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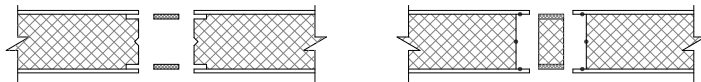
Technical Bulletin

Roof & Floor Panel Transverse Load Design Charts - US Model Codes

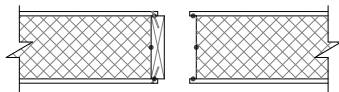
This bulletin provides transverse design loads for the Insulspan® Structural Insulating Panel (SIP) System when used as a component in roof or floor systems designed in accordance with the 2021, 2018, 2015, 2012, and 2009 **International Building Code®** and **International Residential Code®**. Insulspan has completed structural testing of the Insulspan SIP System for this application using a third party testing laboratory following the requirements of ASTM E72, **Standard Test Methods of Conducting Strength Tests of Panels for Building Construction**.

The attached **Roof and Floor Transverse Design Load** charts dated January 20, 2014 summarize total design loads with the following vertical joint configurations:

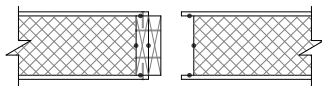
- Table R-1-S – OSB Surface Spline or Insulspline



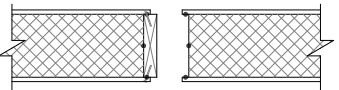
- Table R-2-L – Single 2x Lumber



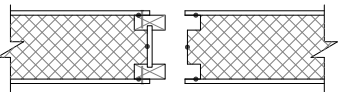
- Table R-3-DL – Double 2x Lumber



- Table R-4-LVL – Single 1.8E LVL



- Table R-5-I – Wood I-Joist



- Table R-6-DLVL – Double 1.8E LVL

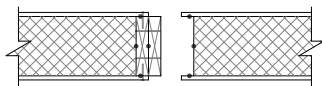
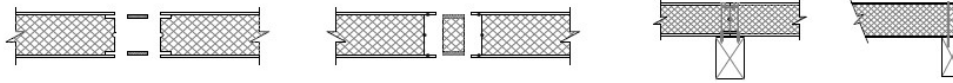


Table R-1-S ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



OSB SURFACE SPLINES OR INSULSPLINES																	
Thickness		Allowable Deflection	PANEL SPAN (feet)														
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
4 1/2"	3 5/8"	L/360	94	73	55	42	33	26	21	17	14	—	—	—	—	—	—
		L/240	121	97	81	64	50	39	32	26	21	—	—	—	—	—	—
		L/180	121	97	81	68	56	47	39	32	27	—	—	—	—	—	—
6 1/2"	5 5/8"	L/360	136	109	84	66	53	43	35	29	24	—	—	—	—	—	—
		L/240	136	109	91	78	68	60	52	43	36	—	—	—	—	—	—
		L/180	136	109	91	78	68	60	54	46	39	—	—	—	—	—	—
8 1/4"	7 3/8"	L/360	151	120	100	86	73	60	50	42	36	30	26	22	19	17	15
		L/240	151	120	100	86	75	67	60	55	50	44	38	33	29	25	22
		L/180	151	120	100	86	75	67	60	55	50	44	38	33	29	26	23
10 1/4"	9 3/8"	L/360	159	127	106	91	79	71	63	58	51	44	38	33	29	26	23
		L/240	159	127	106	91	79	71	63	58	53	49	43	37	33	29	26
		L/180	159	127	106	91	79	71	63	58	53	49	43	37	33	29	26
12 1/4"	11 3/8"	L/360	167	134	111	95	83	74	67	61	56	51	48	43	37	33	30
		L/240	167	134	111	95	83	74	67	61	56	51	48	43	37	33	30
		L/180	167	134	111	95	83	74	67	61	56	51	48	43	37	33	30

Revision : January 20, 2014

Notes:

1. The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in **bold type** are based on panel strength rather than stiffness.
2. The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
3. Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
4. Insulspan SIP skins are nailed to the vertical OSB splines at panel joints using minimum 8d box nails @ 6" on center or equivalent.
5. Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
6. Insulspan SIP System exterior skins are minimum 7/16-inch thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
7. Roof panels subject to concentrated roof maintenance live loads must be limited to maximum span of 8 feet for 4 1/2" roof panels and 16 feet for 8 1/4" or 10 1/4" roof panels.
8. An approved thermal barrier, such as 7/16-inch thick wood-based structural-use sheathing, must be installed over the top surface of floor panels.

Table R-2-L ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



SINGLE 2 x LUMBER SPLINES @ 4'-0" On Center																			
Thickness		Allowable Deflection	PANEL SPAN (feet)																
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4 1/2"	3 5/8"	L/360	94	71	55	43	35	28	23	19	16	14	12	–	–	–	–	–	–
		L/240	142	106	82	65	52	42	35	29	24	20	17	–	–	–	–	–	–
		L/180	189	142	110	87	70	57	47	39	32	27	23	–	–	–	–	–	–
6 1/2"	5 5/8"	L/360	246	181	138	107	84	67	54	45	37	31	26	22	19	16	14	12	11
		L/240	248	199	165	142	124	101	82	67	55	46	39	33	28	24	21	18	16
		L/180	248	199	165	142	124	110	99	87	74	62	52	44	37	32	28	24	21
8 1/4"	7 3/8"	L/360	267	214	178	153	130	104	84	69	57	48	40	34	29	25	21	19	16
		L/240	267	214	178	153	134	119	107	97	86	71	60	51	43	37	32	28	25
		L/180	267	214	178	153	134	119	107	97	89	78	67	58	51	45	41	36	33
10 1/4"	9 3/8"	L/360	295	236	196	168	147	131	118	100	85	72	61	53	45	39	34	30	27
		L/240	295	236	196	168	147	131	118	107	98	90	78	68	59	53	47	42	38
		L/180	295	236	196	168	147	131	118	107	98	90	78	68	59	53	47	42	38
12 1/4"	11 3/8"	L/360	322	258	215	184	161	143	129	117	107	98	85	74	64	56	50	44	39
		L/240	322	258	215	184	161	143	129	117	107	99	91	79	69	61	55	49	44
		L/180	322	258	215	184	161	143	129	117	107	99	91	79	69	61	55	49	44

Revision : January 20, 2014

Notes:

1. The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in bold type are based on panel strength rather than stiffness.
2. The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
3. Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
4. Acceptable 2x4 or 2x6 lumber for assembly of the Insulspan SIP System is SPF #2 & better; acceptable 2x8, 2x10 or 2x12 lumber is Hem Fir #2 & better.
5. Insulspan SIP skins are nailed to the vertical lumber splines at panel joints using minimum 8d box nails @ 6" on center or equivalent.
6. Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
7. Insulspan SIP System exterior skins are minimum 7/16" thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
8. Roof panels subject to concentrated roof maintenance live loads must be limited to maximum span of 8 feet for 4 1/2" roof panels, 14 feet for 6 1/2" roof panels and 18 feet for 8 1/4" roof panels.
9. An approved thermal barrier, such as 7/16-inch thick wood-based structural -use sheathing, must be installed over the top surface of floor panels.

Table R-3-DL ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



DOUBLE 2 x LUMBER SPLINES @ 4'-0" On Center																			
Thickness		Allowable Deflection	PANEL SPAN (feet)																
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4 1/2"	3 5/8"	L/360	162	115	68	54	40	33	26	22	18	15	13	—	—	—	—	—	—
		L/240	195	147	100	79	59	49	39	33	27	23	20	—	—	—	—	—	—
		L/180	195	162	129	103	78	65	52	44	36	31	26	—	—	—	—	—	—
6 1/2"	5 5/8"	L/360	246	200	155	119	84	69	55	46	38	32	27	24	21	18	16	14	13
		L/240	248	210	173	148	124	103	82	69	57	49	41	36	31	27	24	21	19
		L/180	248	210	173	148	124	111	99	87	74	63	52	47	41	36	32	29	26
8 1/4"	7 3/8"	L/360	267	228	190	166	142	115	89	75	62	53	45	39	34	30	26	23	21
		L/240	267	228	190	169	148	129	111	100	90	78	66	57	49	44	39	35	31
		L/180	267	228	190	169	148	129	111	100	90	82	75	69	63	57	51	46	41
10 1/4"	9 3/8"	L/360	295	245	196	190	185	160	136	116	97	83	70	61	53	47	41	37	33
		L/240	295	245	196	190	185	160	136	120	105	96	88	81	75	69	64	56	48
		L/180	295	245	196	190	185	160	136	120	105	96	88	81	75	69	64	59	55
12 1/4"	11 3/8"	L/360	322	268	215	202	190	175	161	142	123	111	99	88	78	69	61	54	48
		L/240	322	268	215	202	190	175	161	142	123	111	99	91	84	78	72	67	63
		L/180	322	268	215	202	190	175	161	142	123	111	99	91	84	78	72	67	63

Revision : January 20, 2014

Notes:

1. The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in **bold type** are based on panel strength rather than stiffness.
2. The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
3. Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
4. Acceptable 2x4 or 2x6 lumber for assembly of the Insulspan SIP System is SPF #2 & better; acceptable 2x8, 2x10 or 2x12 lumber is Hem Fir #2 & better.
5. Insulspan SIP skins are nailed to the vertical lumber splines at panel joints using minimum 8d box nails @ 6" on center or equivalent.
6. Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
7. Insulspan SIP System exterior skins are minimum 7/16" thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
8. Roof panels subject to concentrated roof maintenance live loads must be limited to maximum span of 8 feet for 4 1/2" roof panels, 16 feet for 6 1/2" roof panels.
9. An approved thermal barrier, such as 7/16-inch thick wood-based structural -use sheathing, must be installed over the top surface of floor panels.

Table R-4-LVL ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



SINGLE LVL SPLINES @ 4'-0" On Center																			
Thickness		Allowable Deflection	PANEL SPAN (feet)																
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4 1/2"	3 5/8"	L/360	142	102	63	49	36	30	24	20	17	14	12	—	—	—	—	—	—
		L/240	189	140	92	72	53	44	35	30	25	21	18	—	—	—	—	—	—
		L/180	189	154	120	95	70	58	47	40	33	28	24	—	—	—	—	—	—
6 1/2"	5 5/8"	L/360	246	192	138	111	84	69	54	45	37	31	26	22	19	17	15	13	12
		L/240	248	215	183	153	124	103	82	68	55	47	39	33	28	24	21	19	17
		L/180	248	215	183	162	142	120	99	87	74	63	52	44	37	32	28	25	23
8 1/4"	7 3/8"	L/360	267	228	190	160	130	107	84	70	57	48	40	34	29	26	23	20	18
		L/240	267	228	190	182	174	143	113	99	86	73	60	51	43	38	33	30	27
		L/180	267	228	190	182	174	157	140	119	98	84	71	62	54	48	43	38	34
10 1/4"	9 3/8"	L/360	295	245	196	189	183	153	123	104	85	73	62	54	46	41	36	32	28
		L/240	295	245	196	189	183	175	167	144	122	105	89	77	66	58	51	46	41
		L/180	295	245	196	189	183	175	167	156	145	129	114	99	84	74	65	58	52
12 1/4"	11 3/8"	L/360	322	268	215	202	190	184	178	150	123	106	90	78	67	59	52	46	41
		L/240	322	268	215	202	190	184	178	172	167	148	129	113	97	86	75	67	59
		L/180	322	268	215	202	190	184	178	172	167	157	148	136	124	109	95	85	76

Revision : January 20, 2014

Notes:

1. The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in **bold type** are based on panel strength rather than stiffness.
2. The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
3. Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
4. Acceptable LVL for assembly of the Insulspan SIP System is 1.8E LVL or better.
5. Insulspan SIP skins are nailed to the vertical LVL splines at panel joints using minimum 8d box nails @ 6" on center or equivalent.
6. Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
7. Insulspan SIP System exterior skins are minimum 7/16" thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
8. Roof panels subject to concentrated roof maintenance live loads must be limited to maximum span of 8 feet for 4 1/2" roof panels and 14 feet for 6 1/2" roof panels.
9. An approved thermal barrier, such as 7/16-inch thick wood-based structural-use sheathing, must be installed over the top surface of floor panels.

Table R-5-I ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



WOOD I-JOIST SPLINES @ 4'-0" On Center																			
Thickness		Allowable Deflection	PANEL SPAN (feet)																
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8 1/4"	7 3/8"	L/360	215	195	175	152	130	107	84	70	57	48	40	34	29	25	22	20	18
		L/240	215	195	175	152	130	117	105	95	86	73	60	51	43	38	33	30	27
		L/180	215	195	175	152	130	117	105	97	90	80	71	62	54	48	43	39	35
10 1/4"	9 3/8"	L/360	290	240	190	167	145	132	120	102	85	73	61	53	45	39	34	30	27
		L/240	290	240	190	167	145	132	120	110	100	90	80	70	60	54	48	43	38
		L/180	290	240	190	167	145	132	120	110	100	90	80	79	78	70	62	56	50
12 1/4"	11 3/8"	L/360	315	257	200	180	160	145	130	120	110	97	85	74	64	57	50	44	39
		L/240	315	257	200	180	160	145	130	120	110	102	95	87	80	72	64	58	52
		L/180	315	257	200	180	160	145	130	120	110	102	95	87	80	75	70	67	65

Revision : January 20, 2014

Notes:

1. The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in **bold type** are based on panel strength rather than stiffness.
2. The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
3. Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
4. Acceptable wood I-joists for assembly of the Insulspan SIP System are Nascor NJH, Jager JSI2000 and Trus Joist TJI 100C or better.
5. Insulspan SIP skins are nailed to the vertical wood I-joist splines at panel joints using minimum 8d box nails @ 6" on center or equivalent.
6. Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
7. Insulspan SIP System exterior skins are minimum 7/16" thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
8. An approved thermal barrier, such as 7/16-inch thick wood-based structural-use sheathing, must be installed over the top surface of floor panels.

Table R-6-DLVL ROOF AND FLOOR TRANSVERSE DESIGN LOAD (psf)



DOUBLE LVL SPLINES @ 4'-0" On Center																			
Thickness		Allowable Deflection	PANEL SPAN (feet)																
SIP	EPS		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4 1/2"	3 5/8"	L/360	200	141	82	63	45	36	28	23	19	16	14	12	10	–	–	–	–
		L/240	200	160	121	94	67	54	42	35	29	25	21	18	16	–	–	–	–
		L/180	200	179	158	123	88	72	56	47	39	33	28	24	21	–	–	–	–
6 1/2"	5 5/8"	L/360	248	215	183	143	104	84	65	54	43	37	31	27	23	20	18	16	14
		L/240	248	215	183	166	150	122	95	79	63	54	45	39	33	29	26	23	21
		L/180	248	215	183	169	156	140	124	103	82	70	58	51	44	39	34	30	27
8 1/4"	7 3/8"	L/360	267	228	190	184	179	144	110	92	75	64	53	46	39	34	30	26	23
		L/240	267	228	190	184	179	165	152	130	109	93	77	66	56	49	43	38	34
		L/180	267	228	190	184	179	165	152	143	135	117	100	86	73	64	56	50	44
10 1/4"	9 3/8"	L/360	295	245	196	190	185	179	174	148	122	104	87	75	64	56	49	43	38
		L/240	295	245	196	190	185	179	174	164	154	140	126	110	94	82	71	63	55
		L/180	295	245	196	190	185	179	174	164	154	147	140	131	122	107	92	82	72
12 1/4"	11 3/8"	L/360	322	268	215	202	190	186	182	177	172	151	130	113	97	85	73	65	57
		L/240	322	268	215	202	190	186	182	177	172	164	156	148	141	125	109	97	85
		L/180	322	268	215	202	190	186	182	177	172	164	156	150	145	141	137	123	110

Revision : January 20, 2014

Notes:

- The tabulated values are total design loads for panels with nominal 2" wide bearing at supports based upon design requirements of International Building Code® and International Residential Code®. Values printed in **bold type** are based on panel strength rather than stiffness.
- The span of a sloped roof panel must be measured along the slope. Design loads are to be calculated as normal loads acting perpendicular to the face of the panel.
- Insulspan SIP System must be assembled as per Insulspan Installation Guide and recommended assembly details.
- Acceptable LVL lumber for use with the Insulspan SIP System is 1.8E LVL or better.
- Insulspan SIP skins are nailed to the vertical double LVL splines at panel joints using minimum 8d box nails @ 6" on center or equivalent
- Insulspan SIP System core material is molded expanded polystyrene (EPS) insulation complying with the requirements of ASTM C 578, type I.
- Insulspan SIP System exterior skins are minimum 7/16" thick structural grade oriented strand board (OSB) conforming to DOC PS2, exposure 1.
- Roof panels subject to concentrated roof maintenance live loads must be limited to maximum span of 10 feet for 4 1/2" roof panels and 18 feet for 6 1/2" roof panels.
An approved thermal barrier, such as 7/16-inch thick wood-based structural-use sheathing, must be installed over the top surface of floor panels.