890 L/570	35850 L/705	17920 L/412	26890 L/570
	36"	7450 L/237	19860 L/324	30730 L/397	17920 L/251	13420 L/308	26890 L/412	35850 L/520	17920 L/291	26890 L/412
	48"	-	19390 L/252	30730 L/312	14160 L/203	12490 L/239	26890 L/323	35850 L/412	17920 L/225	26890 L/323
20'	16"	8090 L/377	20440 L/466	30730 L/537	17920 L/366	14000 L/458	26890 L/582	35850 L/671	17920 L/426	26890 L/582
	24"	7770 L/257	20050 L/337	30730 L/407	17920 L/262	13570 L/325	26890 L/426	35850 L/533	17920 L/304	26890 L/426
	36"	-	19470 L/239	30230 L/294	14150 L/193	12870 L/227	26890 L/304	35850 L/388	17920 L/213	26890 L/304
	48"	-	15630 L/191	28260 L/234	-	-	26890 L/237	35850 L/304	-	26890 L/237
22'	16"	7900 L/285	19500 L/361	28350 L/439	16480 L/285	13720 L/350	26890 L/448	35850 L/542	17920 L/324	26890 L/448
	24"	7060 L/194	18620 L/259	27230 L/323	14640 L/207	13160 L/246	26630 L/325	35850 L/409	17920 L/229	26890 L/324
	36"	-	15230 L/188	25680 L/232	-	-	25190 L/233	35850 L/293	-	26890 L/229
	48"	-	-	20660 L/187	-	-	20550 L/187	35850 L/231	-	22460 L/184
24'	16"	7670 L/221	16940 L/291	24320 L/362	13930 L/230	13340 L/272	23930 L/364	33790 L/447	16340 L/257	26890 L/349
	24"	-	15880 L/207	23140 L/261	-	12270 L/191	22810 L/262	32490 L/328	13890 L/187	25490 L/254
	36"	-	-	19650 L/189	-	-	19570 L/189	30700 L/236	-	21110 L/186
	48"	-	-	-	-	-	-	26370 L/189	-	-
26'	16"	-	14530 L/238	20710 L/301	11250 L/190	12000 L/218	20490 L/302	28800 L/377	13740 L/211	22510 L/293
	24"	-	-	19530 L/214	-	-	19350 L/214	27490 L/272	-	21130 L/209
	36"	-	-	-	-	-	-	24970 L/194	-	-
	48"	-	-	-	-	-	-	-	-	-
28'	16"	-	12360 L/197	17570 L/251	-	10050 L/180	17460 L/252	24480 L/319	10050 L/180	18820 L/247
	24"	-	-	15080 L/180	-	-	15080 L/180	23210 L/227	-	15080 L/180
	36"	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-
30'	16"	-	-	14900 L/212	-	-	14840 L/212	20820 L/271	-	15770 L/209
	24"	-	-	-	-	-	-	19600 L/190	-	-
	36"	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
2. The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. The hole shall not be placed within 6" of either end of the column. Refer to Drilling & Notching guidelines on page 20 for more information.
3. The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
4. The following assumptions have been used in the calculation of design wind pressure:
   - I_w = 1.0 for ULS; I_w = 0.75 for SLS
   - C_e = 0.7 for rough terrain; C_e = 1.0 for open terrain. Refer to page 4 for terrain definitions and note 1 for building height restrictions
   - C_{pi} is based on Category 2
   - C_pC_g is based on worst-case wall zone for ULS; C_pC_g is based on worst-case interior wall zone for SLS
   - C_{gi} = 2.0
5. A duration of load adjustment, K_D = 1.15 has been applied for wind.
6. No system factor has been applied for bending resistance or stiffness.
7. Full-width blocking is assumed to be installed at every 8' on centre or less.
8. For deflection calculation, a ratio of combined specified Live and Snow to Dead Load of 4 is assumed, such that: L+0.5S or S +0.5L ≤ 4D. Combined Live and Snow to Dead Load of ratio greater than 4 is beyond the scope of this table.
9. The tabulated values have been limited to the bearing resistance of S-P-F as the wall plate (f_{cp} = 768 psi). For plates with a specified compressive strength perpendicular to grain less than 768 psi, the designer shall check the factored load against the factored compressive resistance for the plate and adjust the column size and/or the spacing accordingly. Refer to the Bearing Capacity table on page 4 for other common species. No increase is allowed without a complete analysis of the vertical resistance of the column.
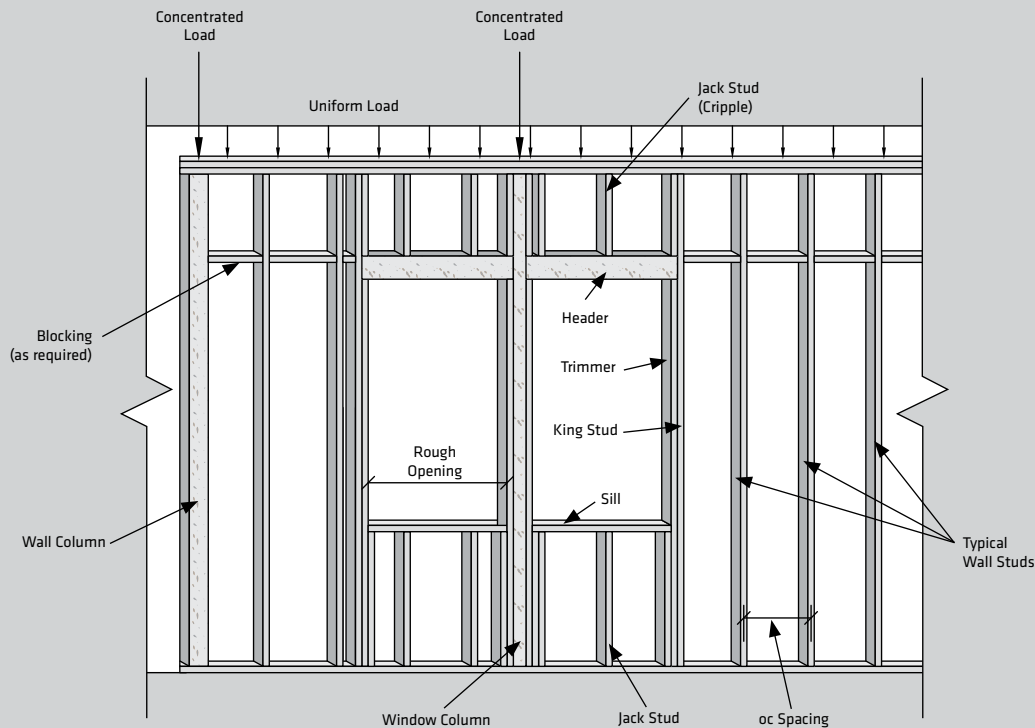
ADDITIONAL NOTES:

1. Height is the clear height of the column between the bottom plate and the lower top plate.
2. The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 1 to 4 of Table 4.1.3.2.A of the NBC or horizontal wind pressure acting alone (no gravity loads except Dead Load), whichever control.
3. The second value in each cell represents the deflection ratio (L/x). The designer shall verify the correct deflection ratio limit for the intended application. For brick or stone veneer, a maximum deflection of L/360 is required in accordance with A4.5.2.1 of CSA Standard O86-09 and the Canadian Wood Council's Wood Frame Construction Guide.
4. These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
5. All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
6. Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

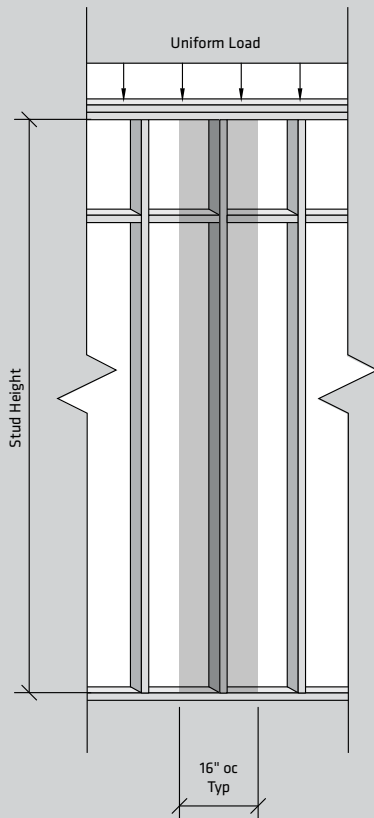# Typical Wall Framing Examples

ENGINEERED WALL FRAMING EXAMPLE

25 psf snow load
15 psf dead load (slope adjusted)

9'

40 psf live load
20 psf dead load

10'

1'   18'   18'   1'

TYPICAL WALL FRAMING

Concentrated Load

Concentrated Load

Uniform Load

Jack Stud (Cripple)

Header

Blocking (as required)

Trimmer

King Stud

Rough Opening

Sill

Wall Column

Typical Wall Studs

Window Column

Jack Stud

oc Spacing

TYPICAL WALL STUD EXAMPLE

16" oc Typ

Stud Height

Uniform Load

EXAMPLE 1.
TYPICAL WALL STUD

HOW TO SIZE:

1. Determine Hourly Wind Pressure ($q_{1/50}$) based on location from Appendix C of the NBC and Exposure Category based on the terrain conditions.
2. Determine the appropriate snow load based on Appendix C of NBC.
3. Determine the clear height of the wall stud.
4. Determine the total factored vertical load (plf) applied to wall studs from roof and floor including wall weight.
5. Determine the allowable deflection ratio based on the wall construction.
6. Select the required grade and size from the appropriate chart for the desired wall stud spacing.

EXAMPLE:

Select a suitable wall stud for a 10' first story wall for a residential structure as shown above located in Victoria, British Columbia, in an open (and level) terrain condition.

– Wall supports second floor and roof of a 36' wide home
– Second floor is supported at midspan and roof trusses have a 1' overhang
– Floor loads are 40 psf Live and 20 psf Dead Load
– Snow load is 25 psf Snow as calculated and 15 psf Roof Dead Load
– Assume 100 plf for the weight of the second story wall
– The exterior wall finish is stucco

SOLUTION:

1. For a structure located in Victoria, British Columbia with open and level terrain condition $q_{1/50}$ = 0.57 kPa and C_e = 1.0.
2. Use the height of the wall (10') as an approximation of the stud height.
3. The vertical load applied to each wall stud is:

Snow: S = 25 psf * (36' / 2 + 1') = 475 plf
Live: L = 40 psf * (18' / 2) = 360 plf
Dead: D = 15psf * (36' / 2 + 1') + 100 plf + 20 psf * (18' / 2) = 565 plf

Total Factored Vertical Load

P_f = 1.25D + 1.5L + 0.5S = 1484 plf
P_f = 1.25D + 1.5S + 0.5L = 1600 plf ← govern

4. With a stucco finish, the deflection ratio shall be L/360 or better.
5. Using the 0.60 kPa chart from the Factored Wall Stud Resistance table on page 7, for a standard wall stud of 16" oc spacing, select:

1-1/2" x 5-1/2" 1.35E LP® SolidStart® LSL at 16" oc can support a factored vertical load of 4370 plf with a deflection ratio of L/442.

WALL COLUMN EXAMPLE

Concentrated Load

Uniform Load

Wall Column
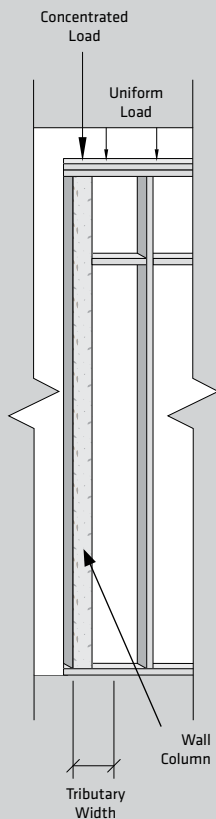
Tributary Width

EXAMPLE 2. WALL COLUMN

HOW TO SIZE

1. Determine the clear height of the column.
2. Determine the tributary width for the lateral wind pressure.
3. Determine the total vertical load (lbs) applied to the column.
4. Determine the allowable deflection ratio based on the wall construction.
5. Select the required grade and size from the appropriate chart.

EXAMPLE:

Based on the conditions from the typical wall stud example, select the corner wall column in the same first story wall to support a girder truss spaced 8' on centers. The design must include the weight of the second story wall and the load from the second floor being carried by the wall header beam.

SOLUTION:

1. The column will be the same height as the typical wall stud - 10' in this example.
2. The tributary width for the wind pressure will be half as that from the typical stud example: 8". Use 16" as next largest tributary width.
3. The applied vertical load on the column will be the girder truss load transferred through the second story wall column, the tributary area of the second floor and the tributary weight of the second story wall (both the same as in the typical wall stud).

Snow: S = 25 psf * (36' / 2 + 1') * (8' / 2 + 1') = 2375 lbs
Dead: Roof = 15 psf * (36' / 2 + 1') * (8' / 2 + 1') = 1425 lbs
Wall = 100 plf * 8" oc / 12 + 100 plf* (18' / 2) = 967 lbs
Floor = 20 psf * (18' / 2) * 8" oc / 12 = 120 lbs
D = 1425 lbs + 967 lbs + 120 lbs = 1739 lbs
Live: L = 360 plf * 8" oc / 12 = 240 lbs

Total Factored Vertical Load

P_f = 1.25D + 1.5L + 0.5S = 4687 plf
P_f = 1.25D + 1.5S + 0.5L = 6822 plf ← govern

4. As in the typical wall stud example, use a minimum deflection ratio of L/360 for stucco.
5. Using the table for Factored Exterior Wall Column Resistance: 2x6 for 0.60 kPa on page 11 for a 16" oc spacing, select:

3-1/2" x 5-1/2" 1.35E LP SolidStart LSL column can support a factored vertical load of 11410 lbs with a deflection ratio of L/879.

WINDOW COLUMN EXAMPLE

Concentrated Load

Uniform Load

Window Column

36" RO   36" RO

Tributary Width for Column
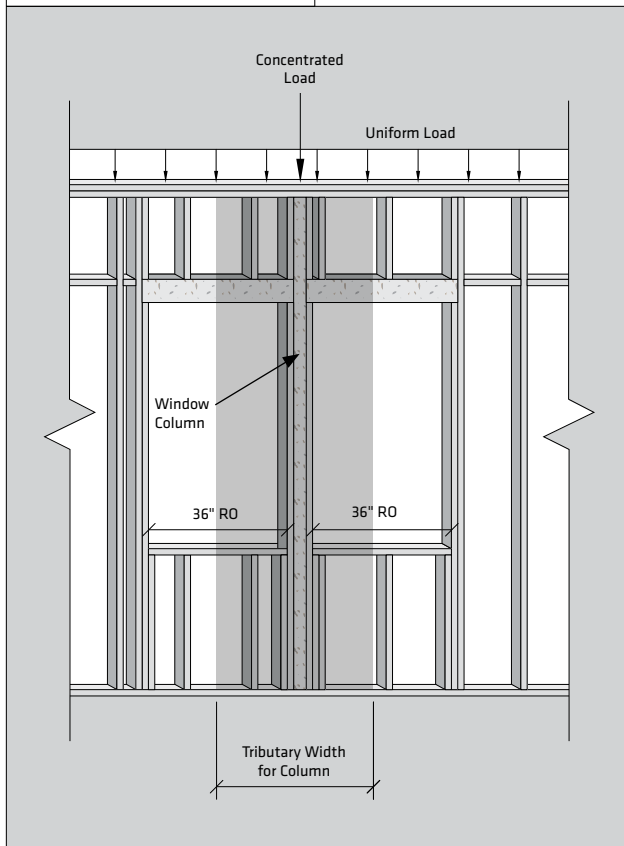
EXAMPLE 3. WINDOW COLUMN

HOW TO SIZE
1. Determine the clear height of the column.
2. Determine the tributary width for the lateral wind pressure.
3. Determine the total vertical load (lbs) applied to the column.
4. Determine the allowable deflection ratio based on the wall construction.
5. Select the required grade and size from the appropriate chart.

EXAMPLE:

This column sits between two windows, both 36" rough openings, in the wall from the following example. For this example, there is no additional concentrated load applied. The only vertical loads will be the uniform load from the roof trusses, second story wall and the second floor.

SOLUTION:
1. The column will be the same height as the typical wall stud – 10'.
2. The tributary width for the wind pressure will be half the rough opening to both sides plus the width of the column and the trimmers. Since the width of the column is not known but the only vertical loads are the uniform loads from the common trusses, try a double 1-1/2" x 5-1/2" column.

    Tributary Width =
       2 * (36" / 2) + 2 * 1-1/2" (trimmers) + 2 * 1-1/2" (double 1-1/2" column) = 42"
    Use 48" as next largest Tributary Width.
3. The applied vertical load on the column will only be the uniform load from the common roof trusses between the trimmers – assume a typical stud spacing of 16" for simplicity. The trimmers will support the vertical load from the window headers.

    Total Factored Vertical Load =
       1600 plf (from Typical Wall Stud example) * 16" oc / 12 = 2133 lbs
4. Again, use a deflection ratio of L/360 for stucco.
5. Using the table for Factored Exterior Wall Columns Resistance: 2x6 for 0.60 kPa on page 11 for a 48" oc spacing, select:

    3-1/2" x 5-1/2" 1.35E LP® SolidStart® LSL column can support a factored vertical load of 10600 lbs with a deflection ratio of L/379.

TRIMMER AND KING STUD EXAMPLES

Uniform Load

Header

Trimmer

King Stud

36" RO

Tributary Width
for King Stud
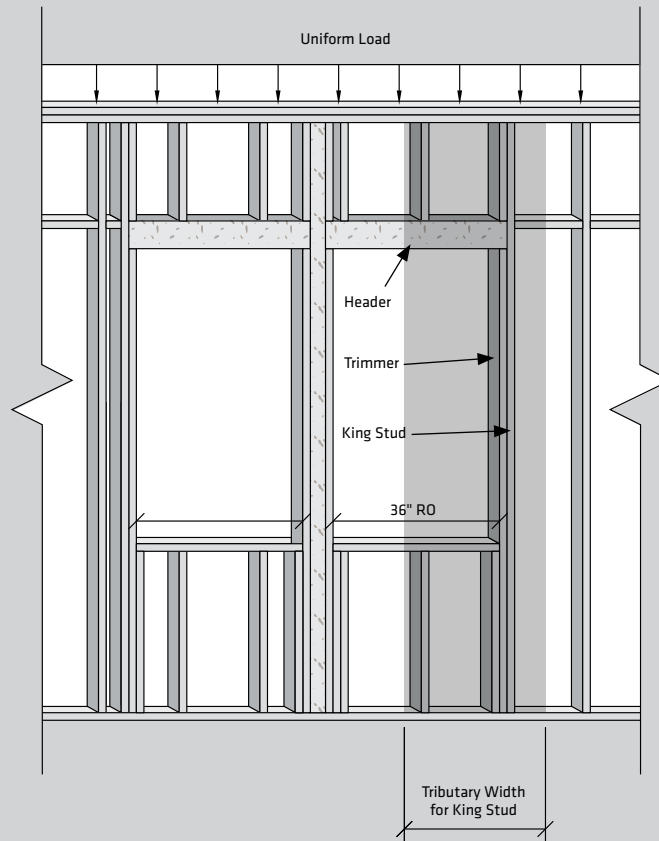
EXAMPLE 4. TRIMMER

HOW TO SIZE:
NOTE: Trimmers are designed only for the vertical load applied by the header. The king stud will be designed for the lateral wind pressures
1. Determine the clear height of the trimmer.
2. Determine the tributary width associated with the trimmer.
3. Determine the vertical load applied to the trimmer from the window header.
4. Select the required grade and size from the appropriate chart.

Hint: To size a trimmer, use the 12" oc row for the required height from the appropriate Wall Stud Capacity table. At 12" oc, the vertical capacity in plf is equivalent to the vertical capacity in lbs. Ignore the deflection for the trimmer.

EXAMPLE:
Select a suitable trimmer for a 3' (36") rough opening (RO) located in the first story wall of the Typical Wall Stud example. Assume the bottom of the window header is at a height of 7'-6".

SOLUTION:
1. With a header height of 7'-6", use 8' for the trimmer height in the tables.
2. Add 3" to the rough opening to approximate the overall length of the header, assuming single trimmers.
    Tributary Width = (36" RO + 3") / 2 = 19.5"
3. The vertical load applied to the trimmer from the header is:

From Typical Wall Stud example:
    Snow: S = 475 plf
    Live: L = 360 plf
    Dead: D = 15psf * (36' / 2 + 1') + 100 plf * (2.5' / 10') + 20 psf * (18' / 2) = 490 plf
    Wall Dead Load is adjusted to the wall height supported by the header, approximately 2.5'

Total Factored Vertical Load
    P_f = 1.25D + 1.5L + 0.5S = 1390 plf
    P_f = 1.25D + 1.5S + 0.5L = 1505 plf ⟵ govern

Total Factored Vertical Load on Trimmer = 1505 plf * 19.5" / 12 = 2446 lbs
4. Using the 0.60 kPa chart from the Factored Wall Stud Resistance table on page 7, for a 12" oc spacing, select:
    1-1/2" x 5-1/2" 1.35E LP® SolidStart® LSL trimmer can support a factored vertical load of 5820 lbs.

NOTE: The factored bearing resistance of the header should always be verified. Based on a 768 psi specified bearing stress for S-P-F lumber, the factored bearing resistance of 5820 lbs (5820 plf * 1') is adequate compared to a reaction of 2446 lbs.

EXAMPLE 5. KING STUD

HOW TO SIZE:
NOTE: Design the king stud like an exterior wall column. The king stud must be attached to the adjacent wall stud by an exterior wall sheathing and interior gypsum wall board (or similar).
1. Determine the clear height of the king stud.
2. Determine the tributary width for the lateral wind pressure.
3. Determine the total vertical load (lbs) applied to the king stud.
4. Determine the allowable deflection ratio based on the wall construction.
5. Select the required grade and size from the appropriate chart.

EXAMPLE:
Select a suitable king stud for the same rough opening from the Trimmer example.

SOLUTION:
1. The king stud will be the same height as the typical wall stud – 10' in this example.
2. The tributary width for the wind pressure on the king stud is from the middle of the rough opening to half the clear distance from the king stud to the adjacent typical wall stud. Check the distance from the king stud to adjacent wall stud on both sides of the window. If not known, and for this example, assume a full wall stud spacing.
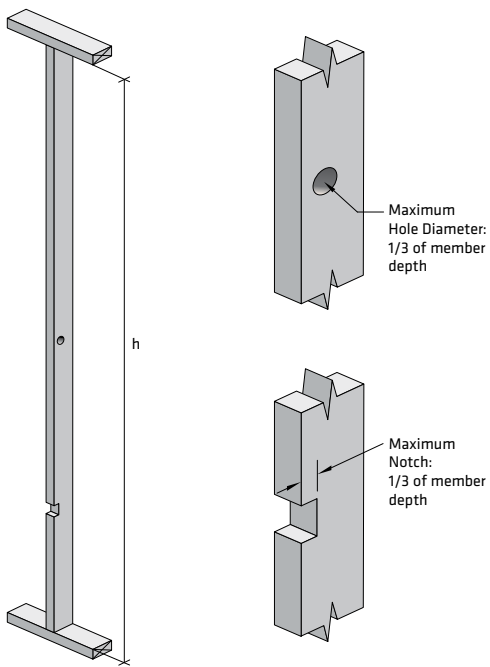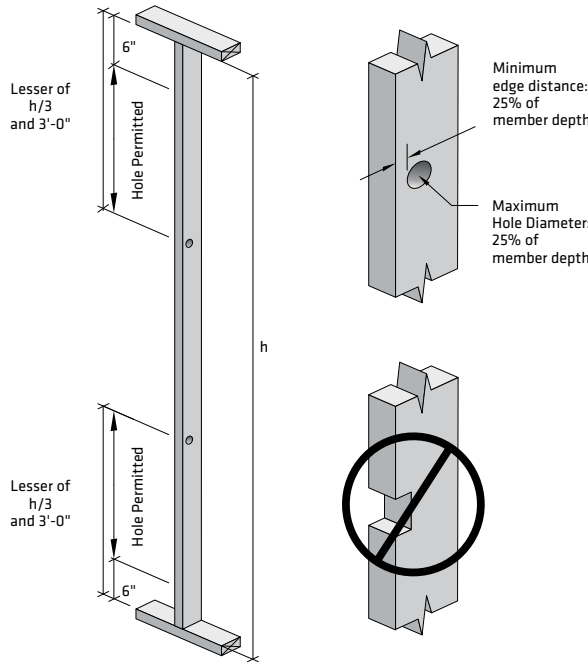   Tributary Width =
        19.5" (from Trimmer example) + 16" / 2 (to next stud) + 3" = 30.5"
    Use 36" as next largest Tributary Width.
3. The applied factored vertical load on the king stud is based on half the spacing to the next adjacent wall stud. Again, check the distance on both sides of the opening. If not known, and for this example, assume a full wall stud spacing.
    Total Factored Vertical Load = 1495 plf * (16" / 12) / 2 = 997 lbs
4. As in the typical wall stud example, use a deflection ratio of L/360 for stucco.
5. Using the table for 0.60 kPa, 2x6 chart from the Factored Exterior Wall Column Resistance on page 11 for a 36" oc spacing, select:
    Double 1-1/2" x 5-1/2" 1.35E LP SolidStart LSL column can support a factored vertical load of 4460 lbs with a deflection ratio of L/450.

PRESCRIPTIVE CONSTRUCTION (NBC PART 9)

Maximum
Hole Diameter:
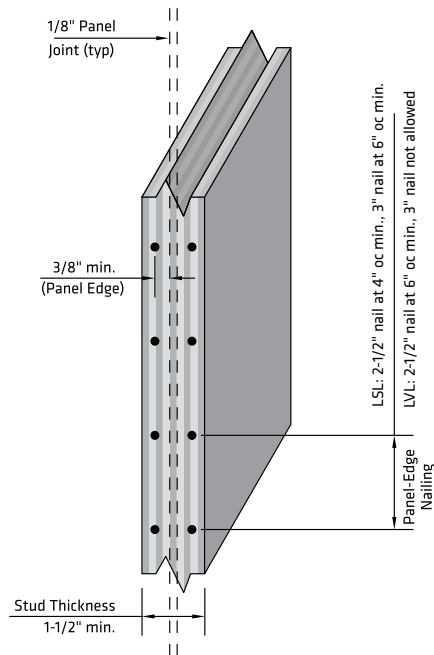1/3 of member
depth

Maximum
Notch:
1/3 of member
depth

FOR TABLES IN THIS GUIDE

Lesser of
h/3
and 3'-0"

Hole Permitted

Lesser of
h/3
and 3'-0"

Hole Permitted

6"

6"

h

Minimum
edge distance:
25% of
member depth

Maximum
Hole Diameter:
25% of
member depth

NOTES:

1. For prescriptive wall framing, cutting and notching of LP LSL and LP LVL wall studs is permitted in accordance with Section 9.23.5 of 2010 NBC. Refer to page 2 on Prescriptive Construction.

2. For all wall stud and exterior column tables in this guide, the rule for holes and notches are as follows:
   - One hole up to 25% of the stud depth is allowed only in the upper or lower 1/3 of the stud height or 3 feet, whichever is less. In addition, a hole shall not be placed within 6" of either end of the stud. The edge distance of the hole shall not be less than 25% of the stud depth.
   - Notching is NOT allowed.

3. Free-standing columns shall not be drilled or notched except as required for proper installation of column caps, bases or other hold-downs without further analysis by a design professional. Bolts, lag screws and self-tapping screws shall only be inserted through the face of the column, perpendicular to the face of the strands in LP LSL and the veneers in LP LVL.

4. For engineered wall applications beyond the scope of this guide, design for notching and drilling shall be based on a net section analysis in accordance with the provisions of CSA Standard O86-09 and as follows:
   - The factored resistance for bending and axial compression and tension shall be reduced by the Strength Reduction Factors (tabulated below) to account for stress concentrations.
   - Hole size shall not exceed 2-3/16" diameter with a minimum clear distance of 5/8" from the edge of the stud.
   - Notch depth shall not exceed 2-3/16" deep by 8" long.
   - Do NOT place a hole or notch within 6" of either end of the stud.
   - Do NOT cut a hole and a notch in the same cross-section. Maintain a clear vertical separation of at least twice the length of the notch or twice the diameter of the hole.

STRENGTH REDUCTION FACTORS

Material	Notch			Hole		
	Bending	Compression	Tension	Bending	Compression	Tension
LP® SolidStart® LSL	0.95	0.90	0.75	1.00	1.00	1.00
LP SolidStart LVL	0.80	0.90	0.60	0.95	0.95	0.95

WALL SHEATHING PANEL EDGE NAILING

SINGLE STUD AT ADJOINING PANELS

1/8" Panel Joint (typ)

3/8" min. (Panel Edge)

LSL: 2-1/2" nail at 4" oc min., 3" nail at 6" oc min.
LVL: 2-1/2" nail at 6" oc min., 3" nail not allowed

Panel-Edge Nailing

Stud Thickness 1-1/2" min.

DOUBLE STUD AT ADJOINING PANELS

1/8" Panel Joint (typ)

Stitch Nailing 2 rows 3" nail at 8" oc

1/2" min. (Panel Edge)

1/2" min. (Stud Edge)

1/4" min. Stagger

LSL: 2-1/2" nail or 3" nail at 3" oc min.
LVL: 2-1/2" nail at 3" oc or 3" nail at 4" oc

Panel-Edge Nailing

Stud Thickness (2) 1-1/2" min. or (1) 2-1/2" min.
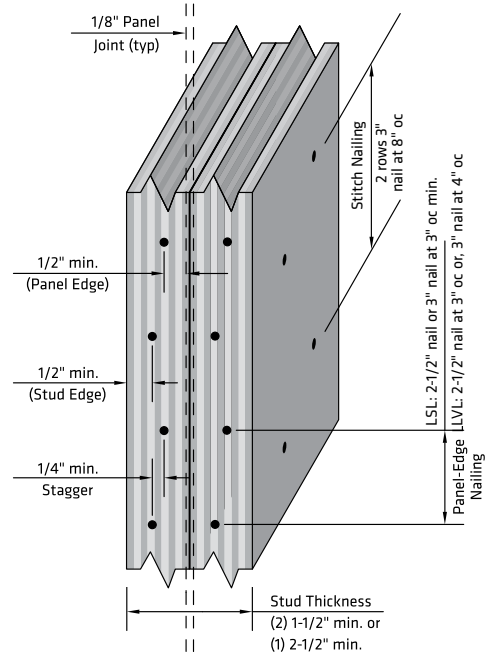
NOTES:

1. Minimum LP® SolidStart® LSL or LVL thickness for a single stud is 1-1/2".
2. A double stud (or a minimum 2-1/2" single stud) is required at adjoining panel edges as follows:
   a. For LP SolidStart LSL when using 2-1/2" common wire nails spaced closer than 4" oc or 3" common wire nails spaced closer than 6" oc.
   b. For LP SolidStart LVL when using 2-1/2" common wire nails spaced closer than 6" oc. 3" common wire nails are not allowed for a single stud.
3. The panel-edge nailing at a double stud shall be installed a minimum 1/2" from both the panel edge and the edge of the stud, and shall be installed with every other nail staggered a minimum 1/4" horizontally.
4. The minimum nail spacing into the edge of the stud shall not be less than:
   a. For LP SolidStart LSL: 3" oc for both 2-1/2" and 3" common wire nails.
   b. For LP SolidStart LVL: 3" oc for 2-1/2" common wire nails or 4" oc for 3" common wire nails.
5. Do not use nails larger than 3" common wire nails for wall sheathing nailing.
6. In lieu of engineering analysis for prescriptive wall framing, the double studs shall be stitch-nailed together with 2 staggered rows of 3" common wire nails spaced 8" oc in each row. For engineered walls, the stitch nailing shall be designed to transfer the required lateral shear.

FASTENER DESIGN

Material	Equivalent Specific Gravity					
	Nails and Wood Screws				Bolts and Lag Screws	
	Withdrawal		Dowel Bearing		Dowel Bearing (into the face only)	
	Edge	Face	Edge	Face	Load Applied Parallel to Grain	Load Applied Perpendicular to Grain
LP SolidStart LSL	0.46	0.50	0.50	0.55	0.50	0.58
LP SolidStart LVL	0.46	0.50	0.50	0.50	0.46	0.50

NOTES:

1. Connection design using the equivalent specific gravity for each connection type listed above is for normal load duration and shall be adjusted according to code.
2. Fastener spacing, end and edge distance shall be as specified by code except for nail spacing as specified below.
3. See details at right for fastener and applied load orientation.

NAIL SPACING REQUIREMENTS

Material	LVL Ply Thickness	Fastener Orientation[4]	Nail Size[1] (common or spiral)	Minimum End Distance[2,5]	Minimum Nail Spacing per Row[5]	
					Single Row	Multiple Rows[3]
LP SolidStart LSL	≥ 1-1/2"	Edge	2-1/2"	2"	3"	3"
			3" & 3-1/4"	2"	3"	4"
			3-1/2"	2-1/2"	4"	6"
		Face	2-1/2"	7/8"	1"	1"
			3" & 3-1/4"	7/8"	1"	1"
			3-1/2"	7/8"	1-1/2"	1-1/2"
LP SolidStart LVL	≥ 1-1/2"	Edge	2-1/2"	2-1/2"	3"	4"[6]
			3" & 3-1/4"	2-1/2"	4"	5"[6]
			3-1/2"	3-1/2"	5"	6"[6,7]
		Face	2-1/2"	1-1/2"	3"	3"
			3" & 3-1/4"	1-1/2"	3"	3"
			3-1/2"	1-1/2"	5"	5"

FASTENER & LOAD ORIENTATION

Nail into edge

Nail into face

Load applied parallel to grain

Load applied perpendicular to grain

NOTES:

1. Nails are common wire or spiral nails in accordance with CSA O86.
2. Edge distance shall be such that does not cause splitting.
3. Multiple rows of nails shall be offset at least 1/2" and staggered.
4. Edge orientation refers to nails driven into the narrow edge of the LVL, parallel to the face of the veneers. Face orientation refers to nails driven into the wide face of the LVL, perpendicular to the face of the veneers. (See Fastener & Load Orientation details above.)
5. Minimum End Distance and Minimum Nail Spacing are tabulated based on common wire nails. For nails with smaller diameters, the spacing and end distance of the common wire nail with the next larger diameter may be used.
6. Minimum nail spacing is tabulated for LVL stamped with plant number 1089. The minimum spacing may be reduced 1" for LVL stamped with plant numbers 1066 and 1071.
7. Minimum nail spacing may be reduced 1" for LVL stamped with plant number 1089, for thickness of 1-3/4" or greater.
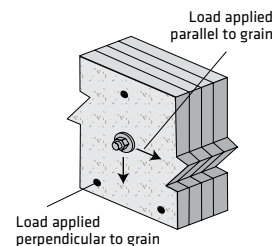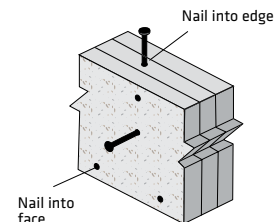
TO USE:

1. Factored horizontal reaction due to horizontal wind, R_h on stud or column is calculated as follows:

    $R_h = 3.29 * (q_{1/50} * C_e) * h * s$

    where:

    R_h = factored top or bottom horizontal reaction (lb)

    $(q_{1/50} * C_e)$ = product of hourly wind pressure and exposure factor from table, 0.45 (kPa) or 0.60 (kPa)

    h = stud or column height (feet)

    s = stud or column spacing (inches)

2. Determine the required number of nails by dividing the factored horizontal reaction by the factored resistance per nail from the table below. Do not exceed 2 nails for 3 1/2" studs, 3 nails for 5-1/2" studs and 4 nails for 7 1/4" studs.

3. If the required number of nails exceed the maximum permitted, use Simpson's® Strong-Tie or USP® connectors. Refer to the manufacturer's catalog for design values.

NAILED PLATE CONNECTIONS

Nail Type	Length	Diameter (mm)	Diameter (in)	Lateral Capacity (lbs)	
				Toe-Nail	End-Nail
Common	2-1/2"	3.25	0.128	137	111
	3"	3.66	0.144	171	138
	3-1/4"	3.66	0.144	171	138
	3-1/2"	4.06	0.160	207	167
Power-driven	3"	3.05	0.120	122	98
	3"	3.33	0.131	143	116
	3-1/4"	3.05	0.120	122	98
Spiral	2-1/2"	2.77	0.109	102	82
	3"	3.10	0.122	126	102
	3-1/4"	3.10	0.122	126	102
	3-1/2"	3.86	0.152	188	152

NOTE:

1. The lateral resistance has been calculated in accordance with CSA Standard O86-09 for short term loading (K_D=1.15) and dry service conditions.

2. Connections assume an equivalent specific gravity (G) of 0.50 for both the side member and main member, and a side member thickness of 1-1/2".
   For a dry SPF plate (G=0.42), multiply the tabulated values by 0.94 For a dry Hem-Fir plate (G=0.46), multiply the tabulated values by 0.97.

3. Toe-nail connections include a toe-nailing factor (J_A) of 0.83.

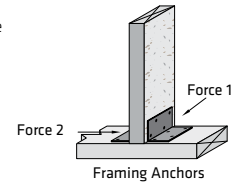4. End-nail connections include an end-grain factor (J_E) of 0.67.

Toe-Nail

End-Nail
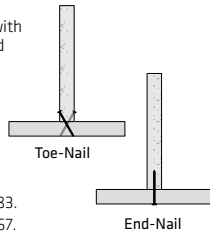
TYPICAL FRAMING ANCHORS

Anchor Type	Nails	Factored Resistance (lbs) D. Fir-L (G=0.49)		Factored Resistance (lbs) S-P-F (G=0.42)	
		Force 1	Force 2	Force 1	Force 2
Simpson Strong-Tie					
A21	4 - 0.148" x 1-1/2"	405	260	335	185
A23	8 - 0.148" x 1-1/2"	815	715	725	510
A33	8 - 0.148" x 3"	1175	570	930	405
A44	8 - 0.148" x 3"	1175	485	930	345
USP Structural Connectors					
A3	8 - 0.148" x 1-1/2"	1115	1130	792	802
AC5	6 - 0.148" x 3"	1145	1070	815	760
AC7	8 - 0.148" x 3"	1285	1535	910	1090
AC9	10 - 0.148" x 3"	2135	1535	1515	1090

NOTE:

1. Refer to the manufacturers' current catalogs for complete information.

2. Capacities assume both members being equivalent to Doug Fir-Larch or Spruce-Pine-Fir, with an equivalent specific gravity of 0.42 or better.

3. Capacities are for a load duration adjustment for wind, K_D = 1.15.

4. Capacities are for a single anchor and may be doubled when installed in pairs.
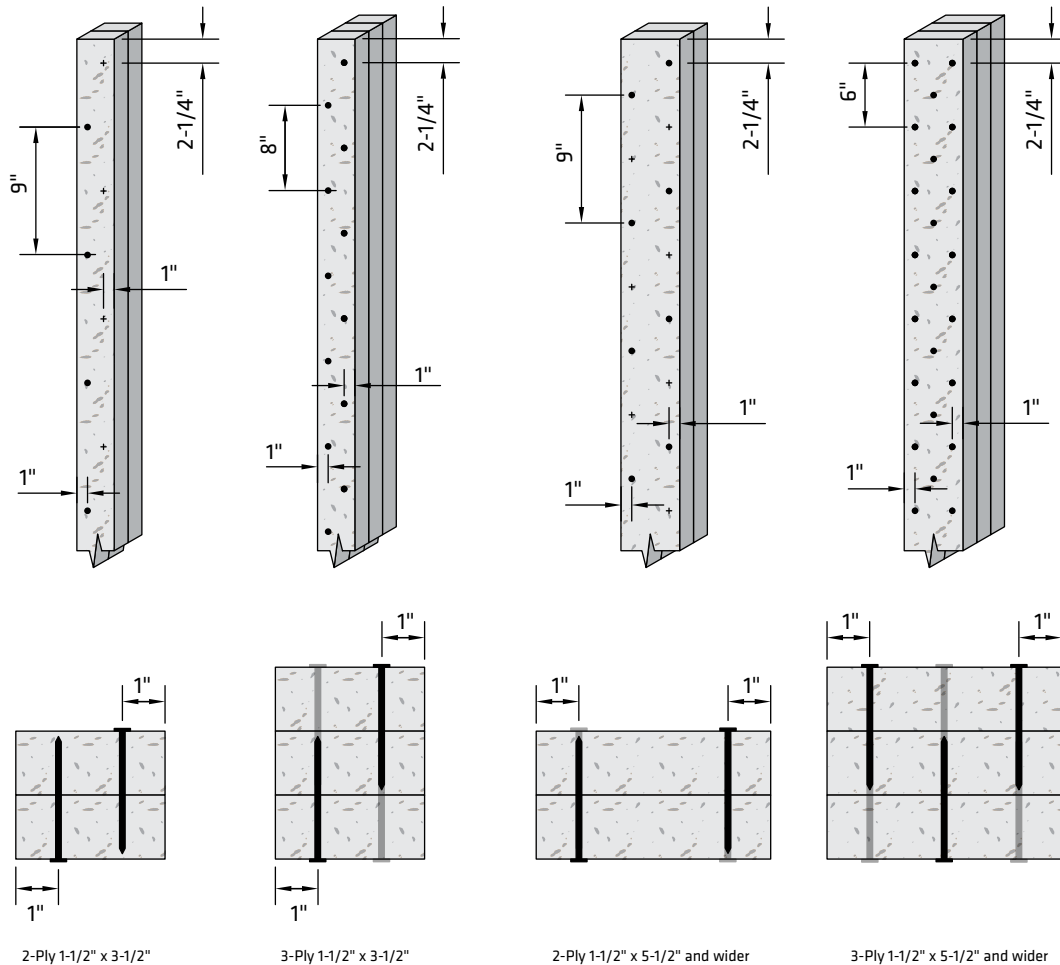
Force 2

TYPICAL CONNECTIONS

BEAM ON COLUMN CAP

COLUMN BASE

ELEVATED COLUMN BASE

Optional non-shrink grout

BEAM ON COLUMN

1-1/4" LP SolidStart LSL or LVL or 1-1/8" rim board or blocking for lateral support

Column

Framing anchor as required for lateral load

Use trimmers as required

EXAMPLES OF FRAMING ANCHORS

CONNECTION OF BUILT-UP COLUMNS

2-Ply 1-1/2" x 3-1/2"

3-Ply 1-1/2" x 3-1/2"

2-Ply 1-1/2" x 5-1/2" and wider

3-Ply 1-1/2" x 5-1/2" and wider

Built-up columns shall be designed in accordance with CSA Standard O86-09 using the following recommended nailing and bolt patterns.

2-Ply 1-1/2" x 3-1/2"
- One row of 3" x 0.131" nails spaced 9" oc from both faces.
- Stagger rows from front to back.

3-Ply 1-1/2" x 3-1/2"
- Two rows of 3" x 0.131" nails spaced 8" oc from both faces.
- Stagger rows on each face and from front to back.

2-Ply 1-1/2" x 5-1/2" and wider
- Two rows of 3" x 0.131" nails spaced 9" oc from both faces.
- Stagger rows on each face and from front to back.

3-Ply 1-1/2" x 5-1/2" and wider
- Three rows of 3" x 0.131" nails spaced 6" oc from both faces.
- Stagger rows on each face and from front to back.
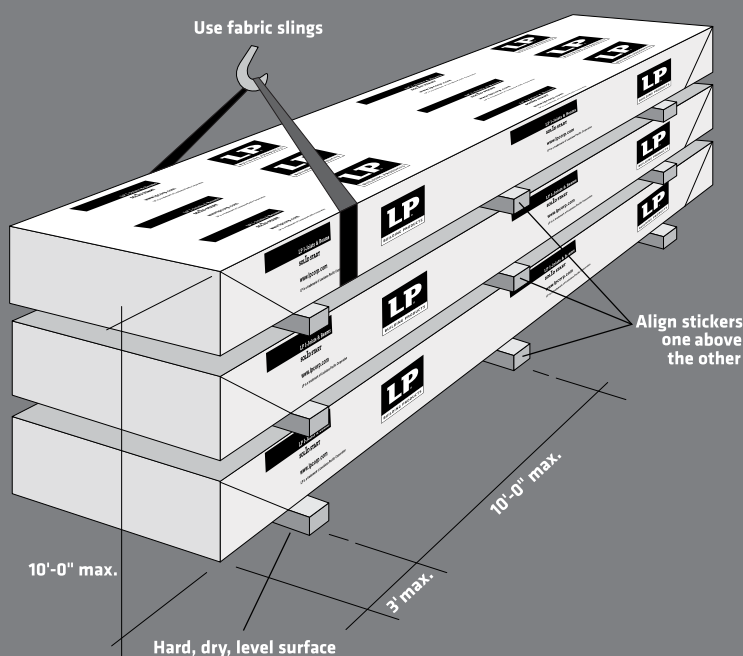
4-Ply 1-1/2" x 5-1/2" and wider (not shown)
- Two rows of 1/2" bolts spaced 8" oc.
- Maintain a 2" minimum edge distance and 4" minimum end distance.

NOTES:
1. Larger nails may be used. Do not exceed a 3-1/2" x 0.135" nail.
2. Except as specified above, nail spacing, row spacing, edge distance and end distance shall be in accordance with the CSA Standard O86-09.
3. Do not exceed three plies for 1-1/2" x 3-1/2" wide members.
4. For 1-3/4" thick members use 3-1/2" long nails.

Handling and Storage Guidelines

- Warning: Failure to follow proper procedures for handling, storage and installation could result in unsatisfactory performance, unsafe structures and possible collapse.

- Keep LP® SolidStart® LSL and LVL dry. These products are intended to resist the effects of moisture on structural performance from normal construction delays but are not intended for permanent exposure to the weather.

- Unload products carefully, by lifting. Support the bundles to reduce excessive bowing. Individual products should be handled in a manner which prevents physical damage during measuring, cutting, erection, etc.

- Keep products stored in wrapped and strapped bundles, stacked no more than 10' high. Support and separate bundles with 2 x 4 (or larger) stickers spaced no more than 10' apart. Keep stickers in line vertically.

- Product must not be stored in contact with the ground, or have prolonged exposure to the weather.

- Use forklifts and cranes carefully to avoid damaging product.

- Do not use a visually damaged product. Call your local LP SolidStart Engineered Wood Products distributor for assistance when damaged products are encountered.

- For satisfactory performance, LP SolidStart LSL and LVL must be used under dry, covered and well-ventilated interior conditions in which the equivalent moisture content in lumber will not exceed 16%.

- For built-up members, LP SolidStart LSL and LVL shall be dry before nailing or bolting to avoid trapping moisture.

- LP SolidStart LSL and LVL shall not be used for unintended purposes such as ramps and planks.

Use fabric slings

Align stickers one above the other

10'-0" max.

10'-0" max.

3' max.

Hard, dry, level surface

LP® SolidStart® ENGINEERED WOOD PRODUCTS

BUILDING PRODUCTS

For more information on the full line of LP® SolidStart® Engineered Wood Products or the nearest distributor, visit our web site at LPCorp.com.

Phone: 1-888-820-0325
E-mail: customer.support@LPCorp.com.

LP SolidStart Engineered Wood Products are manufactured at different locations in the United States and Canada. Please verify availability with the LP SolidStart Engineered Wood Products distributor in your area before specifying these products.

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