

**CITY OF NEW YORK
DEPARTMENT OF BUILDINGS**

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use in accordance with the Report of Materials and Equipment Acceptance (MEA) Division.

Satish K. Babbar, R.A., Acting Commissioner
MEA 448-00-E

Report of Material and Equipment Acceptance Division

Manufacturer - Trus Joist, a Weyerhaeuser Business, P.O. Box 8449, Boise, Idaho 83707.

Trade Name - Trus Joist

Product - Parallam® Parallel Strand Lumber (PSL)

Pertinent Code Section(s) - 27-617 through 27-624

Tests - ASTM D198, Flexure (Allowable bending stress). Allowable tension parallel to grain stress. Allowable compression parallel to grain stress, beam shear, shear block, shear parallel to grain test. Allowable compression perpendicular to grain stress and perpendicular to wide face of strand, etc.

Laboratory - PFS Corporation and Design Tables were certified by Gary Ralph Schweizer, P.E., New York State License Number 062291-1.

Test Reports - Various test reports and other documents were submitted in support of the design properties and performance of Parallam PSL.

Description - Parallam PSL is manufactured from strands of a single wood species, or species combinations, that are oriented parallel to the length of the member and coated with a phenol-formaldehyde adhesive. The wood species or species combinations and adhesive used to manufacture Parallam PSL are specified in the approved quality control manual and manufacturing standard prepared by Trus Joist. Parallam PSL is available in rectangular cross sections having a maximum width of 11 inches, a maximum depth of 19 inches, and lengths up to 66 feet. Cross sections up to 7 inches by 54 inches are available through secondary lamination. This product has been tested and assigned design values for use in structural applications. Daily quality control checks and periodic third party inspections are conducted to assure product quality and performance.

TABLE 1 - Parallam® PSL ALLOWABLE FRAMING LUMBER DESIGN STRESSES ^{1,2,3}
(pounds per square inch)

Species / Grade	Axial		Load To WFS (Joist)			Load ⊥ To WFS (Plank)			MOE (x10 ⁶)
	Ft ⁴	Fc	Fb ^{5,6}	Fv	Fc⊥ ⁷	Fb ^{5,6}	Fv	Fc⊥ ⁷	
DF 1.8E	1755	2500	2500	230	600	2400	190	425	1.80
	1890	2700	2700	260	675	2600	200	450	
	2025	2900	2900	290	750	2800	210	475	
	2160	3100	3100	320	775	3000	220	500	
SP 1.8E	1755	2500	2500	230	600	2400	190	425	1.80
	1890	2700	2700	260	675	2600	200	475	
	2025	2900	2900	290	750	2800	210	525	
	2160	3100	3100	320	825	3000	220	575	
WH 1.8E	1755	2500	2500	230	500	2400	190	380	1.80
	1890	2700	2700	260	575	2600	200	415	
	2025	2900	2900	290	650	2800	210	450	
	2160	3100	3100	320	700	3000	220	475	
YP 1.8E or 1.9E YP/RM 2.0E 2.1E	1755	2500	2500	230	600	2400	190	525	1.80
	1890	2700	2700	260	675	2600	200	600	
	2025	2900	2900	290	750	2800	210	675	
	2160	3100	3100	320	825	3000	220	750	

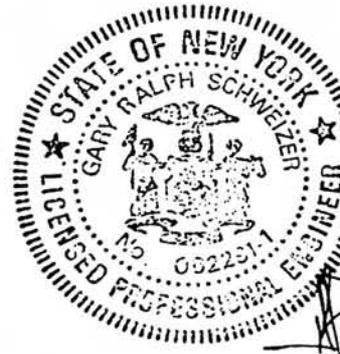
For SI: 1 psi = 0.00689 MPa

1. WFS - Wide face of strand. See figure below for details on strand orientation. DF = Douglas fir-larch, SP = southern pine, WH = western hemlock, YP = yellow poplar, RM = red maple. DF and WH are permitted to be combined as Western Species (WS). SP, YP and YP/RM are permitted to be combined as Eastern Species (ES). When using the species group designations WS or ES, the allowable stresses must be the lower values for the species in the group.
2. Allowable stresses are based on covered, dry conditions of use. Dry conditions of use are those environmental conditions represented by sawn lumber at which the moisture content is less than 16%.
3. For uniformly loaded simple span beams, the deflection is calculated as follows:

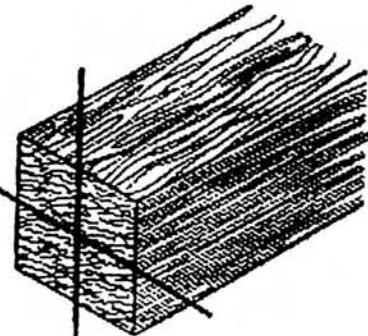
$$\Delta = \frac{270WL^4}{Ebd^3} + \frac{28.8WL^2}{Ebd}$$

Where,

- Δ = Deflection, inches
- W = Uniform load, plf
- L = Span, feet
- b = Beam width, inches
- h = Beam depth, inches
- E = Modulus of Elasticity, psi



PARALLEL TO WIDE FACE OF STRAND



PERPENDICULAR TO WIDE FACE OF STRAND

4. The Ft values in the table are reduced to reflect the volume effects of length, width and thickness for a range of common application conditions.
5. For 12 inch depth; for other depths, table value must be multiplied by (12/d)^{0.111}. Adjustments for common depths are shown below. For depths less than 3.5 inches, the factor for the 3.5 inch depth must be used.

Depth (inches)	3.5	5.5	7.25	9.25	12.0	16.0	20.0	24.0
Multiplier	1.15	1.09	1.06	1.03	1.00	0.97	0.96	0.93

6. When members qualify as repetitive members in accordance with the building code, a 4 percent increase is permitted, for Fb, in addition to the increases permitted in Footnote 4, above.
7. Compression perpendicular to grain values (Fc⊥) may not be increased for duration of load.

TABLE 2 - Parallam® PSL FASTENER DETAILS

Fastener	Description	Comments
Lateral Nail and Wood Screw Capacity	Edge: Parallel and Perpendicular to WFS Face: Parallel and Perpendicular to WFS	For all grades 1.8E and higher use specific gravity, SG = 0.50 (Douglas-fir-larch).
Nail withdrawal capacity is determined on the basis of a specific gravity, SG = 0.50 (Douglas-fir-larch)		
Bolt Capacity - Bolt parallel to WFS:		Not evaluated
Bolt capacity - Bolt perpendicular to WFS ¹	Load parallel to grain Load perpendicular to grain	For all grades 1.8E and higher use specific gravity, SG = 0.50 (Douglas-fir-larch).
Note: Nail and bolt design values are developed using the specific gravity shown, in accordance with the applicable code.		

Closest Allowable Nail Spacing (inches) ^{2,3}			
Nail Size	Nailing Into Narrow Edge	Nailing Into Wide Face	Minimum End Distance (inches)
8d (2-1/2") box	3	2	2-1/2
8d (2-1/2") common	3	2	2-3/4
10d (3") box	3	2	2-3/4
12d (3-1/4") box	4	2	2-3/4
10d (3") & 12d (3-1/4") common	4	3	3
16d (3-1/2") box	4	3	2-3/4
16d (3-1/4") sinker	4	3	3
16d (3-1/2") common	6	4	3-1/4

For SI: 1 inch = 25.4 mm 1 lbf. = 4.448 N

1. When loading at an angle to grain, the lateral capacity is calculated using the Hankinson formula using an equivalent SG = 0.50 for load parallel to grain and perpendicular to grain.
2. Multiple rows to be staggered and the minimum spacing between rows must be 1/2 inch.
3. Multiple rows to be equally spaced from the centerline of the narrow face axis.



MEA 448-00-E

2)

Recommendation – That the above Parallam PSL parallel strand lumber be accepted on the condition that all uses, locations and installations shall comply with the applicable requirements of the New York City Building Code, and on further condition that:

1. Structures designed using Parallam PSL lumber shall conform to the manufacturer's design specifications except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply.
2. Glue used shall not delaminate during a fire.
3. The fire resistance of Parallam PSL is equivalent to that of sawn lumber of equal depth and width when used in heavy timber construction.
4. Except as noted in Footnote 7 to Table 1, adjustments to the design stresses in Table 7 for duration of load is permitted in accordance with the code.
5. Where members qualify as repetitive members as defined in Part 4.3.4 of the NDS-1991 Revised or NDS-1997, an increase of four percent is permitted in allowable bending stresses.
6. Parallam PSL may not be cut, notched or bored, except that when supporting uniform loads only, maximum 1.0 inch diameter holes may be drilled in minimum 4-3/8 inch deep beams, maximum 1-3/4 inch diameter holes may be drilled in minimum 5-1/2 inch deep beams, and maximum 2 inch diameter holes may be drilled in minimum 7-1/4 inch deep beams. All holes must be located in the center third of the beam span and the center third of the beam depth. The minimum clear distance between holes must be two times the diameter of the largest hole. Rectangular holes are not permitted. Holes in cantilevers are beyond the scope of this approval.
7. Parallam PSL is identified with a stamp noting the name of the manufacturer (Trus Joist) and the plant number; the product trade name (Parallam® PSL); the production date, the grade, the species; and the name of the quality control agency (PFS Corporation).
8. All shipments and deliveries of Parallam PSL shall be provided with a permanent marking suitably placed, certifying that the material shipped or delivered is equivalent to that tested and accepted for use, as provided for in Section 27-131 of the Building Code.

Final Acceptance January 12, 2001

Examined by Mark Jucly