

LP SOLIDSTART LSL & LVL WALL FRAMING CANADIAN (LSD) TECHNICAL GUIDE

1.35E, 1.55E, and 1.75E LSL
2.0E LVL

LP **SolidStart**[®]
ENGINEERED WOOD



Introduction

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 high standards, builders know that they'll get fewer callbacks and save themselves time and money compared to dimension lumber products.

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.

PRESRIPTIVE CONSTRUCTION

Prescriptive construction provisions for wood-framed walls are included in Part 9 - Housing and Small Buildings of the 2015 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 – 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.

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, 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 $P\Delta$ 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.5.4.2 of CSA Standard O86-14

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.

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Product Specifications and Design Values

SPECIFIED STRENGTH AND STIFFNESS (PSI)											
Material	Grade	Beam Orientation				Plank Orientation				Axial	
		Bending (f _b)	Modulus of Elasticity (MOE) (x10 ⁶ psi)	Shear (f _v)	Compression perpendicular to the grain (f _{cp})	Bending (f _b)	Modulus of Elasticity (MOE) (x10 ⁶ psi)	Shear (f _v)	Compression perpendicular to the grain (f _{cp})	Tension (f _t)	Compression (f _c)
LP® SolidStart® LSL	1.35E	3195	1.35	760	1365	3530	1.35	290	1240	2020	2635
	1.55E	4360	1.55	760	1595	4820	1.55	290	1405	2715	3470
	1.75E	4620	1.75	760	1730	5170	1.75	290	1610	3350	3910
LP SolidStart LVL	2900F _v -2.0E	5359	2.0	530	1365	5452	2.0	260	1001	2694	5107

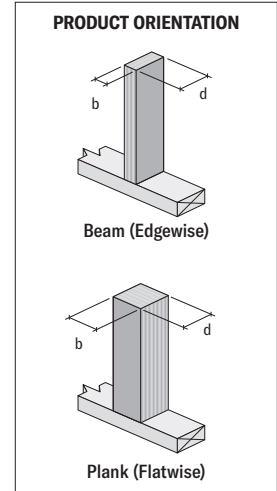
NOTES:

- 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%.
- 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.
- 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/depth)^{0.200}. For depths less than 3-1/2", adjust f_b by 1.159.
- 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/depth)^{0.311}. For depths less than 3-1/2" multiply f_b by 1.147. For depths greater than 12", multiply f_b by (12/depth)^{0.143}.
- The specified Bending, f_b, in the Plank orientation shall not be adjusted for depth (thickness).
- The specified edgewise bending shall also be multiplied by the system factor, K_{st} = 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.
- 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/length)^{0.092}. For lengths less than 3 feet, use the design tensile stresses adjusted to 3 feet.
- 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/length)^{0.311}. For lengths less than 3 feet, use the value adjusted for 3 feet.
- Deflection calculations for LP SolidStart LSL and LVL shall include both bending and shear deformations.

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

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

Equations for other conditions can be found in engineering references.



FACTORED BEARING RESISTANCE												
Stud or Column Size	Column Bearing (lbs)				Stud Bearing (plf)							
	2.0E LP LVL (1001 psi)	1.35E LP LSL (1240 psi)	1.55E LP LSL (1405 psi)	1.75E LP LSL (1610 psi)	2.0E LP LVL (1001 psi)		1.35E LP LSL (1240 psi)		1.55E LP LSL (1405 psi)		1.75E LP LSL (1610 psi)	
					12" oc	16" oc	12" oc	16" oc	12" oc	16" oc	12" oc	16" oc
1-1/2" x 3-1/2"	4204	5208	5901	6762	4204	3153	5208	3906	5901	4425	6762	5071
1-1/2" x 5-1/2"	6606	8184	9273	10626	6606	4954	8184	6138	9273	6954	10626	7969
1-1/2" x 7-1/4"	8708	10788	12223	14007	8708	6531	10788	8091	12223	9167	14007	10505
1-3/4" x 5-1/2"	7707	9548	10818	12397	7707	5780	9548	7161	10818	8113	12397	9297
1-3/4" x 7-1/4"	10160	12586	14260	16341	10160	7620	12586	9439	14260	10695	16341	12255
3-1/2" x 3-1/2"	9809	12152	13769	15778								
3-1/2" x 5-1/2"	15415	19096	21637	24794								
3-1/2" x 7-1/4"	20320	25172	28521	32683								
5-1/4" x 5-1/4"	22072	27342	30980	35500								
5-1/4" x 5-1/2"	23123	28644	32455	37191								
5-1/4" x 7-1/4"	30480	37758	42782	49024								
7" x 7"	39239	48608	55076	63112								

NOTES:

- 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.
- To determine the bearing resistance of a multiple-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 3.
- 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_g per Clause 6.5.7.5 of CSA Standard O86-14.

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:

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

Where:

- p = Design wind pressure (kPa)
- I_w = Importance factor for wind loads
- q_{1/50} = Hourly wind pressure (kPa) based on Table C-2 of Appendix C of the NBC
- C_e = Exposure factor based on Exposure categories below
- C_pC_g = External peak composite pressure-gust coefficient based on the NBC User's Guide
- C_{pi} = Internal pressure coefficient
- C_g = 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).

Exposure Categories:

Open terrain - is level terrain with only scattered buildings, trees and other obstructions, open water or shorelines (NBC Section 4.1.7).

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).

For more relevant code provisions refer to:

- Section 4.1.7 (Wind Load) of the NBC, and
- Commentary I (Wind Loads and Effects) of the NBC User's Guide.

Factored Free-Standing Interior Column Resistance (lbs)

TO USE:

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

SOLID SECTIONS												
Height	3-1/2" 1.35E LP LSL			3-1/2" 1.75E LP LSL			3-1/2" 2.0E LP LVL		5-1/4" 2.0E LP LVL			7" 2.0E LP LVL
	x 3-1/2"	x 5-1/2"	x 7-1/4"	x 3-1/2"	x 5-1/2"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 5-1/4"	x 5-1/2"	x 7-1/4"	x 7"
4'	15225	23925	31535	21875	34362	45313	40489	53368	67697	70914	93437	126560
5'	13347	20977	27643	18903	29703	39157	34666	45698	63191	66195	87272	122098
6'	11433	17964	23681	15962	25089	33072	29082	38344	57971	60729	80059	116553
7'	9651	15164	19995	13316	20930	27589	24162	31848	52420	54892	72391	110074
8'	8088	12712	16757	11056	17374	22910	20005	26370	46894	49126	64756	103062
9'	6763	10632	14007	9170	14409	19002	16572	21844	41661	43640	57503	95678
10'	5655	8885	11716	7615	11971	15774	13754	18134	36828	38588	50339	88248
12'	3967	6238	8219	5289	8308	10955	9549	12588	28641	29995	39555	74041
14'	2815	4423	5831	3720	5846	7705	6715	8851	22292	23363	30785	61499
16'	-	-	-	-	-	-	-	-	17418	18249	24055	50910
18'	-	-	-	-	-	-	-	-	13672	14323	18884	42180
20'	-	-	-	-	-	-	-	-	10796	11311	14904	35018

BUILT-UP SECTIONS																		
Height	1-1/2" 1.35E LP LSL						1-1/2" 1.55E LP LSL											
	Double (2)			Triple (3)			Quad (4)			Double (2)			Triple (3)			Quad (4)		
	x 3-1/2"	x 5-1/2"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 7-1/4"	x 3-1/2"	x 5-1/2"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 7-1/4"			
4'	7195	11306	14903	20198	26624	37517	9238	14515	19143	26510	34945	49647						
5'	6041	9492	12513	18684	24628	36060	7620	11980	15787	24293	32018	47460						
6'	4961	7799	10282	16955	22357	34235	6168	9691	12774	21785	28714	44340						
7'	4038	6347	8363	15139	19958	32116	4954	7784	10261	19217	25318	39807						
8'	3276	5149	6787	13357	17609	29191	3976	6251	8236	16766	22108	35626						
9'	2660	4179	5510	11701	15418	26243	3202	5031	6632	14535	19160	31802						
10'	2164	3400	4482	10204	13446	23541	2585	4063	5356	12565	16505	28342						
12'	1448	2275	2998	7722	10178	18880	1709	2686	3521	9377	12069	22527						
14'	989	1554	2029	5852	7554	15150	1158	1815	2356	6963	8882	17940						
16'	-	-	-	4414	5660	12186	-	-	-	5163	6620	14353						
18'	-	-	-	3338	4298	9839	-	-	-	3890	5007	11547						
20'	-	-	-	2566	3313	7993	-	-	-	2981	3849	9343						
Height	1-1/2" 2.0E LP LVL						1-3/4" 2.0E LP LVL											
	Double (2)		Triple (3)		Quad (4)		Double (2)		Triple (3)		Quad (4)							
	x 5-1/2"	x 7-1/4"	x 5-1/4"	x 7-1/4"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 5-1/2"	x 7-1/4"	x 7-1/4"								
4'	18828	24819	34903	46018	65892	24293	32019	42558	56076	78617								
5'	15414	20324	31718	41814	62608	20801	27412	39723	52362	75847								
6'	12426	16378	28242	37229	58654	17451	23007	36440	48035	72406								
7'	9972	13141	24780	32664	54228	14496	19113	32940	43438	68413								
8'	8005	10554	21553	28395	48306	12007	15822	29473	38856	64036								
9'	6451	8502	18640	24569	42833	9946	13107	26175	34505	59452								
10'	5214	6873	16094	21215	37953	8249	10878	23150	30497	54473								
12'	3453	4551	12010	15832	29901	5730	7549	18008	23740	44044								
14'	-	-	9009	11643	23668	4028	5311	14009	18476	35679								
16'	-	-	6733	8631	18835	-	-	10947	14430	29069								
18'	-	-	5054	6507	15098	-	-	8590	11129	23805								
20'	-	-	-	-	12183	-	-	6683	8670	19605								

Built-up columns shall be designed in accordance with CSA Standard O86 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 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 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.
 - 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:** Two rows of 1/2" bolts spaced 8" oc. Maintain a 2" minimum edge distance and 4" minimum end distance.
- For Multi-Ply Connections using 3rd Party Screws consult 3rd Party Manufacturer's Literature.

DESIGN ASSUMPTIONS:

- Height is the clear height of the column between the top and bottom supports.
- The axial resistance is the total factored vertical load applied to the column, including all dead loads. No lateral loads have been applied.
- 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.
- The factored axial resistance assumes an eccentricity of 1/6 of the column width or depth, whichever controls.
- Interior columns are assumed to be braced in both directions at the top and bottom supports.
- For bearing on a wood plate, concrete, or any material other than steel the designer shall check the factored vertical load against the factored bearing resistance of the plate material and increase the column size accordingly.
- The factored axial resistance in these tables are valid only for when $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.

Refer to the Factored Bearing Resistance table on page 4 for column bearing on different LP plate material. The lower of the Factored Bearing Resistance or the Factored Column Resistance must be used.

ADDITIONAL NOTES:

- The value in each cell represents the factored axial compressive resistance of the column, in pounds (lbs).
- Refer to the "Connection of Built-Up Columns" section on page 23 for connection design of built-up sections.
- 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.

Factored Wall Stud Resistance (plf): $q_{1/50} * C_e = 0.45 \text{ kPa (9.4 psf)}$

HOURLY WIND PRESSURE: $\leq 0.45 \text{ KPA (9.4 PSF)}$ FOR OPEN TERRAIN; $\leq 0.64 \text{ KPA (13.4 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall stud. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the wall based on the greater of 1.25D+1.5L+1.0S or 1.25D+1.5S+1.0L. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected stud. See Design Assumption 9 below.

LP LSL		1-1/2" 1.35E LP LSL			1-1/2" 1.55E LP LSL		
Height	Stud Spacing	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"	3947 L/281	7562 L/759	10163 L/999	5047 L/303	9246 L/738	12188 L/999
	16"	2860 L/222	5671 L/694	7622 L/999	3710 L/241	6934 L/692	9141 L/999
9'	12"	3375 L/208	7210 L/647	9903 L/965	4329 L/226	9243 L/608	12184 L/926
	16"	2067 L/169	5407 L/531	7427 L/911	3141 L/179	6932 L/562	9138 L/882
10'	12"	2837 L/157	6986 L/504	9720 L/843	3884 L/170	9022 L/511	12180 L/800
	16"	1495 L/130	5239 L/410	7290 L/788	2671 L/135	6766 L/437	9135 L/756
11'	12"	2206 L/123	6734 L/398	9514 L/738	3281 L/132	8649 L/423	12175 L/691
	16"	-	5003 L/322	7135 L/646	-	6487 L/345	9131 L/648
12'	12"	-	6439 L/319	9296 L/638	-	8241 L/342	12110 L/600
	16"	-	4681 L/257	6972 L/527	-	6133 L/277	9083 L/554
13'	12"	-	6017 L/260	9052 L/530	-	7782 L/280	11742 L/533
	16"	-	4232 L/209	6789 L/433	-	5688 L/226	8807 L/460
14'	12"	-	5595 L/214	8789 L/443	-	7205 L/232	11348 L/469
	16"	-	3612 L/175	6592 L/359	-	5248 L/186	8511 L/385
15'	12"	-	5179 L/178	8509 L/373	-	6589 L/194	10924 L/398
	16"	-	3051 L/147	6323 L/301	-	4826 L/154	8193 L/324
16'	12"	-	4628 L/150	8216 L/316	-	5946 L/165	10495 L/340
	16"	-	2543 L/125	6003 L/254	-	4368 L/130	7861 L/274
18'	12"	-	-	7415 L/233	-	4659 L/122	9562 L/252
	16"	-	-	5276 L/186	-	-	6991 L/202
20'	12"	-	-	6615 L/176	-	-	8471 L/192
	16"	-	-	4236 L/142	-	-	6169 L/152
22'	12"	-	-	5325 L/138	-	-	7254 L/150
	16"	-	-	-	-	-	4912 L/120
24'	12"	-	-	-	-	-	5945 L/121
	16"	-	-	-	-	-	-

ADDITIONAL NOTES:

- Height is the clear height of the wall stud between the bottom plate and the lower top plate.
- 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.
- 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 CSA O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- Install full-width blocking per local code requirements, normally not more than every 8' along the height of the stud.

LP LVL		1-1/2" 2.0E LP LVL			1-3/4" 2.0E LP LVL	
Height	Stud Spacing	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 5-1/2"	1-3/4" x 7-1/4"
8'	12"	4189 L/428	6582 L/999	8677 L/999	7680 L/999	10123 L/999
	16"	3141 L/336	4937 L/999	6508 L/999	5760 L/999	7592 L/999
9'	12"	4187 L/306	6580 L/999	8673 L/999	7676 L/999	10119 L/999
	16"	3140 L/240	4935 L/830	6505 L/999	5757 L/930	7589 L/999
10'	12"	4185 L/224	6577 L/786	8669 L/999	7673 L/878	10114 L/999
	16"	3139 L/175	4932 L/637	6502 L/999	5754 L/718	7586 L/999
11'	12"	4183 L/167	6574 L/616	8665 L/999	7669 L/692	10110 L/999
	16"	3055 L/131	4930 L/496	6499 L/999	5752 L/562	7582 L/999
12'	12"	3587 L/132	6571 L/489	8662 L/995	7666 L/553	10105 L/999
	16"	-	4928 L/392	6496 L/817	5749 L/445	7579 L/916
13'	12"	-	6568 L/394	8658 L/821	7662 L/446	10101 L/916
	16"	-	4926 L/313	6493 L/669	5747 L/357	7575 L/753
14'	12"	-	6565 L/320	8654 L/682	7659 L/364	10096 L/765
	16"	-	4923 L/253	6490 L/552	5744 L/289	7572 L/623
15'	12"	-	6562 L/262	8650 L/571	7656 L/299	10092 L/643
	16"	-	4921 L/206	6487 L/459	5742 L/236	7569 L/520
16'	12"	-	6559 L/216	8646 L/481	7652 L/247	10087 L/543
	16"	-	4919 L/170	6484 L/385	5739 L/195	7565 L/438
18'	12"	-	6246 L/153	8638 L/348	7356 L/175	10078 L/395
	16"	-	4420 L/121	6479 L/276	5379 L/138	7558 L/315
20'	12"	-	-	8630 L/257	5783 L/134	10069 L/293
	16"	-	-	6473 L/202	-	7552 L/232
22'	12"	-	-	8623 L/193	-	10060 L/221
	16"	-	-	6467 L/151	-	7545 L/174
24'	12"	-	-	7983 L/151	-	9449 L/172
	16"	-	-	5518 L/120	-	6872 L/136

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the stud depth.
- 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
 - $C_{ps} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- 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.
- Gypsum wall board is assumed attached to the interior side of the studs.
- The tabulated values assume the plates are the same material and grade as the stud. For other plate material or grade, 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.

Factored Wall Stud Resistance (plf): $q_{1/50} * C_e = 0.60 \text{ kPa (12.5 psf)}$

HOURLY WIND PRESSURE: $\leq 0.60 \text{ KPA (12.5 PSF)}$ FOR OPEN TERRAIN; $\leq 0.85 \text{ KPA (17.8 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall stud. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the wall based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected stud. See Design Assumption 9 below.

LP LSL		1-1/2" 1.35E LP LSL			1-1/2" 1.55E LP LSL		
Height	Stud Spacing	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"	3814 L/222	7562 L/694	10163 L/999	4947 L/241	9246 L/692	12188 L/999
	16"	2216 L/182	5671 L/566	7622 L/984	3584 L/191	6934 L/611	9141 L/977
9'	12"	2736 L/168	7210 L/529	9903 L/910	4185 L/178	9243 L/560	12184 L/881
	16"	1227 L/139	5407 L/427	7427 L/831	2597 L/145	6932 L/458	9138 L/828
10'	12"	1950 L/129	6986 L/406	9720 L/785	3522 L/134	9022 L/433	12180 L/754
	16"	-	5143 L/327	7290 L/656	-	6766 L/351	9135 L/699
11'	12"	-	6658 L/318	9514 L/639	-	8649 L/341	12175 L/645
	16"	-	4523 L/259	7135 L/524	-	6388 L/276	9131 L/559
12'	12"	-	6227 L/254	9296 L/520	-	8164 L/273	12110 L/548
	16"	-	3730 L/210	6972 L/423	-	5933 L/220	9083 L/451
13'	12"	-	5561 L/207	9052 L/427	-	7569 L/223	11742 L/455
	16"	-	3002 L/173	6738 L/345	-	5373 L/179	8807 L/371
14'	12"	-	4732 L/173	8789 L/354	-	6983 L/183	11348 L/380
	16"	-	2337 L/144	6413 L/285	-	4573 L/149	8511 L/307
15'	12"	-	3980 L/145	8414 L/297	-	6419 L/152	10924 L/319
	16"	-	1743 L/121	5768 L/241	-	3854 L/125	8073 L/257
16'	12"	-	3302 L/123	7987 L/251	-	5766 L/128	10465 L/271
	16"	-	-	5072 L/205	-	-	7621 L/217
18'	12"	-	-	6936 L/184	-	-	9305 L/199
	16"	-	-	3802 L/153	-	-	6696 L/159
20'	12"	-	-	5544 L/141	-	-	8208 L/150
	16"	-	-	-	-	-	5318 L/122
22'	12"	-	-	-	-	-	-
	16"	-	-	-	-	-	-
24'	12"	-	-	-	-	-	-
	16"	-	-	-	-	-	-

ADDITIONAL NOTES:

- Height is the clear height of the wall stud between the bottom plate and the lower top plate.
- 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.
- 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 CSA O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- Install full-width blocking per local code requirements, normally not more than every 8' along the height of the stud.

LP LVL		1-1/2" 2.0E LP LVL			1-3/4" 2.0E LP LVL	
Height	Stud Spacing	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 5-1/2"	1-3/4" x 7-1/4"
8'	12"	4189 L/336	6582 L/999	8677 L/999	7680 L/999	10123 L/999
	16"	3141 L/262	4937 L/892	6508 L/999	5760 L/999	7592 L/999
9'	12"	4187 L/238	6580 L/827	8673 L/999	7676 L/926	10119 L/999
	16"	3140 L/185	4935 L/664	6505 L/999	5757 L/750	7589 L/999
10'	12"	4185 L/173	6577 L/631	8669 L/999	7673 L/711	10114 L/999
	16"	2913 L/137	4932 L/504	6502 L/999	5754 L/573	7586 L/999
11'	12"	4013 L/130	6574 L/489	8665 L/997	7669 L/554	10110 L/999
	16"	-	4930 L/390	6499 L/814	5752 L/444	7582 L/915
12'	12"	-	6571 L/386	8662 L/807	7666 L/439	10105 L/905
	16"	-	4928 L/306	6496 L/654	5749 L/350	7579 L/738
13'	12"	-	6568 L/309	8658 L/660	7662 L/352	10101 L/743
	16"	-	4926 L/243	6493 L/531	5747 L/279	7575 L/602
14'	12"	-	6565 L/249	8654 L/544	7659 L/285	10096 L/615
	16"	-	4923 L/196	6490 L/435	5744 L/225	7572 L/495
15'	12"	-	6562 L/203	8650 L/453	7656 L/233	10092 L/513
	16"	-	4921 L/159	6487 L/360	5742 L/183	7569 L/411
16'	12"	-	6559 L/167	8646 L/379	7652 L/192	10087 L/431
	16"	-	4848 L/131	6484 L/300	5739 L/150	7565 L/343
18'	12"	-	-	8638 L/272	7154 L/136	10078 L/311
	16"	-	-	6479 L/214	-	7558 L/245
20'	12"	-	-	8630 L/199	-	10069 L/229
	16"	-	-	6473 L/156	-	7552 L/179
22'	12"	-	-	8623 L/149	-	10060 L/171
	16"	-	-	-	-	7545 L/134
24'	12"	-	-	-	-	9139 L/134
	16"	-	-	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the stud depth.
- 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
 - $C_{ps} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- 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.
- Gypsum wall board is assumed attached to the interior side of the studs.
- The tabulated values assume the plates are the same material and grade as the stud. For other plate material or grade, 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.

Factored Exterior Wall Column Resistance (lbs): 2x4 Walls for $q_{1/50} \cdot C_e = 0.45 \text{ kPa (9.4 psf)}$

HOURLY WIND PRESSURE: $\leq 0.45 \text{ KPA (9.4 PSF)}$ FOR OPEN TERRAIN; $\leq 0.64 \text{ KPA (13.4 PSF)}$ FOR ROUGH TERRAIN

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X4 WALLS – LP LSL								
Height	Tributary Width	1.35E LP LSL			1.55E LP LSL		1.75E LP LSL	
		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"	4964 L/448	8467 L/450	13733 L/546	6044 L/494	12314 L/474	20037 L/509	
	24"	4836 L/324	8350 L/335	13733 L/468	6038 L/359	12314 L/392	20037 L/466	
	36"	3802 L/238	7361 L/251	13733 L/349	5694 L/259	12064 L/293	20037 L/407	
	48"	1970 L/195	5030 L/210	13376 L/282	4045 L/212	11670 L/236	20037 L/332	
9'	16"	4252 L/333	7512 L/340	12305 L/472	5249 L/370	10931 L/398	17742 L/454	
	24"	3913 L/240	7184 L/250	12305 L/354	5056 L/266	10729 L/297	17742 L/405	
	36"	2006 L/179	4753 L/193	11871 L/262	3714 L/196	10273 L/219	17644 L/310	
	48"	-	1995 L/162	10957 L/211	1667 L/160	8292 L/181	17220 L/250	
10'	16"	4069 L/248	6861 L/258	11565 L/363	5029 L/276	9841 L/308	15821 L/402	
	24"	3096 L/182	5879 L/192	11275 L/270	4612 L/199	9674 L/226	15821 L/323	
	36"	702 L/138	3017 L/149	10773 L/197	2507 L/149	8487 L/168	15821 L/237	
	48"	-	-	8470 L/163	-	5954 L/140	15473 L/189	
11'	16"	3615 L/191	6194 L/200	9980 L/292	4394 L/214	8420 L/246	13497 L/353	
	24"	2281 L/141	4553 L/152	9980 L/211	3743 L/154	8420 L/177	13497 L/260	
	36"	-	-	8933 L/154	-	6597 L/132	13497 L/187	
	48"	-	-	6269 L/129	-	-	13336 L/147	
12'	16"	2853 L/152	5256 L/160	8573 L/237	3574 L/171	7210 L/199	11537 L/291	
	24"	-	3403 L/122	8524 L/169	2690 L/124	6967 L/142	11537 L/210	
	36"	-	-	7114 L/124	-	-	11339 L/150	
	48"	-	-	-	-	-	-	
14'	16"	-	-	6182 L/161	-	5042 L/135	8461 L/201	
	24"	-	-	-	-	-	8161 L/143	
	36"	-	-	-	-	-	-	
	48"	-	-	-	-	-	-	

ADDITIONAL NOTES:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- 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.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

2X4 WALLS – LP LVL				
Height	Tributary Width	2.0E LP LVL		
		Double 1-1/2" x 3-1/2"	Double 1-3/4" x 3-1/2"	5-1/2" x 3-1/2" Plank
8'	16"	7964 L/599	11101 L/624	19040 L/642
	24"	7878 L/444	11101 L/474	19040 L/585
	36"	7600 L/323	11101 L/349	19040 L/484
	48"	6692 L/260	11040 L/278	19040 L/394
9'	16"	6793 L/458	9818 L/483	19034 L/505
	24"	6586 L/333	9818 L/357	19034 L/453
	36"	5954 L/241	9670 L/259	19034 L/352
	48"	4016 L/197	9380 L/205	19034 L/283
10'	16"	6521 L/344	8405 L/380	18204 L/416
	24"	6275 L/248	8405 L/275	18204 L/357
	36"	4660 L/183	8405 L/196	17731 L/267
	48"	2321 L/150	8205 L/153	17228 L/214
11'	16"	5864 L/267	7007 L/304	15521 L/390
	24"	5702 L/190	7007 L/217	15521 L/289
	36"	3390 L/143	6840 L/153	15521 L/210
	48"	-	6488 L/120	15323 L/166
12'	16"	4820 L/215	5844 L/246	13255 L/324
	24"	4558 L/152	5751 L/173	13255 L/236
	36"	-	5515 L/122	13186 L/169
	48"	-	-	12686 L/133
14'	16"	3229 L/144	3990 L/166	9725 L/226
	24"	-	-	9473 L/162
	36"	-	-	-
	48"	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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
 - $C_{pg} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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): 2x4 Walls for $q_{1/50} \cdot C_e = 0.60 \text{ kPa (12.5 psf)}$

HOURLY WIND PRESSURE: $\leq 0.60 \text{ KPA (12.5 PSF)}$ FOR OPEN TERRAIN; $\leq 0.85 \text{ KPA (17.8 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X4 WALLS – LP LSL								
Height	Tributary Width	1.35E LP LSL			1.55E LP LSL		1.75E LP LSL	
		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"	4884 L/352	8430 L/361	13733 L/501	6044 L/389	12314 L/421	20037 L/477	
	24"	4277 L/255	8012 L/266	13733 L/376	5852 L/281	12179 L/315	20037 L/428	
	36"	1816 L/192	4853 L/207	13348 L/278	3909 L/209	11641 L/232	20037 L/328	
	48"	-	1403 L/175	11862 L/227	1201 L/173	8874 L/194	19602 L/266	
9'	16"	4116 L/259	7279 L/270	12305 L/381	5111 L/289	10819 L/320	17742 L/418	
	24"	2589 L/192	5502 L/205	11996 L/283	4237 L/210	10403 L/236	17742 L/333	
	36"	-	1774 L/160	10789 L/209	1501 L/158	8116 L/179	17189 L/247	
	48"	-	-	7618 L/174	-	4856 L/150	16632 L/198	
10'	16"	3489 L/195	6419 L/205	11373 L/291	4861 L/214	9772 L/244	15821 L/347	
	24"	1470 L/147	3840 L/159	10914 L/213	3139 L/160	9220 L/178	15821 L/256	
	36"	-	-	8281 L/161	-	5766 L/138	15439 L/186	
	48"	-	-	4801 L/134	-	-	13778 L/151	
11'	16"	2736 L/152	5118 L/162	9980 L/229	4175 L/166	8420 L/192	13497 L/281	
	24"	-	2395 L/125	9694 L/165	2060 L/125	7349 L/141	13497 L/203	
	36"	-	-	6069 L/127	-	-	13302 L/145	
	48"	-	-	-	-	-	-	
12'	16"	1938 L/121	3987 L/130	8573 L/184	3039 L/134	7063 L/154	11537 L/228	
	24"	-	-	7888 L/132	-	-	11472 L/163	
	36"	-	-	-	-	-	-	
	48"	-	-	-	-	-	-	
14'	16"	-	-	5947 L/124	-	-	8249 L/156	
	24"	-	-	-	-	-	-	
	36"	-	-	-	-	-	-	
	48"	-	-	-	-	-	-	

ADDITIONAL NOTES:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- 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.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

2X4 WALLS – LP LVL				
Height	Tributary Width	2.0E LP LVL		
		Double 1-1/2" x 3-1/2"	Double 1-3/4" x 3-1/2"	5-1/2" x 3-1/2" Plank
8'	16"	7932 L/479	11101 L/509	19040 L/600
	24"	7679 L/350	11101 L/377	19040 L/518
	36"	6556 L/257	11022 L/274	19040 L/388
	48"	4065 L/210	10680 L/217	19040 L/312
9'	16"	6645 L/361	9818 L/385	19034 L/467
	24"	6366 L/260	9754 L/280	19034 L/378
	36"	3866 L/194	9358 L/202	19034 L/279
	48"	577 L/161	7635 L/163	18521 L/224
10'	16"	6345 L/269	8405 L/299	18204 L/378
	24"	5273 L/196	8405 L/213	17878 L/287
	36"	2128 L/149	8068 L/151	17190 L/211
	48"	-	5543 L/124	15377 L/171
11'	16"	5766 L/207	7007 L/236	15521 L/312
	24"	4090 L/153	6909 L/167	15521 L/227
	36"	-	-	15284 L/163
	48"	-	-	11963 L/136
12'	16"	4660 L/166	5797 L/189	13255 L/255
	24"	2963 L/122	5581 L/133	13255 L/183
	36"	-	-	12634 L/131
	48"	-	-	-
14'	16"	-	3887 L/126	9570 L/176
	24"	-	-	9120 L/125
	36"	-	-	-
	48"	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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
 - $C_{pe} = 2.0$
- A duration of load adjustment, $K_p = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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 $q_{1/50} \cdot C_e = 0.45 \text{ kPa (9.4 psf)}$

HOURLY WIND PRESSURE: $\leq 0.45 \text{ KPA (9.4 PSF)}$ FOR OPEN TERRAIN; $\leq 0.64 \text{ KPA (13.4 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of 1.25D+1.5L+1.0S or 1.25D+1.5S+1.0L. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X6 WALLS		1.35E LP LSL			1.55E LP LSL			1.75E LP LSL	2.0E LP LVL					
Height	Tributary Width	Double 1-1/2" x 5-1/2"		Triple 1-1/2" x 5-1/2"	Double 1-1/2" x 5-1/2"		Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	Double 1-1/2" x 5-1/2"		Triple 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"	7045 L/999	13155 L/999	15181 L/976	8536 L/999	16075 L/999	21550 L/928	11260 L/999	21597 L/999	16277 L/999	28561 L/999	19040 L/999
	24"	7045 L/999	13155 L/999	15181 L/904	8536 L/999	16075 L/999	21550 L/876	11260 L/999	21597 L/999	16277 L/999	28561 L/999	19040 L/999	28561 L/999	28561 L/999
	36"	7005 L/821	13155 L/999	15181 L/777	8536 L/907	16075 L/999	21550 L/810	11260 L/999	21597 L/999	16277 L/999	28561 L/999	19040 L/999	28561 L/999	28561 L/999
	48"	6057 L/668	13155 L/868	15181 L/640	8312 L/730	16075 L/946	21550 L/745	11260 L/891	21597 L/999	16277 L/945	28561 L/999	19040 L/898	28561 L/999	28561 L/999
9'	16"	6275 L/999	12483 L/999	13874 L/889	7563 L/999	15205 L/999	19542 L/864	9888 L/999	20334 L/999	14642 L/999	27780 L/999	19034 L/999	28551 L/999	28551 L/999
	24"	6271 L/850	12483 L/999	13874 L/792	7563 L/940	15205 L/999	19542 L/801	9888 L/999	20334 L/999	14642 L/999	27780 L/999	19034 L/955	28551 L/999	28551 L/999
	36"	5670 L/625	12483 L/810	13874 L/603	7335 L/691	15205 L/883	19542 L/705	9841 L/848	20334 L/999	14642 L/897	27780 L/984	19034 L/821	28551 L/961	28551 L/961
	48"	3585 L/513	12404 L/654	13874 L/488	5620 L/566	15205 L/719	19542 L/582	9572 L/680	20334 L/863	14642 L/729	27780 L/910	19034 L/677	28551 L/897	28551 L/897
10'	16"	6227 L/885	12297 L/999	13609 L/759	7498 L/974	14943 L/999	19124 L/746	9803 L/999	19961 L/999	14483 L/999	27235 L/987	19027 L/877	28540 L/941	28540 L/941
	24"	6118 L/648	12297 L/835	13609 L/618	7434 L/720	14943 L/906	19124 L/682	9803 L/879	19961 L/999	14483 L/919	27235 L/922	19027 L/802	28540 L/882	28540 L/882
	36"	4531 L/482	12297 L/621	13609 L/463	6470 L/531	14943 L/683	19124 L/549	9591 L/647	19961 L/818	14483 L/691	27235 L/841	19027 L/636	28540 L/807	28540 L/807
	48"	1758 L/397	10762 L/509	13418 L/372	3922 L/437	14623 L/553	19124 L/448	8578 L/522	19961 L/668	14483 L/556	27235 L/713	19027 L/518	28540 L/701	28540 L/701
12'	16"	6051 L/550	11860 L/710	12946 L/523	7325 L/611	14321 L/772	18086 L/564	9595 L/747	19076 L/859	14083 L/779	25913 L/770	19013 L/635	28520 L/698	28520 L/698
	24"	5205 L/403	11860 L/527	12946 L/391	7030 L/445	14321 L/580	18086 L/465	9458 L/549	19076 L/696	14083 L/585	25913 L/701	19013 L/529	28520 L/639	28520 L/639
	36"	1970 L/305	10288 L/394	12603 L/287	3964 L/336	13878 L/429	18086 L/346	8371 L/403	19076 L/520	14042 L/430	25913 L/558	19013 L/395	28520 L/539	28520 L/539
	48"	-	6620 L/328	11168 L/233	-	10156 L/359	17690 L/279	5372 L/330	18492 L/420	13640 L/343	25913 L/454	19013 L/317	28520 L/440	28520 L/440
14'	16"	5724 L/362	11317 L/479	12108 L/354	6935 L/405	13568 L/528	16775 L/421	9286 L/499	18013 L/633	13577 L/530	22787 L/651	18999 L/458	28499 L/515	28499 L/515
	24"	3575 L/271	10983 L/351	11842 L/260	5330 L/300	13319 L/390	16775 L/313	8924 L/362	18013 L/473	13577 L/389	22787 L/519	18999 L/350	28499 L/462	28499 L/462
	36"	-	7102 L/269	10739 L/190	1274 L/228	10334 L/295	16265 L/230	5905 L/271	17390 L/349	13100 L/283	22787 L/385	18674 L/258	28499 L/357	28499 L/357
	48"	-	2634 L/224	7654 L/157	-	5936 L/245	15716 L/183	1927 L/223	13860 L/289	11107 L/228	22787 L/307	18108 L/206	28499 L/287	28499 L/287
16'	16"	4708 L/254	9376 L/346	10932 L/249	6341 L/281	11144 L/387	15249 L/301	8748 L/347	14990 L/471	12189 L/378	18303 L/524	17329 L/335	26899 L/402	26899 L/402
	24"	1925 L/191	8846 L/250	10494 L/181	3611 L/212	11144 L/278	14876 L/221	7509 L/254	14990 L/343	12189 L/273	18303 L/386	17031 L/247	26899 L/336	26899 L/336
	36"	-	4189 L/192	7938 L/135	-	7089 L/211	14262 L/160	3450 L/192	14177 L/249	11351 L/196	18303 L/279	16392 L/180	26899 L/248	26899 L/248
	48"	-	-	-	-	2154 L/175	12071 L/130	-	9584 L/206	7964 L/161	18303 L/219	14987 L/144	26899 L/198	26899 L/198
18'	16"	3248 L/188	7657 L/257	9305 L/183	4744 L/208	9074 L/289	12526 L/227	7986 L/251	12110 L/359	9761 L/285	14653 L/405	14613 L/253	21925 L/351	21925 L/351
	24"	-	5491 L/190	8350 L/133	1253 L/159	7730 L/210	12499 L/162	5764 L/186	12110 L/256	9604 L/202	14653 L/291	14613 L/182	21925 L/258	21925 L/258
	36"	-	-	-	-	3093 L/159	-	701 L/143	9624 L/187	7801 L/147	14542 L/207	14061 L/130	21925 L/167	21925 L/167
	48"	-	-	-	-	-	-	-	5454 L/154	-	13991 L/162	-	21533 L/141	21533 L/141
20'	16"	1271 L/147	5557 L/198	7368 L/140	2589 L/162	7124 L/221	10231 L/175	5802 L/194	9754 L/277	7701 L/219	11745 L/315	11952 L/196	17930 L/278	17930 L/278
	24"	-	2646 L/148	-	-	4539 L/164	9741 L/125	2936 L/145	9244 L/196	7363 L/154	11641 L/224	11546 L/140	17930 L/200	17930 L/200
	36"	-	-	-	-	-	-	-	5351 L/146	-	11163 L/158	-	17375 L/143	17375 L/143
	48"	-	-	-	-	-	-	-	-	-	8985 L/126	-	-	-
22'	16"	-	3559 L/157	-	766 L/130	4972 L/176	8091 L/138	3734 L/154	7621 L/218	6001 L/171	9382 L/249	9536 L/155	14702 L/222	14702 L/222
	24"	-	-	-	-	1970 L/131	-	-	6148 L/156	4942 L/122	9077 L/175	-	14340 L/158	14340 L/158
	36"	-	-	-	-	-	-	-	-	-	7986 L/124	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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
 - $C_{pf} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

Factored Exterior Wall Column Resistance (lbs): 2x6 Walls for $q_{1/50} \cdot C_e = 0.60 \text{ kPa (12.5 psf)}$

HOURLY WIND PRESSURE: $\leq 0.06 \text{ KPA (12.5 PSF)}$ FOR OPEN TERRAIN; $\leq 0.85 \text{ KPA (17.8 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X6 WALLS		1.35E LP LSL			1.55E LP LSL		1.75E LP LSL	2.0E LP LVL					
Height	Tributary Width	1.35E LP LSL			1.55E LP LSL		1.75E LP LSL	2.0E LP LVL		2.0E LP LVL		2.0E LP LVL	2.0E 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"	Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	3-1/2" x 5-1/2"	Double 1-1/2" x 5-1/2"	Triple 1-1/2" x 5-1/2"	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"	7045 L/999	13155 L/999	15181 L/924	8536 L/999	16075 L/999	21550 L/890	11260 L/999	21597 L/999	16277 L/999	28561 L/999	19040 L/999	28561 L/999
	24"	7045 L/885	13155 L/999	15181 L/828	8536 L/976	16075 L/999	21550 L/828	11260 L/999	21597 L/999	16277 L/999	28561 L/999	19040 L/999	28561 L/999
	36"	5927 L/660	13155 L/856	15181 L/632	8185 L/722	16075 L/934	21550 L/736	11260 L/878	21597 L/999	16277 L/933	28561 L/999	19040 L/887	28561 L/999
	48"	3275 L/546	12913 L/693	15181 L/513	5623 L/600	16075 L/760	21550 L/609	10896 L/708	21597 L/912	16277 L/760	28561 L/973	19040 L/728	28561 L/973
9'	16"	6275 L/918	12483 L/999	13874 L/828	7563 L/999	15205 L/999	19542 L/818	9888 L/999	20334 L/999	14642 L/999	27780 L/999	19034 L/976	28551 L/999
	24"	6084 L/671	12483 L/870	13874 L/646	7414 L/746	15205 L/946	19542 L/745	9888 L/913	20334 L/999	14642 L/961	27780 L/999	19034 L/875	28551 L/981
	36"	3412 L/507	12376 L/645	13874 L/482	5458 L/559	15205 L/709	19542 L/574	9552 L/671	20334 L/853	14642 L/719	27780 L/899	19034 L/668	28551 L/890
	48"	-	9202 L/540	13549 L/387	2032 L/462	13159 L/587	19542 L/467	7293 L/549	20334 L/694	14557 L/577	27780 L/744	19034 L/542	28551 L/738
10'	16"	6178 L/701	12297 L/895	13609 L/661	7498 L/776	14943 L/967	19124 L/699	9803 L/946	19961 L/999	14483 L/982	27235 L/939	19027 L/822	28540 L/898
	24"	5196 L/516	12297 L/669	13609 L/498	7130 L/568	14943 L/734	19124 L/588	9682 L/699	19961 L/875	14483 L/743	27235 L/862	19027 L/680	28540 L/827
	36"	1513 L/392	10532 L/504	13391 L/367	3711 L/432	14401 L/547	19124 L/442	8409 L/515	19961 L/659	14483 L/548	27235 L/704	19027 L/511	28540 L/692
	48"	-	6396 L/421	11773 L/299	-	10247 L/460	18911 L/356	5069 L/424	19334 L/535	14094 L/438	27235 L/576	19027 L/411	28540 L/567
12'	16"	5738 L/432	11860 L/569	12946 L/421	7114 L/482	14321 L/624	18086 L/498	9539 L/593	19076 L/745	14083 L/630	25913 L/719	19013 L/566	28520 L/655
	24"	2998 L/326	11284 L/420	12739 L/310	4900 L/360	14084 L/462	18086 L/373	9151 L/431	19076 L/560	14083 L/464	25913 L/598	19013 L/426	28520 L/576
	36"	-	6329 L/324	10962 L/230	-	9864 L/355	17656 L/275	5125 L/326	18288 L/415	13609 L/337	25913 L/447	19013 L/312	28520 L/434
	48"	-	548 L/271	7173 L/190	-	4386 L/297	16596 L/220	-	13307 L/348	10713 L/275	25913 L/359	19013 L/248	28520 L/350
14'	16"	4262 L/290	11118 L/379	11953 L/281	6006 L/321	13462 L/420	16775 L/338	9027 L/392	18013 L/510	13577 L/421	22787 L/566	18999 L/376	28499 L/476
	24"	541 L/220	8304 L/287	11431 L/204	2541 L/243	11546 L/314	16422 L/249	6897 L/290	17597 L/377	13243 L/306	22787 L/415	18838 L/278	28499 L/383
	36"	-	2277 L/221	7413 L/156	-	5557 L/242	15675 L/180	1584 L/220	13536 L/285	10876 L/225	22787 L/302	18065 L/203	28499 L/283
	48"	-	-	2975 L/129	-	-	11825 L/149	-	7668 L/238	6594 L/185	22491 L/240	15047 L/166	28499 L/225
16'	16"	2762 L/205	9376 L/269	10617 L/196	4417 L/227	11144 L/302	14996 L/238	8230 L/272	14990 L/372	12189 L/296	18303 L/417	17156 L/267	26899 L/361
	24"	-	5541 L/204	8870 L/144	-	8443 L/225	14432 L/173	4658 L/205	14990 L/267	12184 L/211	18303 L/302	16570 L/195	26899 L/268
	36"	-	-	-	-	1757 L/173	11840 L/128	-	9224 L/204	7695 L/159	18303 L/215	14744 L/142	26624 L/195
	48"	-	-	-	-	-	-	-	2723 L/170	2690 L/131	16855 L/171	-	25755 L/155
18'	16"	548 L/154	6277 L/203	9014 L/142	2382 L/169	8503 L/225	12526 L/176	6562 L/199	12110 L/278	9705 L/220	14653 L/316	14613 L/197	21925 L/279
	24"	-	2030 L/154	-	-	4548 L/170	11809 L/127	2437 L/151	10712 L/201	8632 L/158	14653 L/225	14265 L/141	21925 L/202
	36"	-	-	-	-	-	-	-	5091 L/152	-	13779 L/160	-	21477 L/144
	48"	-	-	-	-	-	-	-	-	-	9970 L/129	-	-
20'	16"	-	3551 L/158	-	-	5362 L/176	9877 L/135	3805 L/155	9440 L/214	7457 L/168	11733 L/243	11687 L/152	17930 L/217
	24"	-	-	-	-	-	-	-	6505 L/157	5301 L/122	11296 L/172	-	17582 L/155
	36"	-	-	-	-	-	-	-	-	-	8776 L/124	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-
22'	16"	-	1277 L/126	-	-	2931 L/140	-	1542 L/124	6838 L/169	5473 L/132	9162 L/191	-	14479 L/172
	24"	-	-	-	-	-	-	-	3250 L/125	-	8712 L/134	-	13831 L/122
	36"	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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_m is based on Category 2
 - $C_{df} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

Factored Exterior Wall Column Resistance (lbs): 2x8 Walls for $q_{1/50} \cdot C_e = 0.45 \text{ kPa (9.4 psf)}$

HOURLY WIND PRESSURE: $\leq 0.45 \text{ KPA (9.4 PSF)}$ FOR OPEN TERRAIN; $\leq 0.64 \text{ KPA (13.4 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq L + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS – LP LSL		1.35E LP LSL				1.55E LP LSL				1.75E LP LSL							
Height	Tributary Width	Double 1-1/2" x 7-1/4"		Triple 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"	8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	27073	L/999
	24"	8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	27073	L/999	27802	L/999
	36"	8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	27073	L/999	27802	L/999
	48"	8011	L/999	14887	L/999	20769	L/999	19549	L/999	9807	L/999	17972	L/999	27073	L/999	27802	L/999
9'	16"	7432	L/999	14302	L/999	20290	L/999	18004	L/999	8901	L/999	17235	L/999	26427	L/999	25411	L/999
	24"	7432	L/999	14302	L/999	20290	L/999	18004	L/999	8901	L/999	17235	L/999	26427	L/999	25411	L/999
	36"	7285	L/999	14302	L/999	20290	L/999	18004	L/999	8828	L/999	17235	L/999	26427	L/999	25411	L/999
	48"	5550	L/999	14302	L/999	20290	L/999	18004	L/974	7858	L/999	17235	L/999	26427	L/999	25411	L/999
10'	16"	7394	L/999	14174	L/999	20076	L/999	17816	L/999	8851	L/999	17059	L/999	26055	L/999	25118	L/999
	24"	7397	L/999	14174	L/999	20076	L/999	17816	L/999	8851	L/999	17059	L/999	26055	L/999	25118	L/999
	36"	6479	L/999	14174	L/999	20076	L/999	17816	L/927	8613	L/999	17059	L/999	26055	L/999	25118	L/983
	48"	3931	L/846	14099	L/999	20076	L/999	17816	L/764	6283	L/928	17059	L/999	26055	L/999	25118	L/892
12'	16"	7306	L/999	13876	L/999	19581	L/999	17362	L/919	8732	L/999	16651	L/999	25150	L/999	24406	L/897
	24"	7114	L/862	13876	L/999	19581	L/999	17362	L/795	8609	L/957	16651	L/999	25150	L/999	24406	L/829
	36"	4116	L/658	13770	L/834	19581	L/999	17362	L/602	6384	L/724	16651	L/918	25150	L/999	24406	L/709
	48"	-	-	10349	L/701	19522	L/833	17362	L/487	2777	L/601	14501	L/763	25150	L/898	24406	L/583
14'	16"	7135	L/792	13521	L/999	18998	L/999	16797	L/723	8589	L/877	16170	L/999	24136	L/999	23536	L/722
	24"	5681	L/590	13521	L/765	18998	L/939	16797	L/549	7833	L/649	16170	L/842	24136	L/999	23536	L/644
	36"	1448	L/449	11005	L/581	18983	L/701	16797	L/407	3835	L/495	15002	L/633	24136	L/759	23536	L/488
	48"	-	-	6438	L/485	15555	L/584	16363	L/326	-	-	10400	L/531	21951	L/629	23536	L/395
16'	16"	6839	L/557	13110	L/737	18334	L/900	16114	L/525	8252	L/622	15621	L/810	23036	L/950	22474	L/587
	24"	4059	L/420	12863	L/544	18334	L/676	16114	L/391	6158	L/465	15523	L/602	23036	L/731	22474	L/467
	36"	-	-	8024	L/419	16620	L/506	15726	L/286	1104	L/353	11793	L/459	22466	L/547	22474	L/346
	48"	-	-	2604	L/347	11411	L/422	14275	L/230	-	-	6448	L/382	17092	L/460	22001	L/278
18'	16"	5817	L/411	12645	L/544	17598	L/676	15318	L/390	7806	L/454	15010	L/603	21857	L/730	21244	L/463
	24"	2397	L/310	10891	L/406	17458	L/499	15158	L/286	4458	L/343	14460	L/444	21794	L/546	21244	L/346
	36"	-	-	5186	L/311	13314	L/379	14508	L/207	-	-	8718	L/342	18748	L/413	20833	L/253
	48"	-	-	-	-	7506	L/314	11200	L/170	-	-	2729	L/284	12619	L/345	20209	L/202
20'	16"	4696	L/312	11897	L/413	16716	L/518	14424	L/295	6590	L/346	14218	L/459	20634	L/565	19858	L/356
	24"	-	-	8790	L/311	16256	L/379	13944	L/215	2796	L/261	12115	L/342	20118	L/418	19706	L/262
	36"	-	-	1713	L/240	10254	L/290	12165	L/157	-	-	5915	L/262	15116	L/318	19021	L/190
	48"	-	-	-	-	3060	L/242	8380	L/129	-	-	-	-	8579	L/264	17975	L/151
22'	16"	3076	L/246	10801	L/321	14524	L/412	13222	L/229	5412	L/269	12881	L/359	19328	L/444	18395	L/278
	24"	-	-	5853	L/247	13093	L/301	12707	L/165	-	-	9267	L/271	18489	L/325	17920	L/203
	36"	-	-	-	-	5403	L/233	8936	L/124	-	-	-	-	11146	L/252	17204	L/146
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24'	16"	-	-	7595	L/265	12565	L/331	11906	L/181	2577	L/223	10389	L/292	17121	L/359	16007	L/225
	24"	-	-	1918	L/204	8746	L/248	10016	L/133	-	-	5182	L/223	14041	L/268	15841	L/161
	36"	-	-	-	-	-	-	-	-	-	-	-	-	4612	L/210	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26'	16"	-	-	4943	L/221	10048	L/273	9928	L/148	1790	L/183	7340	L/244	14892	L/294	13783	L/184
	24"	-	-	-	-	5073	L/207	-	-	-	-	1407	L/187	9328	L/225	13104	L/132
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28'	16"	-	-	2650	L/186	7286	L/230	7881	L/124	-	-	4828	L/205	11340	L/250	11524	L/153
	24"	-	-	-	-	1700	L/175	-	-	-	-	-	-	5375	L/191	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30'	16"	-	-	-	-	4996	L/195	-	-	-	-	2663	L/175	8295	L/214	9668	L/129
	24"	-	-	-	-	-	-	-	-	-	-	-	-	1785	L/164	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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_m is based on Category 2
 - $C_{\beta} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

Factored Exterior Wall Column Resistance (lbs): 2x8 Wall for $q_{1/50} * C_e = 0.45 \text{ kPa (9.4 psf)}$

HOURLY WIND PRESSURE: $\leq 0.45 \text{ KPA (9.4 PSF)}$ FOR OPEN TERRAIN; $\leq 0.64 \text{ KPA (13.4 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of 1.25D+1.5L+1.0S or 1.25D+1.5S+1.0L. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS – LP LVL		1-1/2" 2.0E LP LVL			1-3/4" 2.0E LP LVL			2.0E LP LVL	
Height	Tributary Width	Double 1-1/2" x 7-1/4"		Triple 1-1/2" 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"	
		1-1/2" x 7-1/4"	1-1/2" x 7-1/4"	1-1/2" x 7-1/4"	1-3/4" x 7-1/4"	1-3/4" x 7-1/4"	1-3/4" x 7-1/4"	1-3/4" x 7-1/4"	3-1/2" x 7-1/4"
8'	16"	13036 L/999	24129 L/999	33793 L/999	19133 L/999	34028 L/999	47195 L/999	25099 L/999	37649 L/999
	24"	13036 L/999	24129 L/999	33793 L/999	19133 L/999	34028 L/999	47195 L/999	25099 L/999	37649 L/999
	36"	13036 L/999	24129 L/999	33793 L/999	19133 L/999	34028 L/999	47195 L/999	25099 L/999	37649 L/999
	48"	13036 L/999	24129 L/999	33793 L/999	19133 L/999	34028 L/999	47195 L/999	25099 L/999	37649 L/999
9'	16"	11676 L/999	23054 L/999	32904 L/999	17470 L/999	32727 L/999	46055 L/999	25090 L/999	37635 L/999
	24"	11676 L/999	23054 L/999	32904 L/999	17470 L/999	32727 L/999	46055 L/999	25090 L/999	37635 L/999
	36"	11676 L/999	23054 L/999	32904 L/999	17470 L/999	32727 L/999	46055 L/999	25090 L/999	37635 L/999
	48"	11564 L/999	23054 L/999	32904 L/999	17470 L/999	32727 L/999	46055 L/999	25090 L/999	37635 L/999
10'	16"	11609 L/999	22805 L/999	32480 L/999	17347 L/999	32346 L/999	45464 L/999	25081 L/999	37621 L/999
	24"	11609 L/999	22805 L/999	32480 L/999	17347 L/999	32346 L/999	45464 L/999	25081 L/999	37621 L/999
	36"	11609 L/999	22805 L/999	32480 L/999	17347 L/999	32346 L/999	45464 L/999	25081 L/999	37621 L/999
	48"	11288 L/999	22805 L/999	32480 L/999	17347 L/999	32346 L/999	45464 L/999	25081 L/999	37621 L/999
12'	16"	11453 L/999	22227 L/999	31508 L/999	17057 L/999	31455 L/999	44030 L/999	25063 L/999	37594 L/999
	24"	11453 L/999	22227 L/999	31508 L/999	17057 L/999	31455 L/999	44030 L/999	25063 L/999	37594 L/999
	36"	11133 L/861	22227 L/999	31508 L/999	17057 L/915	31455 L/999	44030 L/999	25063 L/809	37594 L/948
	48"	8596 L/710	22227 L/999	31508 L/999	17042 L/739	31455 L/948	44030 L/999	25063 L/666	37594 L/885
14'	16"	11264 L/999	21548 L/999	30383 L/999	16702 L/999	30393 L/999	42341 L/999	25044 L/798	37567 L/861
	24"	11139 L/790	21548 L/999	30383 L/999	16702 L/837	30393 L/976	42341 L/999	25044 L/723	37567 L/802
	36"	9228 L/589	21548 L/757	30383 L/923	16702 L/620	30393 L/801	42341 L/916	25044 L/553	37567 L/729
	48"	5318 L/485	20210 L/619	30383 L/756	16220 L/497	30393 L/656	42341 L/798	25044 L/449	37567 L/612
16'	16"	11040 L/761	20789 L/962	29123 L/999	16278 L/802	29167 L/883	40423 L/904	25026 L/625	37540 L/687
	24"	10664 L/557	20789 L/729	29123 L/885	16278 L/597	29167 L/766	40423 L/832	25026 L/520	37540 L/629
	36"	6799 L/420	20347 L/541	29123 L/669	15911 L/437	29167 L/579	40423 L/707	25026 L/389	37540 L/530
	48"	1872 L/346	15965 L/450	28578 L/542	13417 L/354	29167 L/467	40423 L/579	25026 L/312	37540 L/433
18'	16"	10649 L/560	19934 L/727	27744 L/873	15783 L/597	27797 L/741	38316 L/774	24159 L/506	37512 L/546
	24"	9320 L/411	19928 L/541	27744 L/669	15720 L/437	27797 L/577	38316 L/698	24159 L/385	37512 L/492
	36"	4343 L/310	17521 L/404	27458 L/497	14555 L/319	27797 L/428	38316 L/532	23857 L/284	37512 L/387
	48"	-	11933 L/335	24505 L/406	10320 L/262	27081 L/343	38316 L/430	23211 L/227	37512 L/313
20'	16"	10161 L/421	19011 L/559	26311 L/687	15218 L/452	25158 L/603	33552 L/716	22565 L/396	36938 L/439
	24"	7622 L/313	18594 L/411	26311 L/513	14848 L/329	25158 L/449	33552 L/562	22518 L/293	36938 L/389
	36"	1919 L/236	14265 L/310	25406 L/378	12048 L/243	25158 L/327	33552 L/416	21792 L/214	36938 L/289
	48"	-	8190 L/256	19935 L/313	7328 L/199	24073 L/260	33552 L/332	21096 L/170	36296 L/233
22'	16"	9637 L/324	17314 L/442	23086 L/558	14190 L/352	21432 L/492	28572 L/616	20869 L/311	32846 L/396
	24"	5972 L/243	17240 L/319	23086 L/408	13914 L/253	21432 L/359	28572 L/457	20475 L/228	32846 L/311
	36"	-	11264 L/243	22173 L/296	9386 L/189	21432 L/257	28572 L/331	19733 L/165	32846 L/228
	48"	-	2913 L/204	15587 L/245	2964 L/158	18276 L/207	28572 L/261	18246 L/131	32296 L/181
24'	16"	8057 L/259	14849 L/358	19801 L/458	12077 L/284	18219 L/404	24292 L/513	18672 L/250	28153 L/348
	24"	2522 L/200	13099 L/261	19801 L/330	10630 L/205	18219 L/290	24292 L/373	18512 L/180	28153 L/255
	36"	-	5738 L/200	15578 L/244	4959 L/155	17032 L/208	24292 L/267	17176 L/130	28153 L/184
	48"	-	-	8193 L/202	-	11988 L/169	23006 L/210	-	27507 L/145
26'	16"	5317 L/216	12622 L/294	16964 L/379	10025 L/232	15488 L/333	20656 L/428	16047 L/206	24182 L/292
	24"	-	9009 L/218	16617 L/271	7365 L/170	15190 L/237	20656 L/307	15548 L/148	24182 L/210
	36"	-	-	10035 L/204	-	12123 L/172	20025 L/218	-	23603 L/151
	48"	-	-	-	-	6785 L/140	16488 L/174	-	-
28'	16"	3014 L/182	10212 L/245	14442 L/316	8191 L/193	13079 L/278	17586 L/359	13585 L/172	20804 L/245
	24"	-	5639 L/183	12430 L/228	4704 L/143	12532 L/197	17287 L/255	12913 L/122	20578 L/175
	36"	-	-	5309 L/172	-	8184 L/144	16020 L/181	-	19616 L/125
	48"	-	-	-	-	2051 L/118	11249 L/146	-	-
30'	16"	-	7607 L/208	12050 L/266	6125 L/163	10907 L/234	14911 L/303	11406 L/145	17932 L/208
	24"	-	2704 L/156	8933 L/194	2412 L/121	9846 L/165	14398 L/214	-	17277 L/148
	36"	-	-	-	-	4883 L/122	11847 L/153	-	-
	48"	-	-	-	-	-	6871 L/123	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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_m is based on Category 2
 - $C_{df} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

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

HOURLY WIND PRESSURE: $\leq 0.60 \text{ KPA (12.5 PSF)}$ FOR OPEN TERRAIN; $\leq 0.85 \text{ KPA (17.8 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS – LP LSL		1.35E LP LSL				1.55E LP LSL				1.75E LP LSL							
Height	Tributary Width	Double 1-1/2" x 7-1/4"		Triple 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"			
				8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	25067	L/999
8'	16"	8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	25067	L/999	27802	L/999
	24"	8210	L/999	14887	L/999	20769	L/999	19549	L/999	9859	L/999	17972	L/999	25067	L/999	27802	L/999
	36"	7883	L/999	14887	L/999	20769	L/999	19549	L/999	9787	L/999	17972	L/999	25067	L/999	27802	L/999
	48"	5393	L/999	14887	L/999	20769	L/999	19549	L/999	7976	L/999	17972	L/999	25067	L/999	27802	L/999
9'	16"	7432	L/999	14302	L/999	20290	L/999	18004	L/999	8901	L/999	17235	L/999	24454	L/999	25411	L/999
	24"	7364	L/999	14302	L/999	20290	L/999	18004	L/999	8901	L/999	17235	L/999	24454	L/999	25411	L/999
	36"	5388	L/999	14302	L/999	20290	L/999	18004	L/962	7701	L/999	17235	L/999	24454	L/999	25411	L/999
	48"	2020	L/893	12577	L/999	20290	L/999	18004	L/790	4586	L/977	17042	L/999	24454	L/999	25411	L/927
10'	16"	7394	L/999	14174	L/999	20076	L/999	17816	L/999	8851	L/999	17059	L/999	24159	L/999	25118	L/999
	24"	7138	L/999	14174	L/999	20076	L/999	17816	L/987	8712	L/999	17059	L/999	24159	L/999	25118	L/999
	36"	3720	L/836	13990	L/999	20076	L/999	17816	L/754	6085	L/917	17059	L/999	24159	L/999	25118	L/881
	48"	-	-	9996	L/888	19873	L/999	17816	L/612	2010	L/767	14329	L/961	24159	L/999	25118	L/729
12'	16"	7196	L/930	13876	L/999	19581	L/999	17362	L/847	8695	L/999	16651	L/999	23477	L/999	24406	L/848
	24"	5067	L/703	13876	L/896	19581	L/999	17362	L/646	7296	L/772	16651	L/985	23477	L/999	24406	L/756
	36"	-	-	10060	L/693	19475	L/822	17362	L/480	2466	L/593	14215	L/754	23477	L/904	24406	L/575
	48"	-	-	4588	L/582	14294	L/697	16889	L/386	-	-	8839	L/636	20151	L/756	24406	L/466
14'	16"	6377	L/631	13521	L/823	18998	L/999	16797	L/589	8330	L/696	16170	L/904	22687	L/999	23536	L/670
	24"	2785	L/479	12236	L/617	18998	L/754	16797	L/439	5047	L/529	15935	L/674	22687	L/830	23536	L/524
	36"	-	-	6091	L/479	15203	L/577	16327	L/321	-	-	10063	L/525	20762	L/627	23536	L/389
	48"	-	-	-	-	8779	L/484	13390	L/262	-	-	3335	L/439	14290	L/529	22980	L/313
16'	16"	4921	L/450	13020	L/586	18334	L/727	16114	L/421	6988	L/497	15621	L/648	21818	L/798	22474	L/500
	24"	-	-	9490	L/446	18000	L/538	15886	L/309	2681	L/377	13245	L/489	21680	L/595	22474	L/373
	36"	-	-	2136	L/343	11017	L/417	14023	L/227	-	-	6033	L/378	16187	L/457	21958	L/274
	48"	-	-	-	-	3486	L/347	9506	L/187	-	-	-	-	8744	L/382	20978	L/218
18'	16"	3433	L/332	11912	L/433	17598	L/538	15284	L/308	5452	L/368	14713	L/479	20852	L/596	21244	L/372
	24"	-	-	6840	L/332	14938	L/404	14690	L/224	235	L/279	10376	L/365	19874	L/441	21013	L/274
	36"	-	-	-	-	7042	L/310	10920	L/168	-	-	2218	L/280	11896	L/342	20160	L/199
	48"	-	-	-	-	-	-	5917	L/138	-	-	-	-	3647	L/284	16754	L/161
20'	16"	1752	L/253	9924	L/332	16461	L/409	14080	L/232	3925	L/279	13277	L/365	19651	L/455	19839	L/282
	24"	-	-	4363	L/253	11992	L/310	13245	L/168	-	-	7676	L/279	16556	L/340	19215	L/206
	36"	-	-	-	-	2277	L/240	8087	L/127	-	-	-	-	7976	L/261	17706	L/149
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12893	L/123
22'	16"	-	-	7331	L/263	14387	L/321	12845	L/179	-	-	10688	L/289	17177	L/359	18059	L/220
	24"	-	-	-	-	7783	L/247	10294	L/132	-	-	3017	L/225	12348	L/271	17406	L/158
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24'	16"	-	-	3770	L/217	10126	L/265	10930	L/142	-	-	6754	L/238	13850	L/292	16007	L/174
	24"	-	-	-	-	2559	L/204	-	-	-	-	-	-	6900	L/223	14185	L/127
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26'	16"	-	-	-	-	6586	L/221	-	-	-	-	3401	L/199	9782	L/244	13291	L/143
	24"	-	-	-	-	-	-	-	-	-	-	-	-	1872	L/187	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28'	16"	-	-	-	-	3544	L/186	-	-	-	-	-	-	6434	L/205	-	-
	24"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30'	16"	-	-	-	-	-	-	-	-	-	-	-	-	3562	L/175	-	-
	24"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	36"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

- 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.
- 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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
 - $C_{p0} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

- Height is the clear height of the column between the bottom plate and the lower top plate.
- 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

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

HOURLY WIND PRESSURE: $\leq 0.60 \text{ KPA (12.5 PSF)}$ FOR OPEN TERRAIN; $\leq 0.85 \text{ KPA (17.8 PSF)}$ FOR ROUGH TERRAIN

TO USE:

- Determine the height of the wall column. If not listed, select the next tallest height in the table.
- Select the row for the desired spacing.
- Calculate factored vertical load applied to the top of the column based on the greater of $1.25D+1.5L+1.0S$ or $1.25D+1.5S+1.0L$. Note that the tables are valid only for $(L + 0.5S) / 4 \leq D \leq L + 0.5S$ or $(S + 0.5L) / 4 \leq D \leq S + 0.5L$ where D = unfactored Dead Load, L = unfactored Live Load due to use and occupancy, and S = unfactored Snow Load.
- 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.
- Verify the plate bearing capacity for the selected column. See Design Assumption 9 below.

2X8 WALLS – LP LVL		1-1/2" 2.OE LP LVL			1-3/4" 2.OE LP LVL			2.OE LP LVL									
Height	Tributary Width	Double 1-1/2" x 7-1/4"		Triple 1-1/2" 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"							
		Resistance (lbs)	Deflection Ratio (L/x)	Resistance (lbs)	Resistance (lbs)	Resistance (lbs)	Resistance (lbs)	Resistance (lbs)	Resistance (lbs)	Resistance (lbs)							
8'	16"	13036	L/999	24129	L/999	33793	L/999	19133	L/999	34028	L/999	47195	L/999	25099	L/999	37649	L/999
	24"	13036	L/999	24129	L/999	33793	L/999	19133	L/999	34028	L/999	47195	L/999	25099	L/999	37649	L/999
	36"	13036	L/999	24129	L/999	33793	L/999	19133	L/999	34028	L/999	47195	L/999	25099	L/999	37649	L/999
	48"	12929	L/999	24129	L/999	33793	L/999	19133	L/999	34028	L/999	47195	L/999	25099	L/999	37649	L/999
9'	16"	11676	L/999	23054	L/999	32904	L/999	17470	L/999	32727	L/999	46055	L/999	25090	L/999	37635	L/999
	24"	11676	L/999	23054	L/999	32904	L/999	17470	L/999	32727	L/999	46055	L/999	25090	L/999	37635	L/999
	36"	11543	L/999	23054	L/999	32904	L/999	17470	L/999	32727	L/999	46055	L/999	25090	L/999	37635	L/999
	48"	10290	L/999	23054	L/999	32904	L/999	17470	L/999	32727	L/999	46055	L/999	25090	L/999	37635	L/999
10'	16"	11609	L/999	22805	L/999	32480	L/999	17347	L/999	32346	L/999	45464	L/999	25081	L/999	37621	L/999
	24"	11609	L/999	22805	L/999	32480	L/999	17347	L/999	32346	L/999	45464	L/999	25081	L/999	37621	L/999
	36"	11263	L/999	22805	L/999	32480	L/999	17347	L/999	32346	L/999	45464	L/999	25081	L/999	37621	L/999
	48"	8229	L/900	22805	L/999	32480	L/999	17332	L/926	32346	L/999	45464	L/999	25081	L/838	37621	L/999
12'	16"	11453	L/999	22227	L/999	31508	L/999	17057	L/999	31455	L/999	44030	L/999	25063	L/963	37594	L/999
	24"	11256	L/929	22227	L/999	31508	L/999	17057	L/982	31455	L/999	44030	L/999	25063	L/862	37594	L/968
	36"	8357	L/702	22227	L/886	31508	L/999	17011	L/729	31455	L/936	44030	L/999	25063	L/657	37594	L/876
	48"	3626	L/582	19269	L/737	31508	L/883	15854	L/590	31455	L/768	44030	L/932	25063	L/534	37594	L/726
14'	16"	11241	L/851	21548	L/999	30383	L/999	16702	L/898	30393	L/998	42341	L/999	25044	L/743	37567	L/818
	24"	10246	L/629	21548	L/814	30383	L/986	16702	L/669	30393	L/855	42341	L/938	25044	L/593	37567	L/748
	36"	4999	L/479	19871	L/612	30383	L/745	16181	L/490	30393	L/647	42341	L/788	25044	L/442	37567	L/604
	48"	-	-	13761	L/514	28057	L/613	11819	L/404	30276	L/523	42341	L/647	25044	L/354	37567	L/492
16'	16"	10787	L/603	20789	L/782	29123	L/944	16278	L/643	29167	L/817	40423	L/851	25026	L/557	37540	L/644
	24"	8050	L/450	20587	L/582	29123	L/718	16081	L/472	29167	L/621	40423	L/754	25026	L/418	37540	L/566
	36"	1417	L/342	15570	L/444	28509	L/534	13102	L/350	29136	L/460	40423	L/571	25026	L/307	37540	L/427
	48"	-	-	8462	L/370	21957	L/447	7692	L/288	27181	L/373	40423	L/462	24424	L/245	37540	L/344
18'	16"	10198	L/440	19934	L/583	27744	L/717	15783	L/473	27797	L/619	38316	L/718	24159	L/414	37512	L/506
	24"	5838	L/332	19078	L/430	27743	L/534	15215	L/344	27797	L/461	38316	L/570	24043	L/306	37512	L/416
	36"	-	-	11490	L/331	24064	L/401	9977	L/258	27017	L/338	38316	L/423	23162	L/223	37512	L/308
	48"	-	-	3521	L/275	16240	L/335	3651	L/213	21848	L/278	37311	L/341	20933	L/179	37512	L/246
20'	16"	8608	L/335	18796	L/444	26311	L/553	14999	L/356	25158	L/483	33552	L/603	22565	L/316	36938	L/402
	24"	3640	L/253	15948	L/331	25718	L/408	13342	L/260	25158	L/353	33552	L/449	21991	L/231	36938	L/312
	36"	-	-	7722	L/253	19467	L/309	6958	L/196	23699	L/257	33552	L/327	21044	L/167	36240	L/229
	48"	-	-	-	-	11120	L/256	-	-	16915	L/212	32792	L/259	16646	L/136	35269	L/183
22'	16"	7047	L/261	17314	L/346	23086	L/442	14086	L/274	21432	L/388	28572	L/492	20619	L/246	32846	L/335
	24"	-	-	13027	L/259	23086	L/319	10947	L/202	21432	L/279	28572	L/359	19939	L/178	32846	L/246
	36"	-	-	2173	L/202	15072	L/243	2433	L/156	17941	L/204	28572	L/257	17974	L/129	32242	L/178
	48"	-	-	-	-	3936	L/204	-	-	10762	L/168	24400	L/207	12316	L/107	31248	L/141
24'	16"	4272	L/212	14355	L/279	19801	L/358	11598	L/220	18219	L/315	24292	L/404	18655	L/195	28153	L/276
	24"	-	-	7982	L/213	17468	L/261	6679	L/166	17855	L/224	24292	L/290	17972	L/140	28153	L/199
	36"	-	-	-	-	7605	L/200	-	-	11632	L/167	22688	L/208	-	-	27442	L/143
	48"	-	-	-	-	-	-	-	-	3298	L/138	15991	L/169	-	-	-	-
26'	16"	-	-	10310	L/234	16826	L/294	8356	L/183	15349	L/258	20656	L/333	15743	L/160	24182	L/228
	24"	-	-	3341	L/178	12010	L/218	3026	L/138	13501	L/185	20257	L/237	-	-	23879	L/163
	36"	-	-	-	-	-	-	-	-	6397	L/139	16171	L/172	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	9057	L/140	-	-	-	-
28'	16"	-	-	7026	L/197	13617	L/245	5755	L/153	12685	L/214	17440	L/278	13099	L/133	20769	L/190
	24"	-	-	-	-	7537	L/183	-	-	9596	L/155	16708	L/197	-	-	19880	L/136
	36"	-	-	-	-	-	-	-	-	-	-	10916	L/144	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30'	16"	-	-	4280	L/167	10142	L/208	3590	L/130	10538	L/179	14541	L/234	-	-	17457	L/161
	24"	-	-	-	-	3614	L/156	-	-	6420	L/131	13136	L/165	-	-	-	-
	36"	-	-	-	-	-	-	-	-	-	-	6507	L/122	-	-	-	-
	48"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

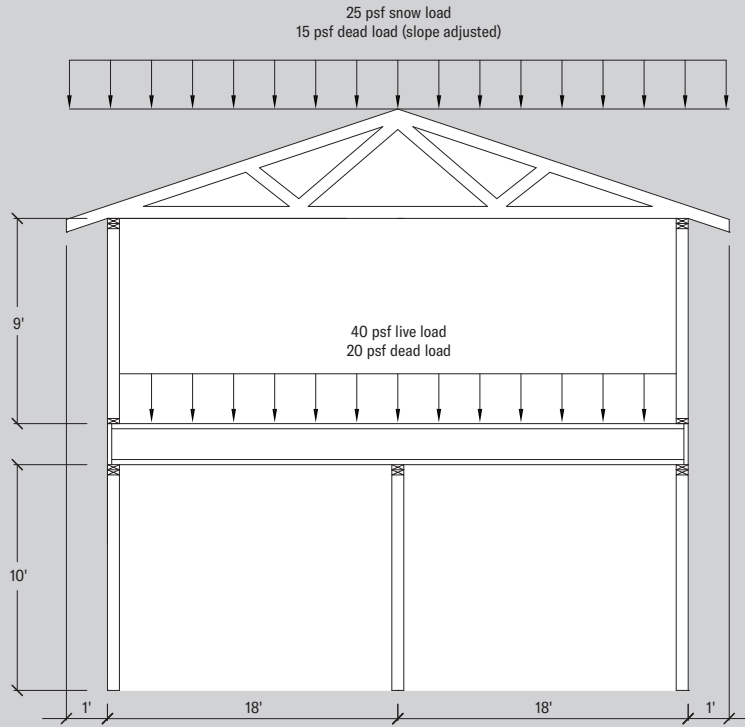
- The tables are limited to structures with a mean roof height of 39'-4" (12 m) for rough terrain, and 32'-9" (10 m) for open terrain.
- The factored resistance has been reduced to allow for one hole up to 25% of the stud depth located in the upper or lower 1/3 of the stud height or 3 feet, whichever 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.
- The vertical resistance assumes an eccentricity of 1/6 of the column depth or width.
- 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_m is based on Category 2
 - $C_{df} = 2.0$
- A duration of load adjustment, $K_D = 1.15$ has been applied for wind.
- No system factor has been applied for bending resistance or stiffness.
- Full-width blocking is assumed to be installed at every 8' on centre or less.
- The tabulated values assume the plates are the same material and grade as the column except the 1.35E LSL plate value is used with LVL columns. For other plate material or grade, 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:

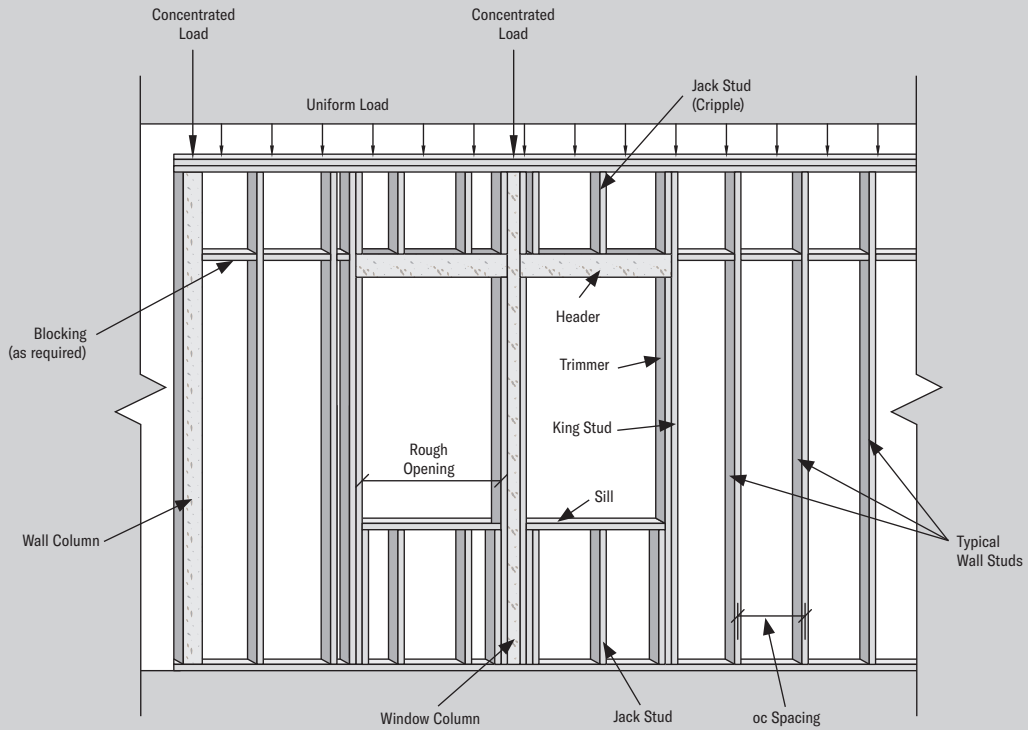
- Height is the clear height of the column between the bottom plate and the lower top plate.
- The first value in each cell represents the factored vertical resistance of the column in pounds (lbs). These factored vertical resistances are the resistance of the column based on Load Combinations cases 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.
- 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 CSA Standard O86 and the Canadian Wood Council's Wood Frame Construction Guide.
- These tables are for members in the Beam orientation. Refer to the Product Orientation detail on page 4.
- All members shall be solid, one-piece sections except for the built-up columns. See page 23 for built-up connections.
- Columns supporting a Tributary Width greater than 48" are beyond the scope of this table.

Typical Wall Framing Examples

ENGINEERED WALL FRAMING EXAMPLE

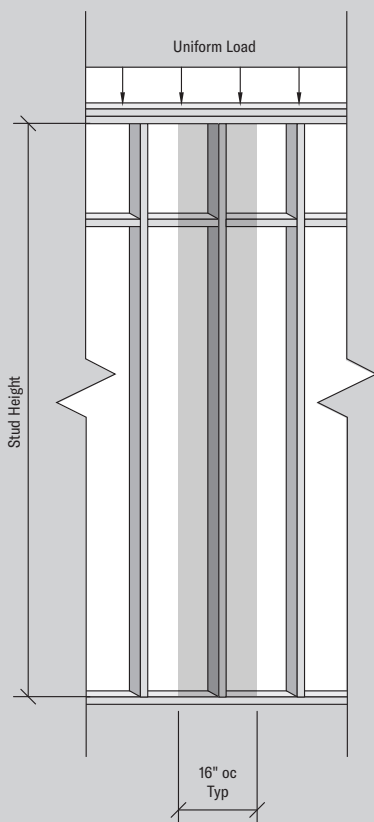


TYPICAL WALL FRAMING



Typical Wall Framing: Wall Stud & Wall Column Examples

TYPICAL WALL STUD EXAMPLE



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: $S = 25 \text{ psf} * (36' / 2 + 1') = 475 \text{ plf}$
 - Live: $L = 40 \text{ psf} * (18' / 2) = 360 \text{ plf}$
 - Dead: $D = 15 \text{ psf} * (36' / 2 + 1') + 100 \text{ plf} + 20 \text{ psf} * (18' / 2) = 565 \text{ plf}$

Total Factored Vertical Load

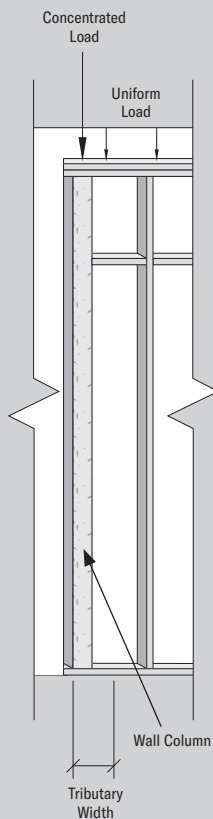
$$P_f = 1.25D + 1.5L + S = 1722 \text{ plf}$$

$$P_f = 1.25D + 1.5S + L = 1780 \text{ plf} \quad \leftarrow \text{govern}$$

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 5143 plf with a deflection ratio of L/442.

WALL COLUMN EXAMPLE



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).

$$\text{Snow: } S = 25 \text{ psf} * (36' / 2 + 1') * (8' / 2 + 1') = 2375 \text{ lbs}$$

$$\text{Dead: Roof} = 15 \text{ psf} * (36' / 2 + 1') * (8' / 2 + 1') = 1425 \text{ lbs}$$

$$\text{Wall} = 100 \text{ plf} * 8" \text{ oc} / 12 + 100 \text{ plf} * (18' / 2) = 967 \text{ lbs}$$

$$\text{Floor} = 20 \text{ psf} * (18' / 2) * 8" \text{ oc} / 12 = 120 \text{ lbs}$$

$$D = 1425 \text{ lbs} + 967 \text{ lbs} + 120 \text{ lbs} = 1739 \text{ lbs}$$

$$\text{Live: } L = 360 \text{ plf} * 8" \text{ oc} / 12 = 240 \text{ lbs}$$

Total Factored Vertical Load

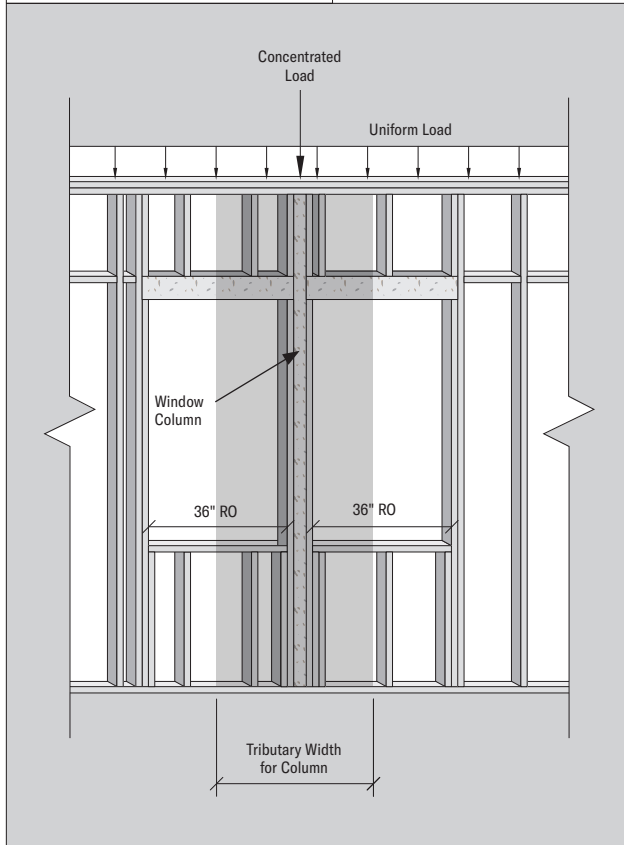
$$P_f = 1.25D + 1.5L + S = 5875 \text{ plf}$$

$$P_f = 1.25D + 1.5S + L = 6942 \text{ plf} \quad \leftarrow \text{govern}$$

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 13609 lbs with a deflection ratio of L/661.

Typical Wall Framing: Window Column Examples

WINDOW COLUMN EXAMPLE



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.

$$\text{Tributary Width} = 2 * (36" / 2) + 2 * 1-1/2" \text{ (trimmers)} + 2 * 1-1/2" \text{ (double 1-1/2" column)} = 42"$$

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.

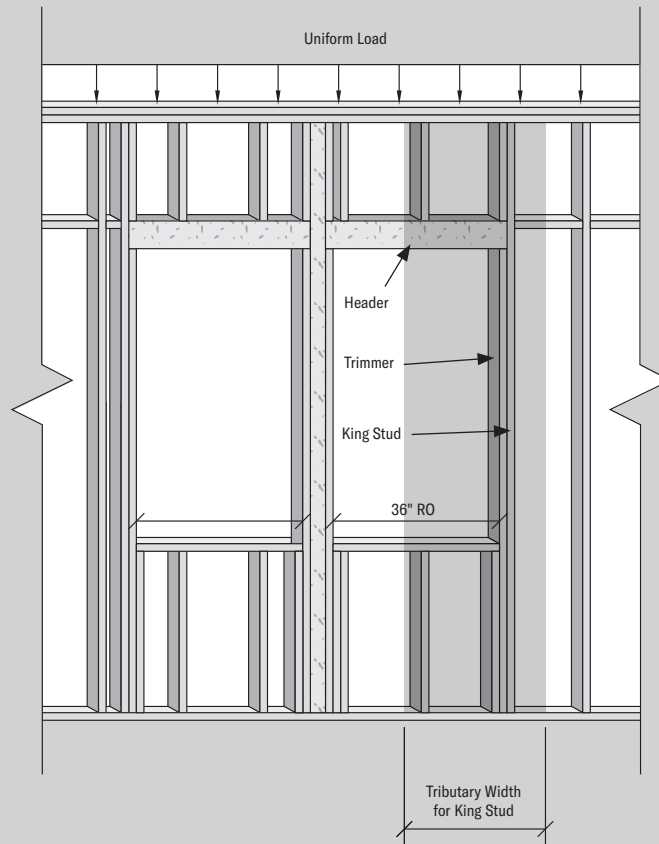
$$\text{Total Factored Vertical Load} = 1600 \text{ plf (from Typical Wall Stud example)} * 16" \text{ oc} / 12 = 2133 \text{ lbs}$$

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 11773 lbs with a deflection ratio of L/299.

Typical Wall Framing: Trimmer & King Stud Examples

TRIMMER AND KING STUD EXAMPLES



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 = $(36" \text{ RO} + 3") / 2 = 19.5"$
3. The vertical load applied to the trimmer from the header is:
From Typical Wall Stud example:
Snow: $S = 475 \text{ plf}$
Live: $L = 360 \text{ plf}$
Dead: $D = 15 \text{ psf} * (36' / 2 + 1') + 100 \text{ plf} * (2.5' / 10') + 20 \text{ psf} * (18' / 2) = 490 \text{ plf}$
Wall Dead Load is adjusted to the wall height supported by the header, approximately 2.5'

Total Factored Vertical Load

$$P_1 = 1.25D + 1.5L + S = 1628 \text{ plf}$$

$$P_1 = 1.25D + 1.5S + L = 1685 \text{ plf} \quad \leftarrow \text{govern}$$

Total Factored Vertical Load on Trimmer = $1685 \text{ plf} * 19.5" / 12 = 2738 \text{ lbs}$

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 7562 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 ($5820 \text{ plf} * 1'$) is adequate compared to a reaction of 2738 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:

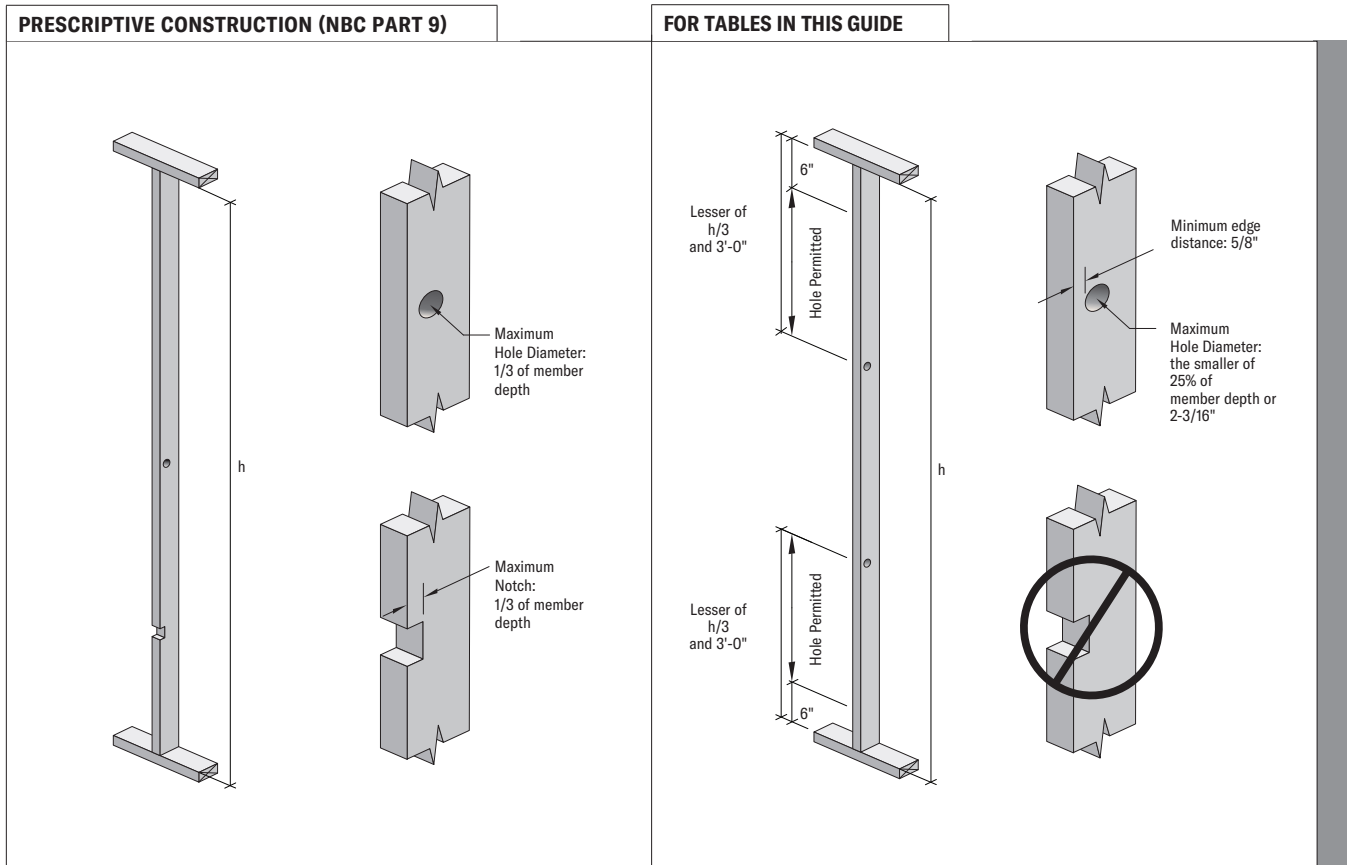
Select a suitable king stud for the same rough opening from the Trimmer example.

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 = $19.5" \text{ (from Trimmer example)} + 16" / 2 \text{ (to next stud)} + 3" = 30.5"$
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 = $1495 \text{ plf} * (16" / 12) / 2 = 997 \text{ lbs}$
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 1530 lbs with a deflection ratio of L/392.

Drilling and Notching



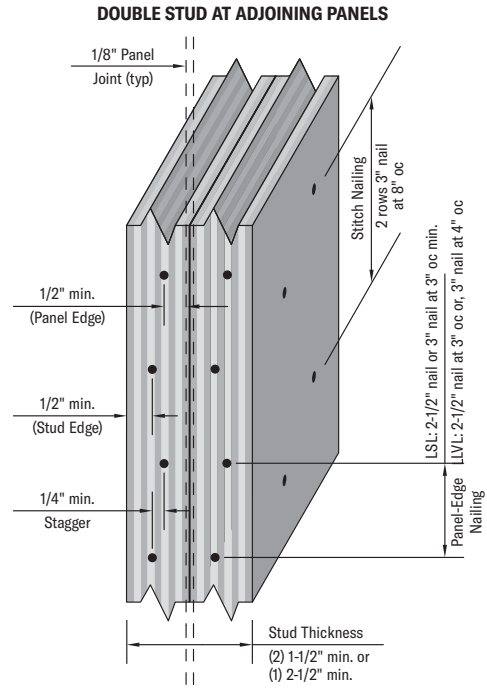
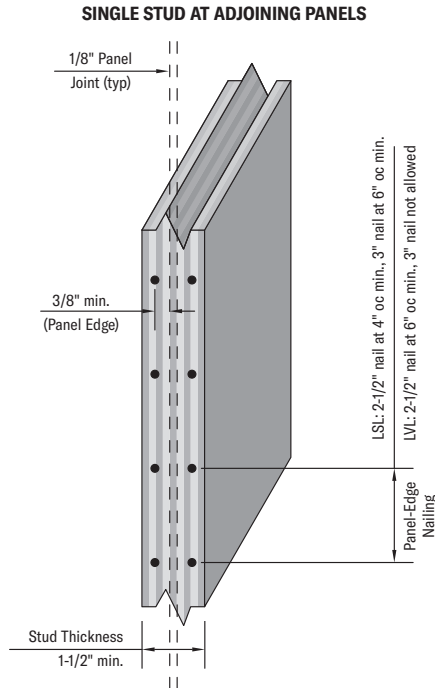
NOTES:

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 2015 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 member 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 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

Nailing and Connection Details

WALL SHEATHING PANEL EDGE NAILING



NOTES:

- Minimum LP® SolidStart® LSL or LVL thickness for a single stud is 1-1/2".
- A double stud (or a minimum 2-1/2" single stud) is required at adjoining panel edges as follows:
 - 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.
 - 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.
- 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.
- The minimum nail spacing into the edge of the stud shall not be less than:
 - For LP SolidStart LSL: 3" oc for both 2-1/2" and 3" common wire nails.
 - For LP SolidStart LVL: 3" oc for 2-1/2" common wire nails or 4" oc for 3" common wire nails.
- Do not use nails larger than 3" common wire nails for wall sheathing nailing.
- 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:

- 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.
- Fastener spacing, end and edge distance shall be as specified by code except for nail spacing as specified below.
- See details at right for fastener and applied load orientation.

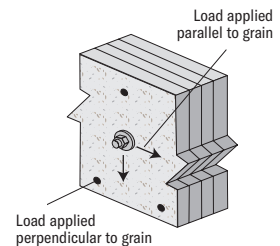
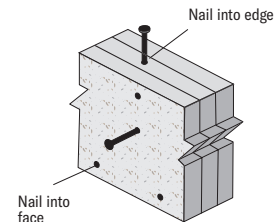
NAIL SPACING REQUIREMENTS

Material	LVL Ply Thickness	Fastener Orientation ⁴	Nail Size ¹ (common or spiral)	Minimum End Distance ^{2,3}	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"

NOTES:

- Nails are common wire or spiral nails in accordance with CSA O86.
- Edge distance shall be sufficient to prevent splitting, but not less than permitted in CSA O86.
- Multiple rows of nails shall be offset at least 1/2" and staggered.
- Edge orientation refers to nails driven into the narrow edge: parallel to the face of the strands for LP LSL or the face of the veneer for LP LVL. Face orientation refers to nails driven into the wide face: perpendicular to the face of the strands for LP LSL or the face of the veneer for LP LVL. (See Fastener & Load Orientation details above)
- 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.
- 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.
- Minimum nail spacing may be reduced 1" for LVL stamped with plant number 1089, for thickness of 1-3/4" or greater.

FASTENER & LOAD ORIENTATION



Typical Connections

TO USE:

- 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)

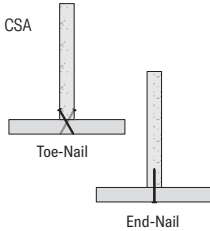
s = stud or column spacing (inches)

- 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.
- If the required number of nails exceed the maximum permitted, use Simpson® 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:

- The lateral resistance has been calculated in accordance with CSA Standard O86 for short term loading ($K_D=1.15$) and dry service conditions.
- 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.
- Toe-nail connections include a toe-nailing factor (J_e) of 0.83.
- End-nail connections include an end-grain factor (J_e) of 0.67.

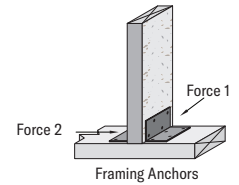


TYPICAL FRAMING ANCHORS

Anchor Type	Nails	Factored Resistance (lbs)		Factored Resistance (lbs)	
		D. Fir-L (G=0.49)		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"	260	405	185	335
A23	8 - 0.148" x 1-1/2"	715	815	510	725
A33	8 - 0.148" x 3"	570	1175	405	930
A44	8 - 0.148" x 3"	485	1175	345	930
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:

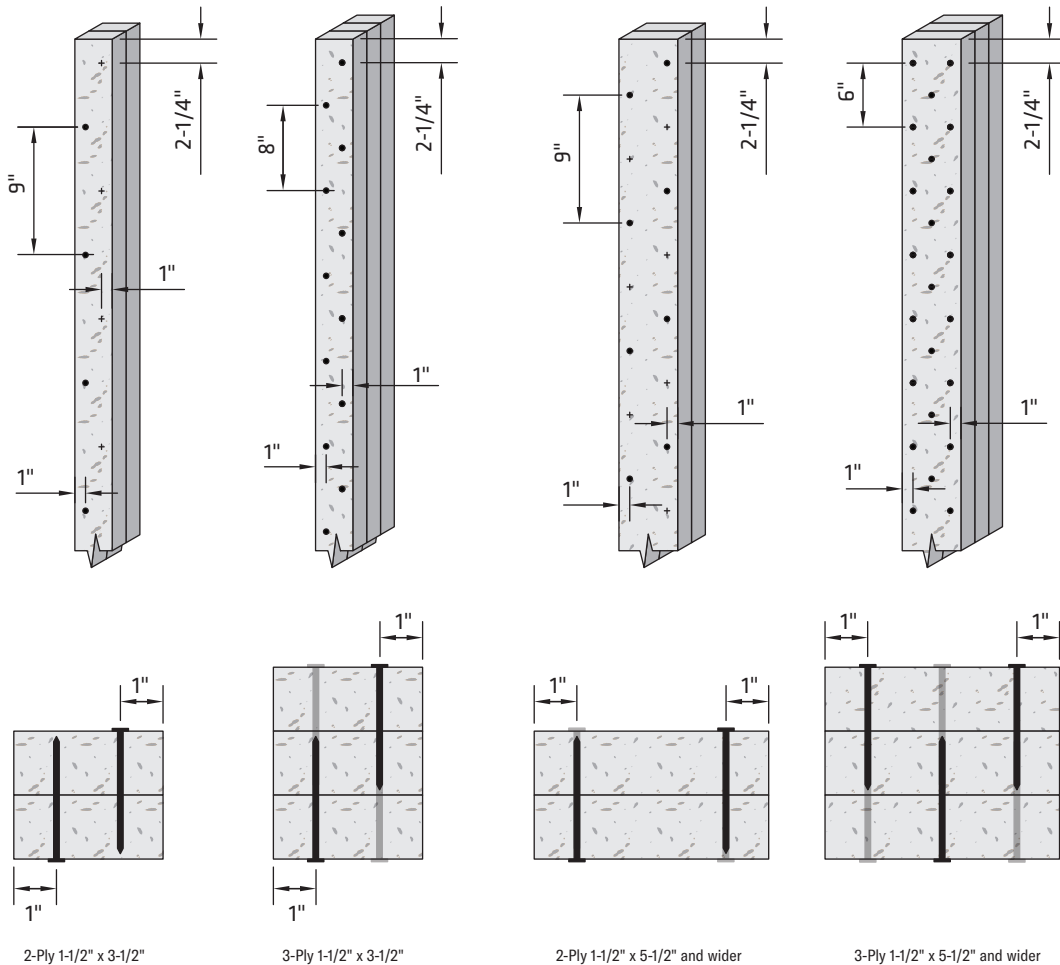
- Refer to the manufacturers' current catalogs for complete information.
- Capacities assume both members being equivalent to Doug Fir-Larch or Spruce-Pine-Fir, with an equivalent specific gravity of 0.42 or better.
- Capacities are for a load duration adjustment for wind, $K_D = 1.15$.
- Capacities are for a single anchor and may be doubled when installed in pairs.



TYPICAL CONNECTIONS

<p>BEAM ON COLUMN CAP</p>	<p>COLUMN BASE</p>	<p>EXAMPLES OF FRAMING ANCHORS</p>
<p>ELEVATED COLUMN BASE</p> <p>Optional non-shrink grout</p>	<p>BEAM ON COLUMN</p> <p>1-1/4" LP SolidStart LSL or LVL or 1-1/8" rim board or blocking for lateral support</p> <p>Column</p>	

CONNECTION OF BUILT-UP COLUMNS



Built-up columns shall be designed in accordance with CSA Standard O86 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)

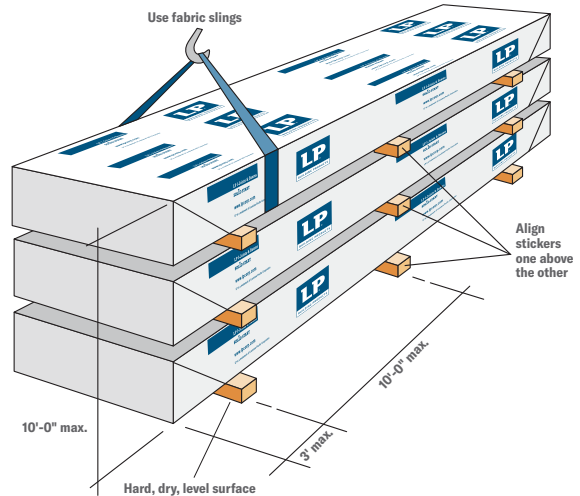
- Two rows of 1/2" bolts spaced 8" oc.
- Maintain a 2" minimum edge distance and 4" minimum end distance.

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 & 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® Engineered Wood Products 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 equilibrated moisture content does not exceed a yearly average of 15% and does not exceed 19% at any time.
- For built-up members, LP SolidStart I-Joists, LSL and LVL shall be dry before nailing or bolting to avoid trapping moisture.
- LP SolidStart I-Joists, LSL and LVL shall not be used for unintended purposes such as ramps and planks.



LP SolidStart LSL 1.35E, 1.55E and 1.75E

Standard Thicknesses of 1-1/2" and 3-1/2"
(also 1-3/4")

Standard Depths of 3-1/2", 5-1/2", and 7-1/4"
(other depths are available)

Lengths up to 60'

LP SolidStart LVL 2.0E

Standard Thicknesses of 1-1/2", 1-3/4", and 3-1/2"
Billet thicknesses of 5-1/4" and 7"

Standard Depths of 3-1/2", 5-1/2", and 7-1/4"
(other depths are available, including 7")

Lengths up to 60'

CODE EVALUATION

Code evaluation reports can be obtained at www.lpcorp.com
LP LSL: CCMC 13319-R
LP LVL: CCMC 11518-R
LP LSL and LVL: APA PR-L280C

A water-resistant coating called SiteCote™ is applied to LP LSL and LVL for extra weather protection during construction. Contact your local distributor for cost and availability

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.



Good for you. Good for our forests.
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PEFC/29-31-102



For product catalog & complete warranty details, visit LPCorp.com

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