U.S. (ASD) TECHNICAL GUIDE

TECH GUIDE

2.1E 3100Fb

PWT LVL BILLET BEAMS

HEADER & BEAM

PWT FOCUSED ON EWP

PWT™ LVL

Welcome to PWT!

At PWT, we believe in quality over quantity. So our company's sole focus has been engineered wood products since 1998—no attempts to be something we're not. No distractions. Just a steadfast dedication to industry-leading innovation and the highest-quality EWP products. This targeted strategy means we're the only dedicated EWP manufacturer to offer whole-home solutions (indoors and out), which means you can rely on us to bring you the best.

Our customer's confidence in our products and service is our business's bedrock. So you know you can count on PWT's superior EWP across our entire line. Our 25-year warranty on exterior products, our application expertise, and elevated customer support back this trust.

Literature Notes

1. PWT™ 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 16%.
2. This guide is valid only for PWT LVL members supporting loads applied parallel to the face of the veneers ("edge" orientation).
3. Ensure that the design loads, duration of load increases and deflection limits that you use to select products from this guide are appropriate for your application and comply with local code requirements. If you do not know the correct design criteria and all the loads imposed on the component from all parts of the structure, seek qualified help from the architect, engineer or designer of the structure. Additional reference data on wood construction is available in the form of building codes, code evaluation reports and other design references.
4. The Quick Reference and Allowable Load tables in this guide are only for uniform loads on simple (single) or equal, continuous (multiple) span members as noted in each table. For other conditions such as concentrated loads, unequal spans, etc., contact your PWT distributor.
5. Spans are measured from center-to-center of supports. A structurally adequate bearing surface under the full width (thickness) of the beam must be provided at each support.
6. Minimum bearing length is 1-1/2" (at least one jack stud or cripple is required) unless otherwise noted for a specific table. Refer to the Reaction Capacity charts and the notes for each table. Verify local code requirements for minimum bearing.
7. Total load deflections are based on instantaneous loading. Long term deflection (creep) under sustained load has not been considered.
8. PWT LVL is not cambered.
9. PWT LVL sized with the tables and design values in this guide requires continuous lateral restraint of the compression edge. Continuous restraint is defined as a maximum unbraced length of 24". This restraint is normally provided by sheathing and/or other framing members, which shall be adequately anchored to the PWT LVL and the supporting structure. Framing conditions that do not provide continuous lateral restraint require special design. Contact your PWT distributor. Caution: Failure to provide adequate lateral restraint could result in an unstable member and reduce its load capacity.
10. Lateral restraint shall also be provided at all supports to prevent rotation or twisting.
11. Refer to the Connection Details page for information on designing nailed and bolted connections, minimum nail spacing and end distances and for properly connecting multiple plies of PWT LVL to form a built-up member.

2.1E 3100Fb PWT LVL

Billet thicknesses of 3-1/2", 5-1/4", and 7"
Standard Depths of 7-1/4", 9-1/4", 9-1/2", 11-1/4", 11-7/8", 14", 16", 18", 20", and 24"
Lengths up to 60 feet
Specific sizes may not be available in all locations, contact your local distributor for availability.
A water-resistant coating is applied to PWT LVL for extra weather protection during construction.

Code Evaluation Reports:
ICC *ESR 2909*, APA® *PR-L233*, or visit pwtewp.com

2.1E 3100F_b PWT LVL
Product Specifications & Design Values

ALLOWABLE STRESS DESIGN VALUES (PSI)

Grade	2.1E 3100F_b
Modulus of Elasticity[4], E (x 10^6)	2.1
Bending Stress[3], F_b	3100
Shear Stress, F_v	285
Compression Stress Perpendicular to Grain, F_c	850

Notes:

1. PWT™ 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 16%.
2. The allowable strengths and stiffness are for normal load duration (10 year). Bending, Shear and Compression parallel-to-grain shall be adjusted according to code. Modulus of Elasticity and Compression perpendicular-to-grain shall not be adjusted.
3. The allowable Bending Stress is tabulated for a standard 12" depth. Multiply F_b by $(12/depth)^{0.200}$.
4. Deflection calculations shall include both bending and shear deformations.

Deflection for a simple span, uniform load: $\Delta = \frac{270wL^4}{Ebd^3} + \frac{28.8wL^2}{Ebd}$

Where: Δ = deflection (in), w = uniform load (plf), L = design span (ft), E = modulus of elasticity (psi), b = width of beam (in), d = depth of beam (in)

Equations for other conditions can be found in engineering references.

SECTION PROPERTIES AND ALLOWABLE CAPACITIES

Depth	Weight (lb/ft)			Allowable Moment (lb-ft)			Allowable Shear (lb)			Moment of Inertia (in^4)		
	3-1/2"	5-1/4"	7"	3-1/2"	5-1/4"	7"	3-1/2"	5-1/4"	7"	3-1/2"	5-1/4"	7"
3-1/2"	3.2	4.8	6.4	2361	3542	4723	2327	3491	4655	12	18	25
5-1/2"	5.0	7.5	10.0	5328	7992	10656	3657	5486	7315	48	72	97
7-1/4"	6.6	9.9	13.2	8760	13141	17521	4821	7231	9642	111	166	222
9-1/4"	8.4	12.6	16.8	13582	20374	27165	6151	9226	12302	230	346	461
9-1/2"	8.6	13.0	17.3	14250	21376	28501	6317	9476	12635	250	375	500
11-1/4"	10.2	15.3	20.5	19320	28980	38640	7481	11221	14962	415	622	830
11-7/8"	10.8	16.2	21.6	21294	31942	42589	7896	11845	15793	488	732	976
14"	12.7	19.1	25.5	28639	42959	57278	9310	13965	18620	800	1200	1600
16"	14.5	21.8	29.1	36420	54631	72841	10640	15960	21280	1194	1792	2389
18"	16.4	24.5	32.7	45021	67532	90043	11970	17955	23940	1701	2551	3402
20"	18.2	27.3	36.4	54423	81635	108847	13300	19950	26600	2333	3500	4666
24"	21.8	32.7	43.6	75563	113345	151127	15960	23940	31920	4032	6048	8064

Notes:

1. The Allowable Moment and Shear capacities are for normal load duration and shall be adjusted according to code.
2. The tabulated Allowable Moment capacities assume continuous lateral support of the compression edge. For other conditions, multiply the Allowable Moment by the beam stability factor, CL, as defined in the NDS.
3. The 3-1/2", 5-1/4" and 7" beam widths listed above can be either a single piece or a combination of thicknesses. For example, a 7" wide beam may be a single billet beam of 7", two plies of 3-1/2". Refer to the Connection Assemblies details on page 14 for additional information.
4. The tabulated weight is an estimate and shall only be used for design purposes. Contact PWT for actual shipping weights.

Fasteners:

Refer to pages 14-15 for information on connecting multiple plies and for the equivalent specific gravity for design of nailed and bolted connections.

REACTION CAPACITY (LBS)

	Bearing Length																						
Width	**1-1/2"**	**2"**	**2-1/2"**	**3"**	**3-1/2"**	**4"**	**4-1/2"**	**5"**	**5-1/2"**	**6"**	**6-1/2"**	**7"**	**7-1/2"**	**8"**	**8-1/2"**	**9"**	**9-1/2"**	**10"**	**10-1/2"**	**11"**	**11-1/2"**	**12"**
3-1/2"	4462	5950	7437	8925	10412	11900	13387	14875	16362	17850	19337	20825	22312	23800	25287	26775	28262	29750	31237	32725	34212	35700
5-1/4"	6693	8925	11156	13387	15618	17850	20081	22312	24543	26775	29006	31237	33468	35700	37931	40162	42393	44625	46856	49087	51318	53550
7"	8925	11900	14875	17850	20825	23800	26775	29750	32725	35700	38675	41650	44625	47600	50575	53550	56525	59500	62475	65450	68425	71400

Notes:

1. The Reaction Capacity values are based on the compression strength, perpendicular-to-grain, of the PWT LVL. This is suitable for beams bearing on steel or the end-grain of studs.
2. Verify that the support for the beam is structurally adequate to carry the reaction. The compressive strength, parallel-to-grain, of studs may require more studs than the bearing length above indicates.
3. For beams bearing on wood plates, the required bearing length will increase based on the bearing strength (compression perpendicular-to-grain) of the species and grade used for the plate material.
4. Verify local code requirements concerning minimum bearing.

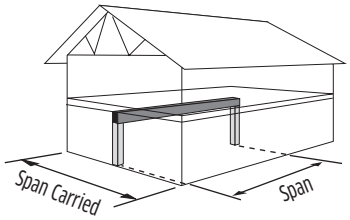
To review PWT LVL products, please visit pwtewp.com.

2.1E 3100Fb PWT LVL
Floor Load Reference Tables

Table Usage:

1. Select the correct table for the supported floor joist condition (simple or continuous – see notes below).
2. Choose the required center-to-center span for the beam in the Span column.
3. Select the span carried by the beam across the top of the table.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with a 10' span carries 15'-0" continuous span joists on each side.
Solution: Using the Continuous-Span Floor Joists table with 30'-0" span carried, select either **3-1/2" x 11-1/4"** or **5-1/4" x 9-1/4".**



CONTINUOUS FLOOR JOIST DESIGN FLOOR LOADS – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	**14"**	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14'-0"	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	**14"**	**14"**	**16"**	**16"**	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
16'-0"	3-1/2"	14"	14"	16"	16"	**16"**	**16"**	**16"**	-	-	-	-
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"	16"
18'-0"	3-1/2"	16"	16"	**16"**	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	**16"**
20'-0"	3-1/2"	18"	**18"**	**18"**	**18"**	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	18"	18"	18"	**18"**	**18"**	**18"**
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	18"	18"	18"	18"	18"	**18"**	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	18"	-	-	-	-	-	-	-	-

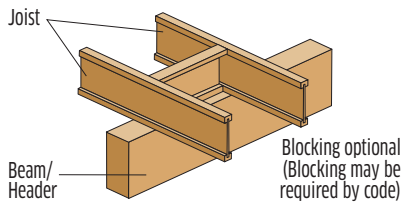
SIMPLE-SPAN FLOOR JOISTS DESIGN FLOOR LOADS – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14'-0"	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	**14"**
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"
16'-0"	3-1/2"	14"	14"	14"	14"	14"	14"	16"	16"	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
18'-0"	3-1/2"	14"	16"	16"	16"	16"	16"	**16"**	**18"**	**18"**	**18"**	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
20'-0"	3-1/2"	16"	16"	18"	18"	**18"**	**18"**	**18"**	**18"**	-	-	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	16"	16"	16"	16"
22'-0"	3-1/2"	18"	18"	18"	**18"**	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	18"	18"	18"	18"	18"	18"	-	-	-	-

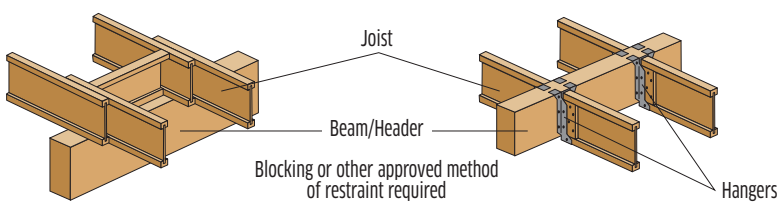
Notes:

1. Use the Continuous Floor Joists table where the floor joists are continuous (multiple span) over the beam. Use the Simple-Span Floor Joists table where the floor joists frame into the side of or end on top of the beam.
2. Span is center-to-center of supports and is valid for simple and equal, continuous beam spans.
3. End supports require 3" bearing. Interior supports require 6" bearing except 7-1/2" is required where **bold**. The bearing length is based on the compression strength, perpendicular-to-grain, of the PWT LVL. See the Reaction Capacity table on page 4 for additional information.
4. Deflections are limited to L/360 live load and L/240 total load.
5. Beam width can be either a single piece of PWT LVL or built up from multiple plies of the same grade that are nailed, bolted or connected with other approved fasteners. Refer to pages 14-15 for connection details.
6. Do not use where marked "-".

CONTINUOUS FLOOR JOISTS



SIMPLE-SPAN FLOOR JOISTS

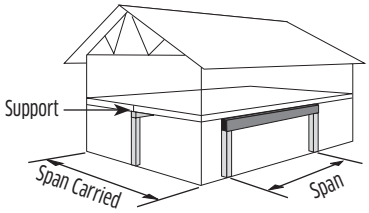


2.1E 3100Fb PWT LVL
Combined Roof & Floor Load Reference Tables

Table Usage:

1. Select the correct table for the roof loads needed.
2. Choose the required center-to-center span for the beam in the Span column.
3. Select the span carried by the beam across the top of the table.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with a 9'-6" span supports a 32'-0" span carried for a 20 psf roof live load.
Solution: Using the correct table for the roof load with 32'-0" span carried, select either **3-1/2" x 11-1/4"** or **5-1/4" x 9-1/4"**.



Design Loads

ROOF – 20 PSF SNOW OR LIVE (115% OR 125%), 15 PSF DEAD, FLOOR – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
9'-6"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14'-0"	3-1/2"	14"	14"	14"	14"	14"	14"	14"	16"	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
16'-0"	3-1/2"	14"	16"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
16'-6"	3-1/2"	16"	16"	16"	16"	16"	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
18'-0"	3-1/2"	16"	16"	18"	**18"**	**18"**	**18"**	**18"**	-	-	-	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"
18'-6"	3-1/2"	16"	18"	18"	-	-	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"	18"
20'-0"	3-1/2"	18"	18"	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	18"	18"	18"	18"	18"	18"	**18"**	-
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	18"	18"	-	-	-	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	-	-	-	-	-	-	-	-	-	-

ROOF – 25 PSF SNOW (115%), 15 PSF DEAD, FLOOR – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"
9'-6"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
12'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14'-0"	3-1/2"	14"	14"	14"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
16'-0"	3-1/2"	16"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
16'-6"	3-1/2"	16"	16"	16"	16"	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
18'-0"	3-1/2"	16"	18"	**18"**	**18"**	**18"**	**18"**	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"	**18"**
18'-6"	3-1/2"	18"	18"	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	16"	18"	18"	18"	-	-
20'-0"	3-1/2"	18"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	18"	18"	18"	18"	18"	**18"**	-	-	-
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	18"	-	-	-	-	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	-	-	-	-	-	-	-	-	-	-	-

Notes:

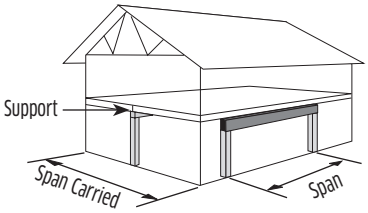
1. Span is center-to-center of supports and is valid for simple beam spans only.
2. End supports require 3" bearing except 4-1/2" is required where **bold**. The end supports for the standard garage door spans of 9'-6", 16'-6" and 18'-6" have been limited to 3" (two trimmers) on each end. The bearing length is based on the compression strength, perpendicular-to-grain, of the PWT LVL. See the Reaction Capacity table on page 4 for additional information.
3. Deflections are limited to L/360 live or snow load and L/240 total load.
4. Loads include 100 plf for an exterior wall and assume a 2' maximum overhang on the roof and an interior support at mid-span of the floor joists.
5. Beam width can be either a single piece of PWT LVL or built up from multiple plies of the same grade that are nailed, bolted or connected with other approved fasteners. Refer to pages 14-15 for connection details.
6. Do not use where marked "-".

2.1E 3100F$_b$ PWT LVL
Combined Roof & Floor Load Reference Tables

Table Usage:

1. Select the correct table for the roof loads needed.
2. Choose the required center-to-center span for the beam in the Span column.
3. Select the span carried by the beam across the top of the table.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with a 9'-6" span supports a 32'-0" span carried for a 40 psf roof snow load.
Solution: Using the correct table for the roof load with 32'-0" span carried, select either **3-1/2" x 11-1/4"** or **5-1/4" x 9-1/4"**.



Design Loads

ROOF – 30 PSF SNOW (115%), 15 PSF DEAD, FLOOR – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
9'-6"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
12'-0"	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	**14"**	**14"**	**14"**
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
14'-0"	3-1/2"	14"	14"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
16'-0"	3-1/2"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
16'-6"	3-1/2"	16"	16"	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"	-
18'-0"	3-1/2"	18"	**18"**	**18"**	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	16"	**18"**	18"	**18"**	**18"**	**18"**
18'-6"	3-1/2"	18"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	18"	18"	18"	-	-	-
20'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	18"	18"	18"	18"	18"	**18"**	-	-	-	-
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	-	-	-	-	-	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	-	-	-	-	-	-	-	-	-	-	-

ROOF – 40 PSF SNOW (115%), 15 PSF DEAD, FLOOR – 40 PSF LIVE, 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
9'-6"	3-1/2"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	-
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
10'-0"	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	**11-7/8"**	**11-7/8"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12'-0"	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	**14"**	**14"**	**14"**	**14"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"
14'-0"	3-1/2"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**	**18"**	-
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
16'-0"	3-1/2"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	**16"**	**16"**	**18"**
16'-6"	3-1/2"	16"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	-	-	-	-
18'-0"	3-1/2"	**18"**	**18"**	**18"**	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	18"	18"	**18"**	**18"**	**18"**	**18"**	-
18'-6"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	18"	18"	-	-	-	-	-	-
20'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	18"	18"	-	-	-	-	-	-	-
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	-	-	-	-	-	-	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Span is center-to-center of supports and is valid for simple beam spans only.
2. End supports require 3" bearing except 4-1/2" is required where **bold**. The end supports for the standard garage door spans of 9'-6", 16'-6" and 18'-6" have been limited to 3" (two trimmers) on each end. The bearing length is based on the compression strength, perpendicular-to-grain, of the PWT LVL. See the Reaction Capacity table on page 4 for additional information.
3. Deflections are limited to L/360 live or snow load and L/240 total load.
4. Loads include 100 plf for an exterior wall and assume a 2' maximum overhang on the roof and an interior support at mid-span of the floor joists.
5. Beam width can be either a single piece of PWT LVL or built up from multiple plies of the same grade that that are nailed, bolted or connected with other approved fasteners. Refer to pages 14-15 for connection details.
6. Do not use where marked "-".

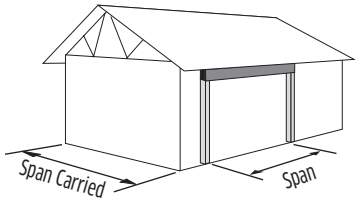
2.1E 3100F_b PWT LVL

Roof Load Reference Tables

Table Usage:

1. Select the correct table for the roof loads needed.
2. Choose the required center-to-center span for the beam in the Span column.
3. Select the span carried by the beam across the top of the table.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with a 16'-6" span supports a 38'-0" span carried for a 25 psf roof snow load.
Solution: Using the correct table for the roof load with 38'-0" span carried, select either **3-1/2" x 16"** or **5-1/4" x 14"**.



Design Loads

ROOF – 20 PSF SNOW OR LIVE (115% OR 125%), 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
9'-6"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10'-0"	3-1/2"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
14'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
16'-0"	3-1/2"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"
16'-6"	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"
18'-0"	3-1/2"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
18'-6"	3-1/2"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
20'-0"	3-1/2"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"	18"
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"
22'-0"	3-1/2"	16"	16"	18"	18"	18"	18"	18"	18"	-	-	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"
24'-0"	3-1/2"	18"	18"	18"	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"	18"

ROOF – 25 PSF SNOW (115%), 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
9'-6"	3-1/2"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
14'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
16'-0"	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
16'-6"	3-1/2"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
18'-0"	3-1/2"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
18'-6"	3-1/2"	14"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"
20'-0"	3-1/2"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"	**18"**
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
22'-0"	3-1/2"	18"	18"	18"	18"	18"	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"	18"
24'-0"	3-1/2"	18"	18"	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	18"	18"	18"	18"	18"	18"	-	-	-

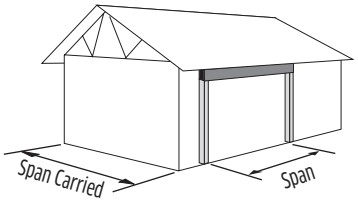
Notes:

1. Span is center-to-center of supports and is valid for simple beam spans only.
2. End supports require 3" bearing except 4-1/2" is required where **bold**. The end supports for the standard garage door spans of 9'-6", 16'-6" and 18'-6" have been limited to 3" (two trimmers) on each end. The bearing length is based on the compression strength, perpendicular-to-grain, of the PWT LVL. See the Reaction Capacity table on page 4 for additional information.
3. Deflections are limited to L/360 live or snow load and L/240 total load.
4. Loads assume a 2' maximum overhang on the roof.
5. Beam width can be either a single piece of PWT LVL or built up from multiple plies of the same grade that are nailed, bolted or connected with other approved fasteners. Refer to pages 14-15 for connection details.
6. Do not use where marked "-".

2.1E 3100F$_b$ PWT LVL
Roof Load Reference Tables

Table Usage:
1. Select the correct table for the roof loads needed.
2. Choose the required center-to-center span for the beam in the Span column.
3. Select the span carried by the beam across the top of the table.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with a 16'-6" span supports a 38'-0" span carried for a 40 psf roof snow load.
Solution: Using the correct table for the roof load with 38'-0" span carried, select a **5-1/4" x 16"**.
Note: A 3-1/2" beam does not work.



Design Loads

ROOF – 30 PSF SNOW OR LIVE (115% OR 125%), 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
9'-6"	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"
14'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
16'-0"	3-1/2"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
16'-6"	3-1/2"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
18'-0"	3-1/2"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"	**18"**
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
18'-6"	3-1/2"	16"	16"	16"	16"	16"	16"	18"	18"	18"	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"
20'-0"	3-1/2"	16"	16"	16"	18"	18"	18"	18"	18"	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"
22'-0"	3-1/2"	18"	18"	18"	18"	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	18"	18"	18"	18"	18"	-	-	-	-	-

ROOF – 40 PSF SNOW (115%), 15 PSF DEAD

Span	Beam Width	Span Carried By Beam										
		20'	22'	24'	26'	28'	30'	32'	34'	36'	38'	40'
6'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8'-0"	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
9'-6"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10'-0"	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12'-0"	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14'-0"	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
16'-0"	3-1/2"	14"	14"	16"	16"	16"	16"	16"	16"	**16"**	**18"**	**18"**
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	16"	16"
16'-6"	3-1/2"	14"	16"	16"	16"	16"	16"	16"	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
18'-0"	3-1/2"	16"	16"	16"	18"	18"	18"	**18"**	**18"**	**18"**	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"
18'-6"	3-1/2"	16"	16"	18"	18"	18"	**18"**	**18"**	-	-	-	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"
20'-0"	3-1/2"	18"	18"	18"	18"	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"
22'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	18"	18"	18"	18"	18"	-	-	-	-	-
24'-0"	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	18"	18"	-	-	-	-	-	-	-	-	-

Notes:
1. Span is center-to-center of supports and is valid for simple beam spans only.
2. End supports require 3" bearing except 4-1/2" is required where **bold**. The end supports for the standard garage door spans of 9'-6", 16'-6" and 18'-6" have been limited to 3" (two trimmers) on each end. The bearing length is based on the compression strength, perpendicular-to-grain, of the PWT LVL. See the Reaction Capacity table on page 4 for additional information.
3. Deflections are limited to L/360 live or snow load and L/240 total load.
4. Loads assume a 2' maximum overhang on the roof.
5. Beam width can be either a single piece of PWT LVL or built up from multiple plies of the same grade that are nailed, bolted or connected with other approved fasteners. Refer to pages 14-15 for connection details.
6. Do not use where marked "-".

2.1E 3100Fb PWT LVL

Uniform Floor Load (PLF) Table – 1¾"

Table Usage:

1. Select the required Span.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Total Load and the appropriate Live Load.
4. Check the bearing requirements.

Example:
For a 16'-6" span, select a 2- and 3-ply beam that satisfies an L/360 Live Load deflection limit for the following design loads: Live Load = 440 plf, Total Load = 605 plf.

Solution for a 3-1/2" Beam:
Design Total Load per ply = 605 / 2 = 303 plf
Design Live Load per ply = 440 / 2 = 220 plf
Use 3-1/2" x 14"
(Total Load = 360 plf, Live Load L/360 = 245 plf)

Solution for a 5-1/4" Beam:
Design Total Load per ply = 605 / 3 = 202 plf
Design Live Load per ply = 440 / 3 = 147 plf
Use 5-1/4" x 11-7/8"
(Total Load = 223 plf, Live Load L/360 = 152 plf)

Span	1-3/4" x 7-1/4"			1-3/4" x 9-1/4"			1-3/4" x 9-1/2"			1-3/4" x 11-1/4"			1-3/4" x 11-7/8"			1-3/4" x 14"			1-3/4" x 16"			1-3/4" x 18"		
	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load	Live Load		Total Load
	L/480	L/360		L/480	L/360		L/480	L/360		L/480	L/360		L/480	L/360		L/480	L/360		L/480	L/360		L/480	L/360	
5'			768			979			1006			1191			1258			1483			1695			1907
6'	519		639			815			838			992			1047			1234			1411			1587
7'	339	452	547	661		698	710		717			849			897			1057			1208			1359
8'	232	310	462	460		610	495		627			743			784			924			1056			1188
9'	166	221	329	332	442	542	357	476	557	569		659	659		696			821			938			1055
9'-6"	142	189	281	285	380	513	307	409	527	491		624	569		659			777			888			999
10'	122	163	242	246	329	487	266	354	501	426	569	593	495		626			738			843			949
11'	93	124	182	188	250	372	203	270	401	327	436	538	380	507	568	598		670			766			862
12'	72	96	141	146	195	288	158	211	312	256	341	493	298	398	521	471		614	678		702			789
13'	57	76	110	116	155	228	125	167	246	204	272	403	238	317	470	378	504	566	546		647			728
14'	45	61	88	93	125	183	101	135	198	165	220	325	192	257	380	307	409	525	445	594	600	614		675
15'	37	49	71	76	102	149	82	110	161	135	180	265	158	211	311	253	337	490	368	491	560	509		630
16'	30	41	58	63	84	122	68	91	132	112	149	219	131	175	257	210	280	415	307	409	524	426	569	590
16'-6"	28	37	53	58	77	111	62	83	121	102	137	200	120	160	235	193	257	379	281	375	508	392	522	572
17'	25	34	48	53	70	102	57	76	110	94	125	183	110	146	215	177	236	348	259	345	493	360	481	555
18'	21	29	40	44	59	85	48	64	92	79	106	154	93	124	181	150	200	294	220	293	433	307	409	523
18'-6"	20	26	37	41	55	78	44	59	85	73	98	142	86	114	167	138	185	271	203	271	400	284	379	509
19'	18	24	33	38	51	72	41	55	78	68	90	131	79	106	154	128	171	250	188	251	370	264	352	490
20'	15	21	28	32	43	61	35	47	66	58	78	112	68	91	131	110	147	215	163	217	318	228	304	442
21'	13	18	24	28	37	52	30	41	57	50	67	96	59	79	113	96	128	186	141	188	276	198	264	389
22'	12	16	20	24	33	45	26	35	49	44	59	83	51	69	98	84	112	161	123	165	240	173	231	339
23'	10	14	17	21	29	39	23	31	42	38	51	72	45	60	85	73	98	141	108	145	210	153	204	298
24'	9	12	15	19	25	34	20	27	37	34	45	63	40	53	74	65	86	123	96	128	185	135	180	262
25'	8	10	13	16	22	29	18	24	32	30	40	55	35	47	65	57	77	109	85	113	163	120	160	232
26'	7	9	11	15	20	26	16	21	28	27	36	48	31	42	58	51	68	96	76	101	145	107	143	206
27'	-	-	-	13	18	22	14	19	24	24	32	43	28	37	51	46	61	85	68	91	129	96	128	184
28'	-	-	-	12	16	20	13	17	21	21	28	38	25	33	45	41	55	76	61	81	115	86	115	164
29'	-	-	-	10	14	17	11	15	19	19	26	33	22	30	40	37	49	68	55	73	103	78	104	148
30'	-	-	-	9	13	15	10	14	17	17	23	30	20	27	36	33	45	61	50	66	92	70	94	133

Design Assumptions:

1. Span is the center-to-center distance of the supports and is valid for simple or equal, continuous span applications.
2. The values in the tables are for uniform loads only.
3. Total Load is for normal (100%) duration and has been adjusted to account for the self-weight of the member.
4. Live Load deflection has been limited to L/360 or L/480 as noted in the table.
5. Total deflection has been limited to L/240. Long term deflection (creep) has not been considered.
6. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
7. Proper bearing must be provided. Bearing length must be checked for support reactions with the table on page 4.

Additional Notes:

1. The allowable loads represent the capacity of the member in pounds per lineal foot (plf) of length.
2. The designer shall check both the Total Load and the appropriate Live Load column.
3. Where the Live Load is blank, the Total Load governs the design.
4. Depths of 16" and greater shall be used with a minimum of two plies unless designed specifically as a single ply with proper lateral bracing, such as a marriage beam for each half of a manufactured home before the units are joined.
5. The allowable loads in the table are for a single ply of PWT LVL. Multiply the values by the number of plies of equal thickness to size a built-up member or divide the required loads by the number of equal thickness plies to directly verify the capacity of each individual ply. Example: double the allowable loads in the table for a 2-ply member or divide the required uniform loads by 2 to verify each ply of a 2-ply member.
6. The member width shall be properly built up by connecting plies of the same grade of PWT LVL. Refer to the multiple-ply connections on pages 14-15.
7. Do not use a product where designated "-" without further analysis by a design professional.

ACTUAL DEFLECTION BASED ON SPAN AND LIMIT

Span (ft)	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
L/480	1/4"	5/16"	3/8"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	3/4"
L/360	5/16"	3/8"	7/16"	9/16"	5/8"	11/16"	3/4"	13/16"	7/8"	15/16"	1"
L/240	1/2"	5/8"	11/16"	13/16"	7/8"	1"	1-1/8"	1-3/16"	1-5/16"	1-3/8"	1-1/2"

To review PWT LVL products, please visit pwtewp.com.

2.1E 3100Fb PWT LVL
Uniform Roof Load (PLF) Table

Table Usage:

1. Select the required Span. For beams with a pitch greater than 1:12, multiply the horizontal span by the slope adjustment factor from the table below.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the appropriate Total Load (Snow 115% or Non-Snow 125%) and the appropriate Snow/Live Load (L/360 or L/240).
4. Check the bearing requirements.

Example:

For a 16' horizontal span with a pitch of 4:12, select a 2- and 3-ply beam that satisfies an L/360 Snow Load deflection limit for the following design loads: Snow Load = 720 plf, Total Load = 1128 plf.

Calculate Beam Span: 16' x 1.054 = 16.9' **–> Use Span = 17'**

Solution for a 3-1/2" Beam:
Design Total Load per ply = 1128 / 2 = 564 plf
Design Snow Load per ply = 720 / 2 = 360 plf
Use 3-1/2" x 18"
(Total Load = 638 plf, Snow Load L/360 = 458 plf

Solution for a 5-1/4" Beam:
Design Total Load per ply = 1128 / 3 = 376 plf
Design Snow Load per ply = 720 / 3 = 240 plf
Use 5-1/4" x 16"
(Total Load = 543 plf, Snow Load L/360 = 329 plf)

Span	1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				1-3/4" x 18"			
	Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load		Snow/Live Load		Total Load	
	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%	L/360	L/240	Snow 115%	Non-Snow 125%
5'			883	960			1127	1226			1158	1259			1371	1491			1447	1573			1706	1855			1950	2120			2194	2385
6'	692		735	800			938	1021			964	1048			1142	1241			1205	1310			1421	1545			1624	1766			1827	1986
7'	452	678	630	685			804	874			825	898			978	1063			1032	1122			1217	1323			1391	1512			1565	1701
8'	310	465	551	599	613		703	764	660		722	785			855	930			902	981			1064	1157			1216	1322			1368	1488
9'	221	332	440	440	442	664	624	679	476		641	697	759		759	826			801	872			945	1028			1080	1174			1215	1321
9'-6"	189	284	376	376	380	570	591	643	409	614	607	660	655		719	782	759		759	825			895	973			1023	1112			1151	1251
10'	163	245	324	324	329	493	561	610	354	532	576	627	569		683	743	660		721	784			850	924			971	1056			1093	1188
11'	124	186	244	244	250	376	497	497	270	406	524	537	436	654	620	675	507		655	712	797		772	840			882	960			992	1080
12'	96	144	189	189	195	293	386	386	211	316	417	417	341	512	568	618	398	597	600	652	629		707	769			808	879			909	989
13'	76	114	149	149	155	232	305	305	167	251	330	330	272	408	520	539	317	476	553	602	504		652	709	728		745	811			838	912
14'	61	91	119	119	125	187	245	245	135	202	265	265	220	330	435	435	257	385	494	508	409	614	605	658	594		691	752	819		778	846
15'	49	74	96	96	102	153	200	200	110	165	216	216	180	270	356	356	211	316	416	416	337	506	564	614	491		645	702	679		725	789
16'	41	61	79	79	84	126	165	165	91	137	178	178	149	224	294	294	175	262	344	344	280	421	508	553	409	614	604	657	569		680	739
16'-6"	37	56	72	72	77	116	150	150	83	125	162	162	137	205	268	268	160	240	315	315	257	386	477	508	375	563	585	637	522		659	717
17'	34	51	65	65	70	106	137	137	76	114	148	148	125	188	246	246	146	220	288	288	236	354	449	466	345	518	568	618	481		639	695
18'	29	43	54	54	59	89	115	115	64	97	125	125	106	159	207	207	124	186	243	243	200	300	394	394	293	440	509	554	409	614	603	656
18'-6"	26	40	50	50	55	82	106	106	59	89	115	115	98	147	191	191	114	172	224	224	185	277	364	364	271	407	482	524	379	569	587	638
19'	24	37	46	46	51	76	97	97	55	82	106	106	90	136	176	176	106	159	207	207	171	257	336	336	251	377	456	496	352	528	565	615
20'	21	31	39	39	43	65	83	83	47	71	90	90	78	117	151	151	91	137	177	177	147	221	289	289	217	326	411	427	304	456	509	554
21'	18	27	33	33	37	56	71	71	41	61	77	77	67	101	130	130	79	118	153	153	128	192	250	250	188	283	370	370	264	397	461	502
22'	16	24	28	28	33	49	61	61	35	53	67	67	59	88	112	112	69	103	133	133	112	168	217	217	165	247	323	323	231	347	419	455
23'	14	21	24	24	29	43	53	53	31	47	58	58	51	77	98	98	60	91	116	116	98	147	190	190	145	217	283	283	204	306	383	400
24'	12	18	21	21	25	38	46	46	27	41	51	51	45	68	86	86	53	80	101	101	86	130	167	167	128	192	249	249	180	270	351	352
25'	10	16	18	18	22	33	41	41	24	36	44	44	40	60	75	75	47	71	89	89	77	115	147	147	113	170	220	220	160	240	312	312
26'	9	14	16	16	20	30	36	36	21	32	39	39	36	54	66	66	42	63	79	79	68	103	131	131	101	152	195	195	143	214	278	278
27'	8	13	14	14	18	27	31	31	19	29	34	34	32	48	59	59	37	56	70	70	61	92	116	116	91	136	174	174	128	192	248	248
28'	7	11	12	12	16	24	28	28	17	26	30	30	28	43	52	52	33	50	62	62	55	82	104	104	81	122	156	156	115	173	222	222
29'	-	-	-	-	14	21	24	24	15	23	27	27	26	39	47	47	30	45	55	55	49	74	93	93	73	110	140	140	104	156	200	200
30'	-	-	-	-	13	19	22	22	14	21	24	24	23	35	42	42	27	41	49	49	45	67	83	83	66	100	126	126	94	141	180	180

Design Assumptions:

1. Span is the center-to-center distance of the supports, along the sloped length of the member and is valid for simple or equal, continuous span applications.
2. The values in the tables are for uniform loads only.
3. Total Load is for Snow (115%) or Non-Snow (125%) duration, as noted in the table, and has been adjusted to account for the self-weight of the member.
4. Snow/Live Load deflection has been limited to L/360 or L/240 as noted in the table. To design for a Snow or Roof Live Load deflection of L/480, use the Uniform Floor Load tables on page 10.
5. Total deflection has been limited to L/180. Long term deflection (creep) has not been considered.
6. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
7. Proper bearing must be provided. Bearing length must be checked for support reactions with the table on page 4.

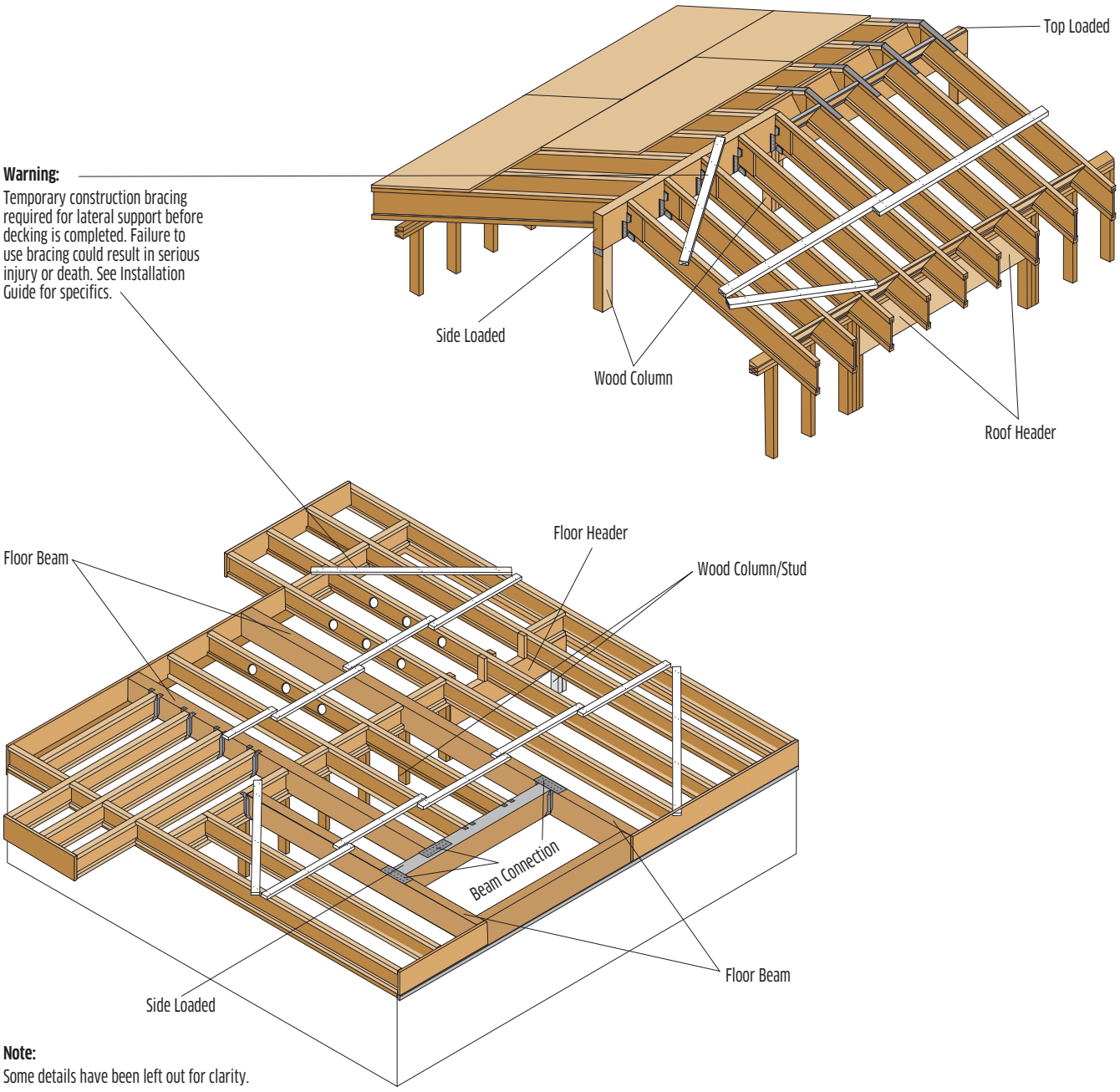
Additional Notes:

1. The allowable loads represent the capacity of the member in pounds per lineal foot (plf) of length.
2. The designer shall check both the appropriate Total Load and the appropriate Live Load column.
3. For roofs with a slope of 2:12 or greater, the horizontal span shall be multiplied by the appropriate slope adjustment factor from the table below.
4. Where the Live Load is blank, the Total Load governs the design.
5. Depths of 16" and greater shall be used with a minimum of two plies unless designed specifically as a single ply with proper lateral bracing, such as a marriage beam for each half of a manufactured home before the units are joined.
6. The allowable loads in the table are for a single ply of PWT LVL. Multiply the values by the number of plies of equal thickness to size a built-up member or divide the required loads by the number of equal thickness plies to directly verify the capacity of each individual ply. Example: double the allowable loads in the table for a 2-ply member or divide the required uniform loads by 2 to verify each ply of a 2-ply member.
7. The member width shall be properly built up by connecting plies of the same grade of PWT LVL. Refer to the multiple-ply connections on pages 14-15.
8. Do not use a product where designated "-" without further analysis by a design professional.

SLOPE ADJUSTMENT FACTOR

Slope	2:12	3:12	4:12	5:12	6:12	7:12	8:12	9:12	10:12	11:12	12:12
Factor	1.014	1.031	1.054	1.083	1.118	1.158	1.202	1.250	1.302	1.357	1.414

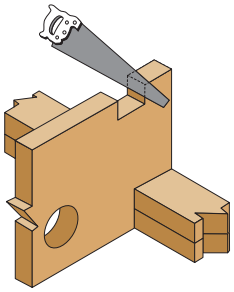
Temporary Bracing & Warnings



Note:
Some details have been left out for clarity.

WARNING

Don't **use visually damaged products without first checking with your local PWT distributor or sales office. (See back cover for details.)**

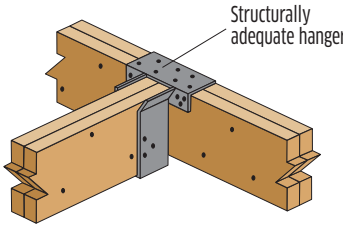


Don't **bore holes or notch unless reviewed by a design professional. Exception: small holes may be drilled in accordance with the beam hole details on page 13.**

To review PWT LVL products, please visit pwtewp.com.

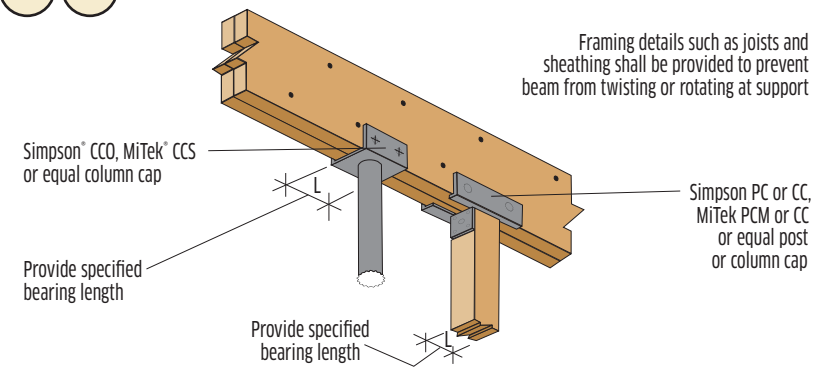
Installation Details

P3 BEAM CONNECTION

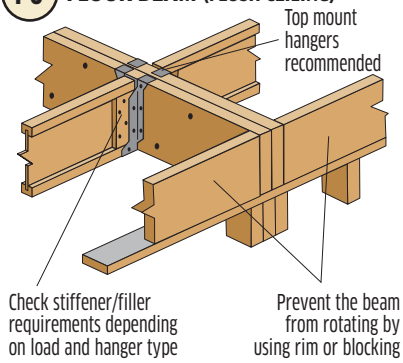


Hanger shall apply load equally to each ply or special design required

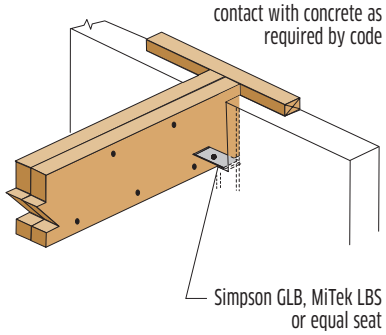
P4 P5 STEEL COLUMN & WOOD COLUMN



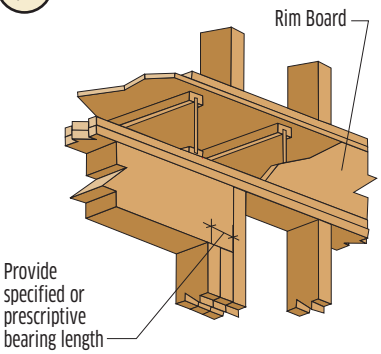
P6 FLOOR BEAM (FLUSH CEILING)



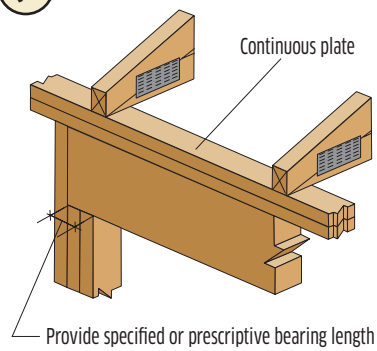
P7 CONCRETE WALL



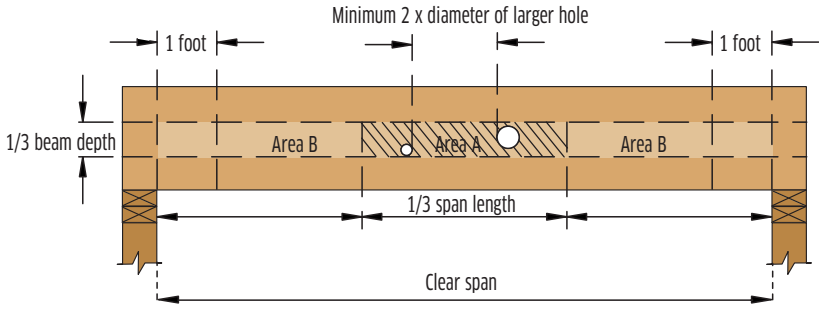
Q1 WINDOW/DOOR HEADER



Q2 WINDOW/DOOR HEADER



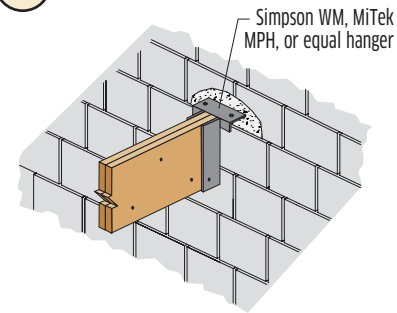
Q3 BEAM HOLE DETAILS



Notes:

1. These guidelines apply to uniformly loaded beams selected from the Quick Reference Tables or the Uniform Load Tables or designed with Exacte by PWT member design software only. For all other applications, such as beams with concentrated loads, please contact your PWT distributor for assistance.
2. Round holes can be drilled anywhere in "Area A" provided that: no more than four holes are cut, with the minimum spacing described in the diagram. The maximum hole size is 1-1/2" for depths up to 9-1/4", and 2" for depths greater than 9-1/4".
3. Rectangular holes are NOT allowed.
4. DO NOT drill holes in cantilevers without prior approval from the project designer.
5. Other hole sizes and configurations MAY be possible with further engineering analysis. For more information, contact your PWT distributor.
6. Up to three 3/4" holes may be drilled in "Area B" to accommodate wiring and/or water lines. These holes shall be at least 12" apart. The holes shall be located in the middle third of the depth, or a minimum of 3" from the bottom and top of the beam. For beams shallower than 9-1/4", locate holes at mid-depth.
7. Protect plumbing holes from moisture.

Q4 MASONRY HANGER

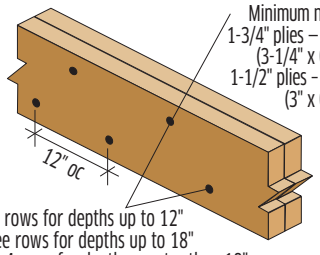


NOTE: Protect wood from contact with concrete as required by code

Connection Details

P1 TOP-LOADED BEAM – NAILED CONNECTION

(SEE CONNECTION ASSEMBLIES FOR MORE DETAILS)

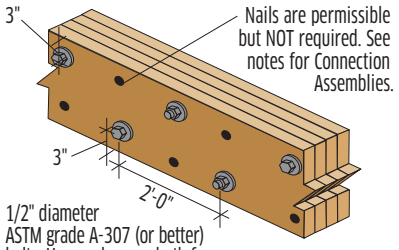


Two rows for depths up to 12"
Three rows for depths up to 18"
Min. 4 rows for depths greater than 18"

Framing is applied to top of the beam so that each ply carries an equal load

P2 TOP-LOADED BEAM – BOLTED CONNECTION

(SEE CONNECTION ASSEMBLIES FOR MORE DETAILS)

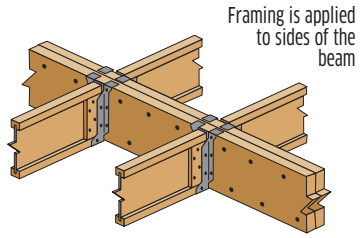


1/2" diameter
ASTM grade A-307 (or better) bolts. Use washers on both faces.

Framing is applied to top of the beam so that each ply carries an equal load

Q3 SIDE-LOADED BEAM

(SEE CONNECTION ASSEMBLIES FOR MORE DETAILS)

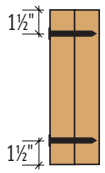


SIDE LOADS ARE NOT RECOMMENDED FOR BEAMS OVER 5-1/2" WIDE UNLESS EQUALLY APPLIED TO BOTH FACES

See Connection Assemblies for more information

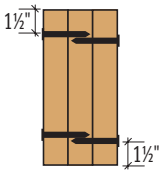
Connection Assemblies

DETAIL A
Maximum 3-1/2" Wide 2-Ply Beams



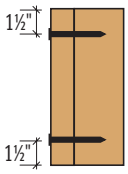
1-3/4" max. ply thickness

DETAIL B
Maximum 5-1/4" Wide 3-Ply Beams



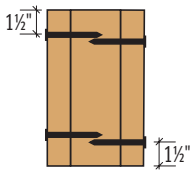
1-3/4" max. ply thickness

DETAIL C/E
Maximum 7" Wide 2-Ply Beams



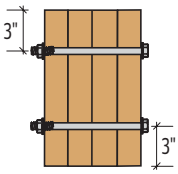
1-3/4" maximum side member
3-1/2" main member for C
5-1/4" main member for E

DETAIL D
Maximum 7" Wide 3-Ply Beams

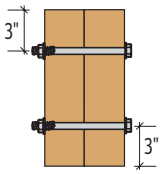


1-3/4" maximum side members
3-1/2" main member

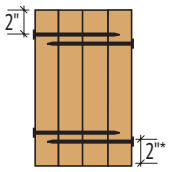
DETAIL F
Maximum 7" Wide 3- Or 4-Ply Beams



DETAIL G
Maximum 7" Wide 2-Ply Beams



DETAIL H
Maximum 7" Wide 2-, 3- Or 4-Ply Beams



Simpson SDS -1/4" x 6"
Simpson SDW 6-3/4"or equal
Simpson SDW may be driven from one side.

* Minimum of 2" or the screw mfg.'s edge distance.

UNIFORM SIDE-LOAD CAPACITY (PLF)

Connection Detail	2 Rows of Nails at 12" oc	3 Rows of Nails at 12" oc	2 Rows of -1/2" Bolts at 24" oc	2 Rows of 1/2" Bolts at 12" oc
A	388	582	506	1012
B	291	436	380	760
C	291	436	522	1044
D	258	388	464	928
E	258	388	464	928
F	na	na	337	674
G	na	na	858	1716
H	Refer to the screw manufacturer's catalog for installation requirements & capacities.			

NAIL SCHEDULE

Nail Length (in)	Nail Diameter (in)	Lateral Load Capacity (lbs)	Nail Size Factor	Nail Type
3-1/2"	0.162	141	1.37	16d common
	0.135	103	1.00	16d box
3-1/4"	0.148	118	1.15	16d sinker/12d common
	0.128	93	0.90	12d box
	0.120	81	0.79	Power-driven nail[13]
3"	0.148	99	0.96	10d common
	0.128	91	0.88	10d box
	0.120	81	0.79	Power-driven nail[13]

Notes:

1. The Uniform Side-Load Capacity values are the maximum load that can be applied to either side of the beam, based on the selected connection detail, and represent loads applied uniformly such as joists supported by hangers spaced 24" oc or less. Connections for discrete point loads may be determined with this table by calculating the equivalent fastener schedule within a 2' length centered about the point load. Details **B** and **D** shall have the back ply connected with a number of nails equal to half that used to connect the front ply – see the Side-Load Connection Example and detail on page 15. All nail and bolt spacing requirements shall be verified. The full length of the beam shall be connected with the standard connection or with the appropriate uniform side-load connection from this table. The beam shall be designed to support all applied loads.
2. Values are for normal load duration and shall be adjusted according to code.
3. The values for Uniform Side-Load Capacity for nails and Lateral Load Capacity (from Nail Schedule) are based on Douglas Fir lumber equivalence (SG = 0.50) for a 16d box (3-1/4" x 0.131"Ø) nails for 1-3/4" PWT LVL. For other nail sizes, multiply the Uniform Side-Load Capacity by the Nail Size Factor from the Nail Schedule. For 1-1/2" PWT LVL, multiply by the Nail Size Factor for the appropriate 3" nail. Higher capacities may be calculated using the equivalent specific gravities tabulated in the Fastener Design table on page 15.
4. The values for the Uniform Side-Load Capacity for bolts are based on Douglas Fir lumber equivalence (SG = 0.50) for ASTM grade A-307, -1/2"Ø bolts, for loads applied perpendicular-to-grain. For 1-1/2" PWT LVL, multiply these values by 0.86 or calculate for the needed detail. Higher bolt capacities may be calculated using the equivalent specific gravities tabulated in the Fastener Design table on page 15.
5. For nails at 8" oc, multiply the capacity by 1.5. For nails at 6" oc, multiply the capacity by 2. For four rows of nails, double the two-row capacity.
6. Use 2 rows of nails for depths to 12." Use 3 rows of nails for depths greater than 12," up to 18."
7. Unless specifically designed, use 3-1/2" nails for 1-3/4" and 2" thick plies and use 3" nails for 1-1/2" thick plies. If the nails do not fully penetrate the second ply (main member), then the nails shall be driven from both faces.
8. For detail **A**, or when attaching the first two plies for detail **B** (and optionally for details **F** and **H** – see note 11), the nails may be driven all from one face or alternating from both faces. If the nails do not fully penetrate the second ply, then the nails shall be driven from both faces.
9. When driving nails from each face, alternate every other nail in each row.
10. For details **C** and **E**, when side-loaded, the larger side-load shall be applied to the thicker ply (main member).
11. For details **F** and **H**, it is permissible to nail the plies together before bolting or driving Simpson SDS or SDW (or equal) screws. Nail two plies together (see note 8) then nail one additional ply to each side.
12. Beams wider than 5-1/2" shall be top-loaded or side-loaded from both sides to prevent rotation. For side loads applied to one side of a beam only, the project designer shall verify torsional capacity or detail the beam to prevent rotation due to any side loads. Consult a design professional for other options.
13. Power-driven nails shall conform to ICC-ES report ESR-1539 (International Staple, Nail and Tool Association) for power-driven staples and nails.
14. Other nail, screw or bolt configurations are possible. Refer to the Fastener Design table on page 15 or contact your PWT distributor.

Connection Details

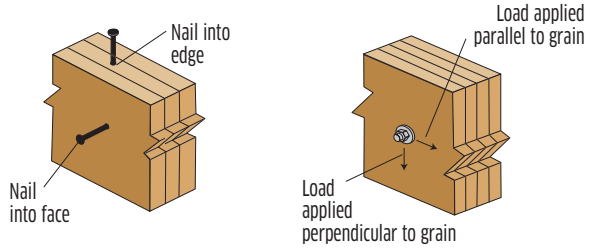
FASTENER DESIGN

Equivalent Specific Gravity					
Nails Only		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
0.46	0.50	0.50	0.50	0.46	0.50

Notes:

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

FASTENER & LOAD ORIENTATION



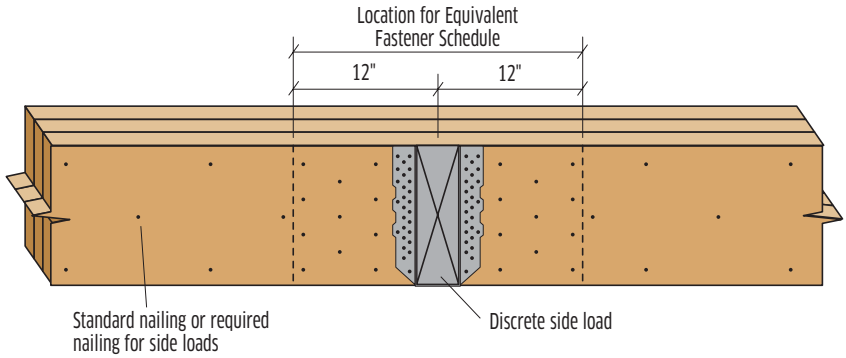
NAIL SPACING REQUIREMENTS

PWT LVL Ply Thickness	Fastener Orientation	Common Nail Size	Minimum End Distance	Minimum Nail Spacing per Row	
				Single Row	Multiple Rows
≥ 1-1/2"	Edge[7]	8d & smaller	2-1/2"	3"	4"
		10d & 12d	2-1/2"	4"	5"
		16d[5]	3-1/2"	5"	6"
	Face[8]	8d & smaller	1-1/2"	3"	3"
		10d & 12d	1-1/2"	3"	3"
		16d[5]	1-1/2"	5"	5"

Notes:

1. Edge distance shall be sufficient to prevent splitting.
2. Multiple rows of nails shall be offset at least 1/2" and staggered, and equally spaced about the centerline of the edge or face (whichever applies).
3. Edge orientation refers to nails driven into the narrow edge: parallel to the face of the strands for PWT LVL. Face orientation refers to nails driven into the wide face: perpendicular to the face of the strands for PWT LVL.
4. Nails listed are common wire nails.
5. 16d sinkers (3-1/4" x 0.148") may be spaced the same as a 10d and 12d common nail.
6. Nail penetration for edge nailing must not exceed 2" for 16d common nails (3-1/2" by 0.162" diameter) and 2-1/2" for all nails with a smaller shank diameter.
7. Minimum nail spacing for the face orientation is applicable to nails that are installed in rows that are parallel to the direction of the face grain (length) of the PWT LVL. For nails driven into the face in rows that are perpendicular to the direction of the grain (thickness/depth) of the PWT LVL, the minimum nail spacing must be sufficient to prevent splitting of the wood.

SIDE-LOAD CONNECTION EXAMPLE



Example: Assuming a properly designed 3-ply 14" beam, determine the equivalent connection to support a 3300 lb point load applied to the side of the beam.

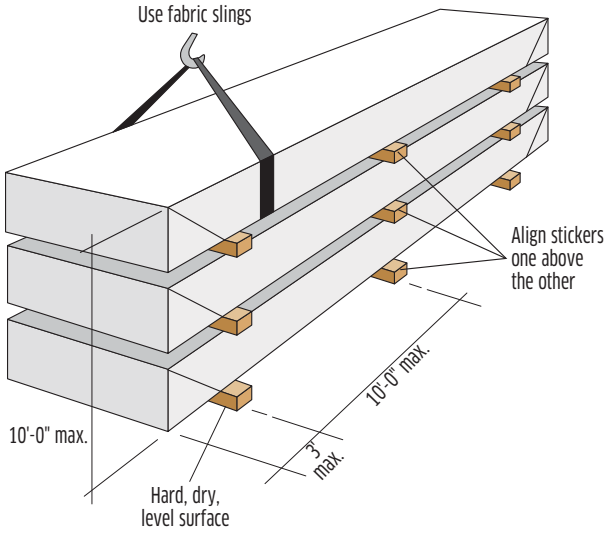
Solution:

1. Determine the equivalent PLF load over the 2' length by dividing the applied load by 2: 3300 lb / 2' = 1650 plf
2. Divide the equivalent PLF load by the capacity for the appropriate detail. For a 14" depth, 3 rows of nails are required. For Detail **B** with 3 rows of nails at 12" oc: 1650 plf / 464 plf = 3.6
3. The required total number of nails is: 3.6 * 3 rows of nails @ 12" oc = 10.8 nails per foot
4. Connect the front (loaded) ply with the nailing determined in step 3: drive 11 16d box nails within 12" to each side of the point load (a total of 22 nails). Verify nail spacing.
5. Connect the back ply with half the number of nails determined in step 4: drive 6 16d box nails, from the back, within 12" to each side of the point load (a total of 12 nails). Verify nail spacing.
6. Connect full length of member with the standard nailing or as required for side loads.
7. Project designer shall detail to prevent rotation of the beam due to the applied side load.

Code Evaluation Reports: ICC *ESR 2909* and APA® *PR-L233* or visit pwtewp.com.

HANDLING AND STORAGE GUIDELINES

- WARNING: Failure to follow proper procedures for handling, storage and installation could result in unsatisfactory performance, unsafe structures and possible collapse.
- Keep PWT™ 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. I-Joists shall be handled vertically and not flatwise.
- 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 PWT distributor for assistance when damaged products are encountered.
- For satisfactory performance, PWT products must be used under dry, covered and well-ventilated interior conditions in which the equivalent moisture content in lumber is less than 16%.
- For built-up members, all PWT products shall be dry before nailing or bolting to avoid trapping moisture.
- PWT I-Joists and PWT LVL shall not be used for unintended purposes such as ramps and planks.



PWT™ LVL

PWT™

FOCUSED ON EWP

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pwtewp.com

For product catalog and complete warranty details or for more information on the full line of PWT products or the nearest distributor, visit pwtewp.com.

PWT products are manufactured at different locations in the United States and Canada.

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