

SUBJECT: EXTREME SIPS WALL LOADS (COMBINED AXIAL & TRANSVERSE LOADING)

Building materials that are utilized to create structural components, such as walls, are subject to a combination of loads. Wall assemblies must be able to withstand axial forces while also resisting a bending load. Most building materials, including concrete, steel, lumber, and other engineered wood products, determine their suitability for application in an assembly using a well-known engineering formula known as the Unity Equation.

The Unity Equation considers the ultimate load capacity for a product in both the axial and transverse directions. These ultimate loads are divided by a factor of safety, which yields design values. To determine if a wall assembly meets the required combined axial and transverse loads, the wall assembly must satisfy the following formula:

$$\left(\frac{f_a \text{ (Design Axial Load)}}{F_a \text{ (Allowable Axial Load)}} \right) + \left(\frac{f_b \text{ (Design Bending Load)}}{F_b \text{ (Allowable Bending Load)}} < 1 \right)$$

Refer to Load Chart #1A / #1B for uniform axial load values for type S / type L splines and Load Chart #3A for uniform transverse loads for the data necessary to complete the Unity Equation.

All current Load Charts are available at www.extremepanel.com.

LOAD CHART #1A Uniform Axial Loads - PLF ¹⁻⁴ Type S Spline						
SIP Thickness	SIP Height (ft.)					
	8'	10'	12'	16	20'	24'
4-1/2"	3500	2553	2453	2117	NA	NA
6-1/2"	4250	4043	3373	3923	2817	2183
8-1/4"	4917	4327	4473	4197	3497	3067
10-1/4"	4600	4414	4228	4417	3389	3248
12-1/4"	3889	3959	4028	4408	3837	3333

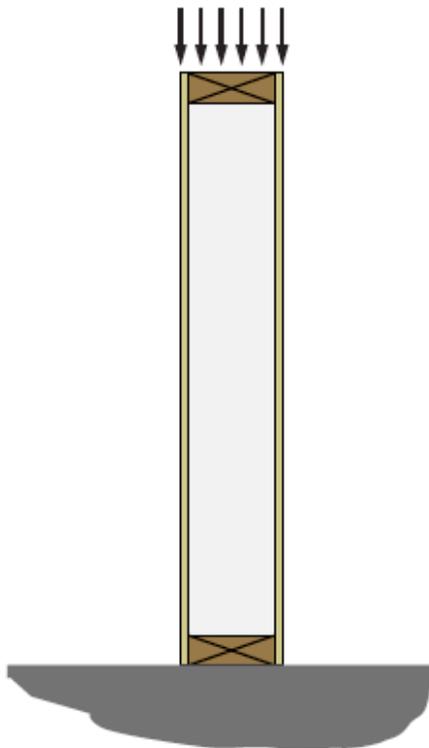
¹ Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.

² Uniform axial loads.

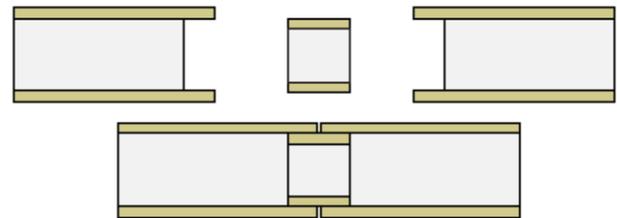
³ Both facings must bear on the supporting foundation or structure.

⁴ Tabulated values for 8-foot (2.44 m) walls apply to SIPs constructed with OSB strength axis oriented either parallel or perpendicular to supports.

AXIAL LOAD



TYPE S SPLINE



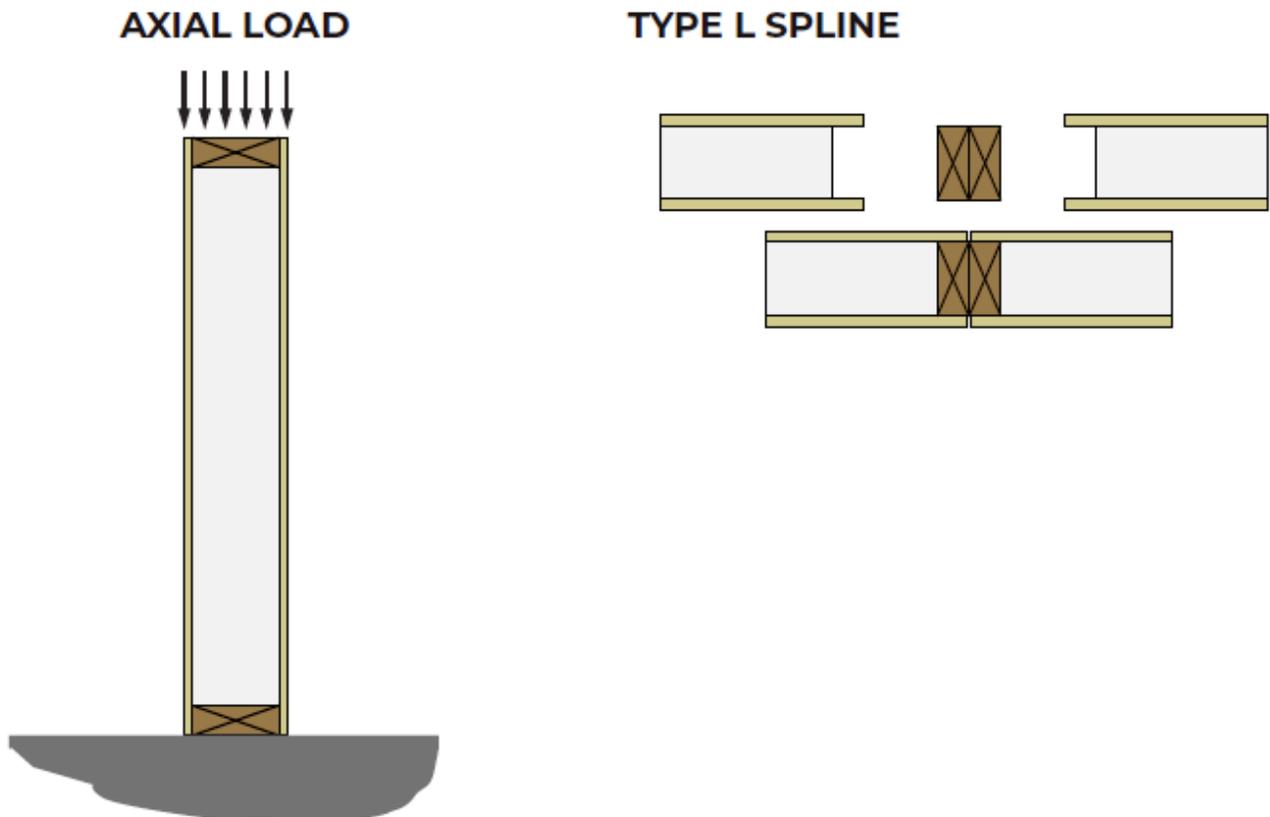
LOAD CHART #1B Uniform Axial Loads - PLF ¹⁻⁴ Type L Spline						
SIP Thickness	SIP Height (ft.)					
	8'	10'	12'	16'	20'	24'
4-1/2"	4723	3903	3273	2623	NA	NA
6-1/2"	5850	5890	4277	4310	2933	2837
8-1/4"	6807	6110	5557	5180	4837	4083
10-1/4"	5473	5709	5946	5948	4729	4250
12-1/4"	5667	5474	5281	5775	4729	4223

¹ Splines consist of No. 2 or better, Hem-Fir, 1-1/2 inch (38.1 mm) wide with depth equal to the core thickness, spaced to provide no less than two members for every 48 inches (1219.2 mm) of SIPs width. Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.

² Uniform axial loads.

³ Both facings must bear on the supporting foundation or structure.

⁴ Tabulated values for 8-foot (2.44 m) walls apply to SIPs constructed with OSB strength axis oriented either parallel or perpendicular to supports.



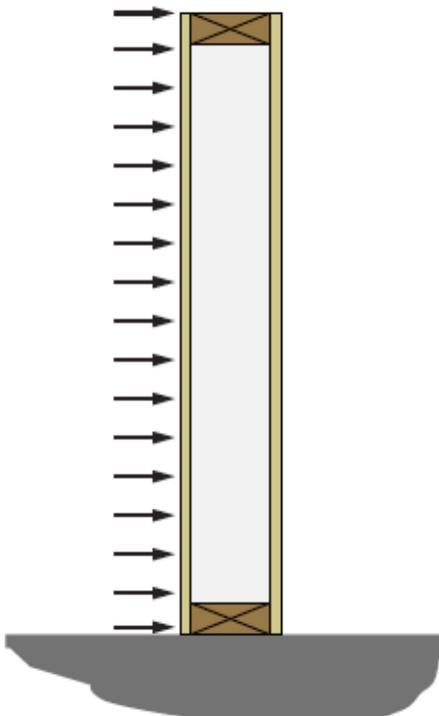
LOAD CHART #3A										
Wall Uniform Transverse Loads - PSF ¹⁻³										
Type S Spline										
SIP Thickness	Deflection Limit	SIP Height (ft.)								
		8'	10'	12'	14'	16'	18'	20'	22'	24'
4-1/2"	L/360	32	23	18	14	11	NA	NA	NA	NA
	L/240	48	35	27	21	16	NA	NA	NA	NA
	L/180	55	44	36	28	22	NA	NA	NA	NA
6-1/2"	L/360	51	38	29	23	19	15	12	NA	NA
	L/240	67	53	44	35	28	23	19	NA	NA
	L/180	67	53	44	38	33	29	24	NA	NA
8-1/4"	L/360	67	51	40	32	26	22	18	15	13
	L/240	75	60	50	42	37	33	27	23	19
	L/180	75	60	50	42	37	33	30	26	22
10-1/4"	L/360	83	66	52	43	35	29	25	21	18
	L/240	83	66	55	47	41	36	33	30	27
	L/180	83	66	55	47	41	36	33	30	27
12-1/4"	L/360	89	72	60	51	44	37	32	27	23
	L/240	89	72	60	51	45	40	36	32	30
	L/180	89	72	60	51	45	40	36	32	30

¹ Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.

² Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of applicable building code. Values are based on loads of short duration only.

³ Table values for 8-foot (2.44 m) spans apply to SIPs constructed with the OSB strength axis oriented either parallel or perpendicular to span direction. Table values for other spans are based on the OSB strength axis parallel to the span direction..

TRANSVERSE LOAD



TYPE S SPLINE

