Thermapan
Structural
Insulated
Panels

Design Handbook

Load & Span Table for SIP Designers

Exterior Walls, Foundations Walls, Roofs and Floors

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TECHNICAL DATA

PANEL SPECIFICATIONS

Dimensions & Standard SIP Panel Properties

SIP Thickness: inch (mm)	**4.5"** (114)	**6.5"** (165)	**8.25"** (210)	**10.25"** (260)	**12.25"** (311)
EPS Core Thickness: inch (mm)	**3.625"** (92)	**5.625"** (143)	**7.375"** (188)	**9.375"** (238)	**11.375"** (289)
Dimensional Lumber: nominal inches (actual mm)	**2x4** (38x89)	**2x6** (38x140)	**2x8** (38x185)	**2x10** (38x235)	**2x12** (38x285)
Weight: psf (kg/m^2)	**3.2** (15.6)	**3.4** (16.6)	**3.6** (17.6)	**3.8** (18.5)	**4.0** (19.5)
R-Value Performance[1] (Prescriptive[2])	**24** (17.0)	**48** (25.8)	**55** (33.5)	**70** (42.3)	**85** (51.1)

Design Handbook General Notes:

1. Thermal resistance compliance with Division A, 1.2.1.1.(1).(b) of the NBC.
2. EPS @ 25F ASTM C518; Structural Board Association's "OSB in Wood Frame Construction," (U.S. Edition 1996/97); compliance with Division A, 1.2.1.1.(1).(a) of the NBC.

LOAD COMBINATION

Designer to use ASD load combination to determine SIP panels capacity. The load combinations are shown as below:

Case	Load Combination
1	D
2	D+L
3	D + (L_r or S or R)
4	D + 0.75L + 0.75(L_r or S or R)
5	D + (0.6W or 0.7E)
6a	D + 0.75(L + 0.6W + (L_r or S or R))
6b	D + 0.75(L + 0.7E + S)
7	0.6D + 0.6W
8	0.6D + 0.7E

Where:
D= Dead Load
L = Live Load
S= Snow Load
Lr= Roof Live Load
R = Rain Load
W= Wind Load
E = Earthquake Load

COMMON ABBREVIATIONS USED IN THIS HANDBOOK

plf: Pounds per linear foot (lb/ft)
psf: Pounds per square foot (lb/ft^2)

SIP: Structural Insulated Panel
PWF: Permanent Wood Foundation

FULL LENGTH SIP PANELS with SIP SPLINES

TABLE 1

Transverse Allowable Design Load (PSF)
Spline Type: SIP

SIP Thickness (inches)	Deflection Limit	SIP Span (feet)			
		4	8	10	12
4.5	L/360	76	38	24	
	L/240	110	46	24	
	L/180	142	46	24	
6.5	L/360	145	61	35	25
	L/240	154	61	51	39
	L/180	154	61	51	41
8.25	L/360	145	64	51	42
	L/240	154	69	55	46
	L/180	154	69	55	46
10.25	L/360	145	65	52	43
	L/240	154	74	59	49
	L/180	154	74	59	49

General Notes:
1. Table values are for uniform area load pounds per square foot (psf).
2. Continuous support with a minimum bearing of 3″ at each end.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based upon the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.

FULL LENGTH SIP PANEL with 2-PLY LUMBER SPLINE

TABLE 2

Transverse Allowable Design Load (PSF)

Spline Type: 2-Ply Lumber Spline NLGA SPF No. 2 or Better Grade

SIP Thickness (inches)	Deflection Limit	Panel Length (feet)		
		8	10	12
4.5	L/480	38	27	19
	L/360	51	37	26
	L/240	76	56	39
	L/180	91	74	52
6.5	L/480	83	50	38
	L/360	110	68	51
	L/240	164	106	77
	L/180	164	121	80
8.25	L/480	94	75	63
	L/360	128	102	85
	L/240	178	142	119
	L/180	178	142	119
10.25	L/480	106	85	71
	L/360	142	113	94
	L/240	191	153	127
	L/180	196	153	127
12.25	L/480	106	85	71
	L/360	142	113	94
	L/240	191	153	127
	L/180	191	153	127

General Notes:

1. Table values are for uniform area load pounds per square foot (psf).
2. Continuous support with a minimum bearing of 3″ at each end.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based upon the inclined SIP length.
5. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
6. Lumber spline every 4ft apart.

4-FOOT SIP PANEL with 2-PLY LUMBER SPLINE

TABLE 3A

Transverse Allowable Design Load (PSF)

Spline Type: 2-Ply Lumber Spline NLGA SPF No. 1 / No. 2 or Better Grade

SIP Thickness (inches)	Deflection Limit	Lumber Spline Length (feet)									
		4	8	10	12	14	16	18	20	22	24
6.5	L/480	94	31	16							
	L/360	124	42	21	12						
	L/240	125	44	28	18	11					
	L/180	125	44	28	19	14	10				
8.25	L/480	82	71	37	21	13					
	L/360	109	71	45	28	18	12				
	L/240	134	71	45	31	23	17	12			
	L/180	134	71	45	31	23	17	14	11		
10.25	L/480	97	97	68	44	28	18	13			
	L/360	128	107	68	47	35	25	17	12		
	L/240	144	107	68	47	35	26	21	17	14	11
	L/180	144	107	68	47	35	26	21	17	14	11
12.25	L/480	97	97	92	64	47	33	23	17	13	10
	L/360	128	128	92	64	47	36	28	23	17	13
	L/240	144	144	92	64	47	36	28	23	19	16
	L/180	144	144	92	64	47	36	28	23	19	16

General Notes:

1. Table values are for uniform area load pounds per square foot (psf) for SIP panels spanned 4ft between 2-Ply lumber spline.
2. Continuous support with a minimum bearing of 3″ at each end.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based upon the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Lumber spline capacity based on NDS2015 allowable stress design.

4-FOOT SIP PANEL with 3-PLY LUMBER SPLINE

TABLE 3B

Transverse Allowable Design Load (PSF)

Spline Type: 3-Ply Lumber Spline NLGA SPF No. 1 / No. 2 or Better Grade

SIP Thickness (inches)	Deflection Limit	Lumber Spline Length (feet)									
		4	8	10	12	14	16	18	20	22	24
6.5	L/480	94	47	24							
	L/360	124	63	32	18						
	L/240	125	67	43	28	17					
	L/180	125	67	43	29	21	15				
8.25	L/480	82	82	55	32	20					
	L/360	109	107	68	42	27	18				
	L/240	134	107	68	47	35	26	19			
	L/180	134	107	68	47	35	26	21	17		
10.25	L/480	97	97	97	66	42	28	19			
	L/360	128	128	102	71	52	37	26	19		
	L/240	144	144	102	71	52	40	31	25	21	16
	L/180	144	144	102	71	52	40	31	25	21	17
12.25	L/480	97	97	97	96	70	50	35	25	19	15
	L/360	128	128	128	96	70	54	42	34	26	20
	L/240	144	144	138	96	70	54	42	34	28	24
	L/180	144	144	138	96	70	54	42	34	28	24

General Notes:

1. Table values are for uniform area load pounds per square foot (psf) for SIP panels spanned 4ft between 3-Ply lumber spline.
2. Continuous support with a minimum bearing of 3″ at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading condition and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combinations.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Lumber spline capacity based on NDS2015 allowable stress design.

4-FOOT SIP PANEL with 4-PLY LUMBER SPLINE

TABLE 3C

Transverse Allowable Design Load (PSF)

Spline Type: 4-Ply Lumber Spline NLGA SPF No. 1 / No. 2 or Better Grade

SIP Thickness (inches)	Deflection Limit	Lumber Spline Length (feet)									
		4	8	10	12	14	16	18	20	22	24
6.5	L/480	94	63	32							
	L/360	124	84	43	24						
	L/240	125	103	64	37	23					
	L/180	125	103	65	45	31	21				
8.25	L/480	82	82	74	42	27					
	L/360	109	109	98	57	36	24				
	L/240	134	134	105	73	53	36	25			
	L/180	134	134	105	73	53	41	32	24		
10.25	L/480	97	97	97	89	56	37	26			
	L/360	128	128	128	109	74	50	35	25		
	L/240	144	144	144	109	80	61	48	38	28	22
	L/180	144	144	144	109	80	61	48	39	32	27
12.25	L/480	97	97	97	97	97	67	47	34	26	20
	L/360	128	128	128	128	108	82	63	46	34	26
	L/240	144	144	144	144	108	82	65	53	43	36
	L/180	144	144	144	144	108	82	65	53	43	36

General Notes:

1. Table values are for uniform area load pounds per square foot (psf) for SIP panels spanned 4ft between 3-Ply lumber spline.
2. Continuous support with a minimum bearing of 3″ at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading condition and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combinations.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Lumber spline capacity based on NDS2015 allowable stress design.

4-FOOT SIP PANEL with 2-PLY LSL SPLINES

TABLE 4A

Transverse Allowable Design Load (PSF)

Spline Type: 2-Ply LSL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	13											
		L/240	46	20											
		L/180	46	27	14										
6.5	5.5	L/480	94	38	20	11									
		L/360	124	51	26	15									
		L/240	125	77	40	23	14								
		L/180	125	103	53	31	19	13							
8.25	7.25	L/480	82	82	45	26	16								
		L/360	109	109	60	35	22	15							
		L/240	134	134	90	53	33	22	16	11					
		L/180	134	134	120	71	45	30	21	15	11				
10.25	9.25	L/480	97	97	91	54	34	23	16	12					
		L/360	128	128	121	72	46	31	22	16	12				
		L/240	144	144	144	108	69	46	33	24	18	14			
		L/180	144	144	144	139	92	62	44	32	24	18	14	11	
12.25	11.25	L/480	97	97	97	94	60	41	29	21	16	12			
		L/360	128	128	128	126	81	55	39	28	21	16	13		
		L/240	144	144	144	144	121	82	58	43	32	25	19	16	13
		L/180	144	144	144	144	144	110	78	57	43	33	26	21	17

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 2-Ply LSL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LSL beam.
8. LSL properties shall not be less than:
   Fb(psi): 2325 Fv(psi): 310 E (psi): 1.55E+06
9. Table values are based on each LSL ply to be 1-3/4" thick.

4-FOOT SIP PANEL with 3-PLY LSL SPLINES

TABLE 4B

Transverse Allowable Design Load (PSF)

Spline Type: 3-Ply LSL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	20											
		L/240	46	30											
		L/180	46	41	21										
6.5	5.5	L/480	94	58	30	17									
		L/360	124	77	40	23									
		L/240	125	116	60	35	22								
		L/180	125	125	80	47	29	20							
8.25	7.25	L/480	82	82	67	39	25								
		L/360	109	109	90	53	33	22							
		L/240	134	134	134	79	50	34	24	17					
		L/180	134	134	134	106	67	45	32	23	17				
10.25	9.25	L/480	97	97	97	81	51	35	24	18					
		L/360	128	128	128	108	69	46	33	24	18				
		L/240	144	144	144	144	103	70	49	36	27	21			
		L/180	144	144	144	144	138	93	66	48	36	28	22	17	
12.25	11.25	L/480	97	97	97	97	91	62	44	32	24	18			
		L/360	128	128	128	128	121	82	58	43	32	25	19		
		L/240	144	144	144	144	144	124	88	64	49	37	29	24	19
		L/180	144	144	144	144	144	144	117	86	65	50	39	32	26

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 3-ply LSL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LSL beam.
8. LSL properties shall not be less than:
   Fb(psi): 2325 Fv(psi): 310 E (psi): 1.55E+06
9. Table values are based on each LSL ply to be 1-3/4" thick.

4-FOOT SIP PANEL with 4-PLY LSL SPLINES

TABLE 4C

Transverse Allowable Design Load (PSF)

Spline Type: 4-Ply LSL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	27											
		L/240	46	41											
		L/180	46	46	28										
6.5	5.5	L/480	94	77	40	23									
		L/360	124	103	53	31									
		L/240	125	125	80	47	29								
		L/180	125	125	107	63	39	26							
8.25	7.25	L/480	82	82	82	53	33								
		L/360	109	109	109	71	45	30							
		L/240	134	134	134	106	67	45	32	23					
		L/180	134	134	134	134	90	60	43	31	23				
10.25	9.25	L/480	97	97	97	97	69	46	33	24					
		L/360	128	128	128	128	92	62	44	32	24				
		L/240	144	144	144	144	138	93	66	48	36	28			
		L/180	144	144	144	144	144	124	88	64	48	37	29	23	
12.25	11.25	L/480	97	97	97	97	97	82	58	43	32	25			
		L/360	128	128	128	128	128	110	78	57	43	33	26		
		L/240	144	144	144	144	144	144	117	86	65	50	39	32	26
		L/180	144	144	144	144	144	144	144	115	87	67	53	42	34

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 4-ply LSL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LSL beam.
8. LSL properties shall not be less than:
   Fb(psi): 2325 Fv(psi): 310 E (psi): 1.55E+06
9. Table values are based on each LSL ply to be 1-3/4" thick.

4-FOOT SIP PANEL with 2-PLY LVL SPLINES

TABLE 5A

Transverse Allowable Design Load (PSF)

Spline Type: 2-Ply LVL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	17											
		L/240	46	26											
		L/180	46	35	18										
6.5	5.5	L/480	94	50	26	15									
		L/360	124	66	34	20									
		L/240	125	100	52	30	19								
		L/180	125	125	69	40	25	17							
8.25	7.25	L/480	82	82	58	34	21								
		L/360	109	109	77	45	29	19							
		L/240	134	134	116	68	43	29	20	15					
		L/180	134	134	134	91	58	39	27	20	15				
10.25	9.25	L/480	97	97	97	69	44	30	21	15					
		L/360	128	128	128	93	59	40	28	20	15				
		L/240	144	144	144	139	89	60	42	31	23	18			
		L/180	144	144	144	144	114	80	57	41	31	24	19	15	
12.25	11.25	L/480	97	97	97	97	78	53	37	27	21	16			
		L/360	128	128	128	128	104	71	50	37	28	21	17		
		L/240	144	144	144	144	144	107	75	55	42	32	25	20	16
		L/180	144	144	144	144	144	126	99	74	56	43	34	27	22

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 2-Ply LVL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LVL beam.
8. LVL properties shall not be less than:
   Fb(psi): 2600 Fv(psi): 285 E (psi): 2.00E+06

4-FOOT SIP PANEL with 3-PLY LVL SPLINES

TABLE 5B

Transverse Allowable Design Load (PSF)

Spline Type: 3-Ply LVL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	26											
		L/240	46	39											
		L/180	46	46	27										
6.5	5.5	L/480	94	75	39	22									
		L/360	124	100	52	30									
		L/240	125	125	78	45	28								
		L/180	125	125	104	61	38	25							
8.25	7.25	L/480	82	82	82	51	32								
		L/360	109	109	109	68	43	29							
		L/240	134	134	134	103	65	44	31	22					
		L/180	134	134	134	134	87	59	41	30	22				
10.25	9.25	L/480	97	97	97	97	66	45	32	23					
		L/360	128	128	128	128	89	60	42	31	23				
		L/240	144	144	144	144	133	90	64	47	35	27			
		L/180	144	144	144	144	144	120	85	62	47	36	28	23	
12.25	11.25	L/480	97	97	97	97	97	80	56	41	31	24			
		L/360	128	128	128	128	128	107	75	55	42	32	25		
		L/240	144	144	144	144	144	144	113	83	63	48	38	30	25
		L/180	144	144	144	144	144	144	144	111	84	65	51	41	33

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 3-ply LVL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LVL beam.
8. LVL properties shall not be less than:
   Fb(psi): 2600 Fv(psi): 285 E (psi): 2.00E+06

4-FOOT SIP PANEL with 4-PLY LVL SPLINES

TABLE 5C

Transverse Allowable Design Load (PSF)

Spline Type: 4-Ply LVL Spline

SIP Thickness (inches)	LVL Depth (inches)	Deflection Limit	Lumber Spline Length (feet)												
			4	8	10	12	14	16	18	20	22	24	26	28	30
4.5	3.5	L/480	28												
		L/360	38	35											
		L/240	46	46											
		L/180	46	46	36										
6.5	5.5	L/480	94	94	52	30									
		L/360	124	124	69	40									
		L/240	125	125	104	61	38								
		L/180	125	125	125	81	51	34							
8.25	7.25	L/480	82	82	82	68	43								
		L/360	109	109	109	91	58	39							
		L/240	134	134	134	134	87	59	41	30					
		L/180	134	134	134	134	116	78	55	40	30				
10.25	9.25	L/480	97	97	97	97	89	60	42	31					
		L/360	128	128	128	128	119	80	57	41	31				
		L/240	144	144	144	144	144	120	85	62	47	36			
		L/180	144	144	144	144	144	144	114	83	63	48	38	30	
12.25	11.25	L/480	97	97	97	97	97	97	75	55	42	32			
		L/360	128	128	128	128	128	128	101	74	56	43	34		
		L/240	144	144	144	144	144	144	144	111	84	65	51	41	33
		L/180	144	144	144	144	144	144	144	144	112	86	68	55	44

General Notes:

1. Table values are for uniform area load pounds per square foot (psf), for SIP panels spanned 4ft between 4-ply LVL spline.
2. Continuous support with a minimum bearing of 3" at each end required.
3. Loads limited by deflection or ultimate failure load divided by a Factor of Safety (FoS) of 3.
4. For sloped SIPs, the loading conditions and SIP capacities should be reviewed based on the inclined SIP length.
5. Values are for the total load as per ASD load combination.
6. Deflection based upon Kcr=1.0. For long term deflection under sustained load (creep), additional deflection must be evaluated.
7. Deflection values include shear deformation of LVL beam.
8. LVL properties shall not be less than:
   Fb(psi): 2600 Fv(psi): 285 E (psi): 2.00E+06

SIP WALL PANEL with SIP SPLINE

TABLE 6A

Maximum Allowable Axial Load for 4.5" Panel (PLF)

Spline Type: SIP Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	3229	2882	2535	2188	1840	1493	1146	799	451
	L/240	3229	2882	2535	2188	1840	1493	1146	799	451
	L/180	3229	2882	2535	2188	1840	1493	1146	799	451
9	L/360	3319	2886	2453	2019	1586	1153	720	286	
	L/240	3319	2886	2453	2019	1586	1153	720	286	
	L/180	3319	2886	2453	2019	1586	1153	720	286	
10	L/360	3158	2700	2242	1784	1326	868	410		
	L/240	3158	2700	2242	1784	1326	868	410		
	L/180	3158	2700	2242	1784	1326	868	410		

TABLE 6B

Maximum Allowable Axial Load for 6.5" Panel (PLF)

Spline Type: SIP Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	4452	4090	3728	3366	3004	2642	2280	1918	1556
	L/240	4452	4090	3728	3366	3004	2642	2280	1918	1556
	L/180	4452	4090	3728	3366	3004	2642	2280	1918	1556
9	L/360	4065	3658	3250	2842	2434	2026	1618	1211	803
	L/240	4065	3658	3250	2842	2434	2026	1618	1211	803
	L/180	4065	3658	3250	2842	2434	2026	1618	1211	803
10	L/360	3227	2868	2508	2148	1788	1429	1069	709	350
	L/240	3227	2868	2508	2148	1788	1429	1069	709	350
	L/180	3227	2868	2508	2148	1788	1429	1069	709	350
12	L/360	3965	3484	3003	2522	2042	1561	1080	600	119
	L/240	3965	3484	3003	2522	2042	1561	1080	600	119
	L/180	3965	3484	3003	2522	2042	1561	1080	600	119

General Notes:

1. Table values are for linear pound per foot (lb/ft).
2. Loads Limited by Deflection or Ultimate Failure Load.
3. Tables values are for concentrated axial load with no eccentricity.

SIP WALL PANEL with SIP SPLINE (continued)

TABLE 6C

Maximum Allowable Axial Load for 8.25" Panel (PLF)
Spline Type: SIP Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	4048	3757	3466	3175	2884	2594	2303	2012	1721
	L/240	4048	3757	3466	3175	2884	2594	2303	2012	1721
	L/180	4048	3757	3466	3175	2884	2594	2303	2012	1721
9	L/360	4048	3721	3393	3066	2739	2412	2085	1757	1430
	L/240	4048	3721	3393	3066	2739	2412	2085	1757	1430
	L/180	4048	3721	3393	3066	2739	2412	2085	1757	1430
10	L/360	4048	3684	3321	2957	2594	2230	1866	1503	1139
	L/240	4048	3684	3321	2957	2594	2230	1866	1503	1139
	L/180	4048	3684	3321	2957	2594	2230	1866	1503	1139
12	L/360	4048	3612	3175	2739	2303	1866	1430	994	557
	L/240	4048	3612	3175	2739	2303	1866	1430	994	557
	L/180	4048	3612	3175	2739	2303	1866	1430	994	557

TABLE 6D

Maximum Allowable Axial Load for 10.25" Panel (PLF)
Spline Type: SIP Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	4048	3775	3502	3229	2956	2683	2410	2137	1864
	L/240	4048	3775	3502	3229	2956	2683	2410	2137	1864
	L/180	4048	3775	3502	3229	2956	2683	2410	2137	1864
9	L/360	4048	3741	3433	3126	2819	2512	2205	1898	1590
	L/240	4048	3741	3433	3126	2819	2512	2205	1898	1590
	L/180	4048	3741	3433	3126	2819	2512	2205	1898	1590
10	L/360	4048	3707	3365	3024	2683	2341	2000	1659	1317
	L/240	4048	3707	3365	3024	2683	2341	2000	1659	1317
	L/180	4048	3707	3365	3024	2683	2341	2000	1659	1317
12	L/360	4048	3638	3229	2819	2410	2000	1590	1181	771
	L/240	4048	3638	3229	2819	2410	2000	1590	1181	771
	L/180	4048	3638	3229	2819	2410	2000	1590	1181	771

General Notes:
1. Table values are for linear pound per foot (lb/ft).
2. Loads Limited by Deflection or Ultimate Failure Load.
3. Tables values are for concentrated axial load with no eccentricity.

SIP WALL PANEL with 2-PLY LUMBER SPLINE

TABLE 7A

Maximum Allowable Axial Load for 4.5" Panel (PLF)

Spline Type: 2-Ply Lumber Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	3229	3054	2878	2702	2526	2350	2174	1308	0
	L/240	3229	3054	2878	2702	2526	2350	2174	1998	1822
	L/180	3229	3054	2878	2702	2526	2350	2174	1998	1822
9	L/360	3319	3128	2936	2744	2553	1339			
	L/240	3319	3128	2936	2744	2553	2361	2170	1978	1786
	L/180	3319	3128	2936	2744	2553	2361	2170	1978	1786
10	L/360	3158	2954	2749	2544	2212				
	L/240	3158	2954	2749	2544	2339	2135	1930	1725	1520
	L/180	3158	2954	2749	2544	2339	2135	1930	1725	1520
12	L/360	1935	1581	1226	871	523				
	L/240	2315	2110	1904	1699	1491	1146	801	452	94
	L/180	2315	2110	1904	1699	1493	1287	1082	876	671

TABLE 7B

Maximum Allowable Axial Load for 6.5" Panel (PLF)

Spline Type: 2-Ply Lumber Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	3334	3233	3131	3030	2929	2827	2726	2625	2523
	L/240	3334	3233	3131	3030	2929	2827	2726	2625	2523
	L/180	3334	3233	3131	3030	2929	2827	2726	2625	2523
9	L/360	3531	3400	3269	3139	3008	2878	2747	2617	2486
	L/240	3531	3400	3269	3139	3008	2878	2747	2617	2486
	L/180	3531	3400	3269	3139	3008	2878	2747	2617	2486
10	L/360	3938	3776	3614	3453	3291	3129	2967	2806	2644
	L/240	3938	3776	3614	3453	3291	3129	2967	2806	2644
	L/180	3938	3776	3614	3453	3291	3129	2967	2806	2644
12	L/360	3965	3719	3474	3229	2984	2738	2493	2248	2003
	L/240	3965	3719	3474	3229	2984	2738	2493	2248	2003
	L/180	3965	3719	3474	3229	2984	2738	2493	2248	2003

General Notes:

1. Table values are for linear pound per foot (lb/ft).
2. Loads Limited by Deflection or Ultimate Failure Load.
3. Tables values are for concentrated axial load with no eccentricity.
4. Allowable design values for SIP panels with lumber splines are tabulated. Extrapolation for wall heights greater than tabulated values is not allowed.
5. SPF No.1/No.2 or better lumber splines.
6. Lumber splines to be full wall height.

SIP WALL PANEL with 2-PLY LUMBER SPLINE (cont.)

TABLE 7C

Maximum Allowable Axial Load for 8.25" Panel (PLF)

Spline Type: 2-Ply Lumber Spline

Panel Height (feet)	Deflection Limit	Wind Load								
		0	5	10	15	20	25	30	35	40
8	L/360	4368	4286	4205	4123	4042	3960	3879	3797	3716
	L/240	4368	4286	4205	4123	4042	3960	3879	3797	3716
	L/180	4368	4286	4205	4123	4042	3960	3879	3797	3716
9	L/360	4327	4225	4122	4020	3918	3816	3714	3611	3509
	L/240	4327	4225	4122	4020	3918	3816	3714	3611	3509
	L/180	4327	4225	4122	4020	3918	3816	3714	3611	3509
10	L/360	4235	4112	3988	3865	3741	3618	3494	3371	3247
	L/240	4235	4112	3988	3865	3741	3618	3494	3371	3247
	L/180	4235	4112	3988	3865	3741	3618	3494	3371	3247
12	L/360	4048	3878	3708	3538	3368	3198	3028	2858	2688
	L/240	4048	3878	3708	3538	3368	3198	3028	2858	2688
	L/180	4048	3878	3708	3538	3368	3198	3028	2858	2688

General Notes:

1. Table values are for linear pound per foot (lb/ft).
2. Loads Limited by Deflection or Ultimate Failure Load.
3. Tables values are for concentrated axial load with no eccentricity.
4. Allowable design values for SIP panels with lumber splines are tabulated. Extrapolation for wall heights greater than tabulated values is not allowed.
5. SPF No.1/No.2 or better lumber splines.
6. Lumber splines to be full wall height.

PWF FOUNDATION WALL (8ft, 9ft & 10ft IN HEIGHT)

TABLE 8A

Maximum Allowable Axial Load (PLF)

Backfill Height (feet)	8.25" (2x8)			10.25" (2x10)			12.25" (2x12)		
	Panel Height (feet)			Panel Height (feet)			Panel Height (feet)		
	8	9	10	8	9	10	8	9	10
9									
8								526	
7	1492	290		2052	1026	127	2466	1609	729
6	2156	1393	344	2823	2104	1216	3160	2580	1709
5	2733	2323	1343	3493	3014	2114	3764	3398	2518
4	3196	3049	2109	4031	3724	2802	4248	4038	3137
3	3528	3558	2636	4416	4222	3276	4594	4486	3564
2	3727	3858	2942	4647	4515	3551	4802	4749	3811
1	3812	3983	3068	4746	4637	3665	4891	4860	3914

General Notes:

1. THIS TABLE IS FOR REFERENCE ONLY, THE FINAL DESIGN SHALL BE REVIEWED BY A LICENSED PROFESSIONAL ENGINEER.
2. Shaded values shown are for non-load bearing walls.
3. This table takes into account a surcharge load of 50psf.
4. The panels' deflection is limited to L/240.
5. The values in the table are for a standard load duration.
6. A linear axial+bending interaction relationship is taken into account.
7. The loads listed in the table are for loads with no eccentricity.
8. DEFLECTION CREEP FACTOR OF 1.5 FOR DEAD LOADS AS PER AWC DESIGN GUIDE.
9. A load duration factor of 0.9 is used to calculate strength capacity. Designer to select appropriate load duration factor based on the applicable loads.
10. It is recommended that the designer use the next thicker panel size if the applied load is very close to the allowable design load.

PWF FOUNDATION WALL (4ft IN HEIGHT)

TABLE 8B

Maximum Allowable Axial Load (PLF)

Panel Width	Outside Backfill (ft)	Inside Backfill (ft)			
		4	3	2	1
4.5"	4	1979	1058	364	53
	3	1979	1979	1278	948
	2	1979	1979	1979	1627
	1	1979	1979	1979	1979
6.5"	4	2491	1691	1088	817
	3	2491	2491	1882	1595
	2	2491	2491	2491	2186
	1	2491	2491	2491	2491
8.5"	4	2760	2042	1501	1258
	3	2760	2760	2214	1956
	2	2760	2760	2760	2486
	1	2760	2760	2760	2760

General Notes:

1. Deflection Limited to 0.25in
2. Design for permanent load. Reference CSA S406 2008
3. Table values are for standard load term.
4. Inside Backfill Linear axial+bending interaction relation is considered to allowable concentrated axial load with no eccentricity.
5. Load duration of 1.0 is considered for strength

SIP HEADERS & LINTELS

TABLE 9A

Maximum Allowable Axial Load (PLF) for 4.5" SIP Header/Lintel

Header Depth (inches)	Header Span (feet)	Maximum Load	
		Uniform Load (plf)	Point Load (lbs)
13	4	479	959
	6	320	959
	8	240	959
24	4	1050	2101
	6	700	2101
	8	525	2101
36	4	1807	3614
	6	1205	3614
	8	904	3614

TABLE 9B

Maximum Allowable Axial Load (PLF) for 6.5" SIP Header/Lintel

Header Depth (inches)	Header Span (feet)	Maximum Load	
		Uniform Load (plf)	Point Load (lbs)
13	4	446	892
	6	297	892
	8	223	892
24	4	943	1886
	6	629	1886
	8	471	1886
36	4	1571	3141
	6	1047	3141
	8	785	3141

TABLE 9C

Maximum Allowable Axial Load (PLF) for 8.25" SIP Header/Lintel

Header Depth (inches)	Header Span (feet)	Maximum Load	
		Uniform Load (plf)	Point Load (lbs)
13	4	432	864
	6	288	864
	8	216	864
24	4	898	1795
	6	598	1795
	8	449	1795
36	4	1471	2941
	6	980	2941
	8	735	2941

General Notes:

1. Designed loads as per NDS allowable stress design.
2. Table values are for standard load term.
3. Self weight must be included in load calcuations.
4. This table is designed for common nail, 8d (D=0.131 in; L=2.5in) @ spacing 2" O.C.
5. Additional resistance reduction factor e.g. service condition, treatment factor must apply based on lumber condition.

WOOD FRAME HEADER DESIGN

WOOD FRAME HEADERS

TABLE 10

Maximum Allowable Design Loads

Lumber Size	No. Plies	Span (ft)					
		4ft		6ft		8ft	
		Uniform Load (plf)	Point Load (lb)	Uniform Load (plf)	Point Load (lb)	Uniform Load (plf)	Point Load (lb)
2x6	1	358	1434	159	956	76	607
	2	717	2867	319	1912	152	1213
	3	1075	4301	478	2867	227	1820
	4	1434	5735	637	3823	303	2426
2x8	1	575	2300	256	1533	144	1150
	2	1150	4599	511	3066	287	2300
	3	1725	6899	767	4599	431	3449
	4	2300	9198	1022	6132	575	4599
2x10	1	858	3431	381	2288	214	1716
	2	1716	6863	763	4575	429	3431
	3	2574	10294	1144	6863	643	5147
	4	3431	13726	1525	9150	858	6863
2x12	1	1154	4614	513	3076	288	2307
	2	2307	9229	1025	6152	577	4614
	3	3461	13843	1538	9229	865	6921
	4	4614	18457	2051	12305	1154	9229

General Notes:

1. Designed loads as per NDS Allowable Stress Design for SPF No1/No2 or better grade lumber.
2. Table values are for allowable stress design. Use ASD load combination.
3. Self weight must be included in load calcuations.
4. Headers to have a min. of 1.5" bearing at each end.
5. Additional resistance reduction factor e.g. service condition, treatment factor must apply based on lumber condition.
6. See Thermapan Installation Manual for header installation.

Product Warranty

Thermapan Structural Insulated Panels, Inc. warrants that its products will be free from manufacturing defects or errors in workmanship and material. In addition, the company warrants the adequacy of its design for the normal and expected life of the building, provided the product is correctly installed and used.

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