



SPAN TABLES 

COMPOSITE TOTALJOIST

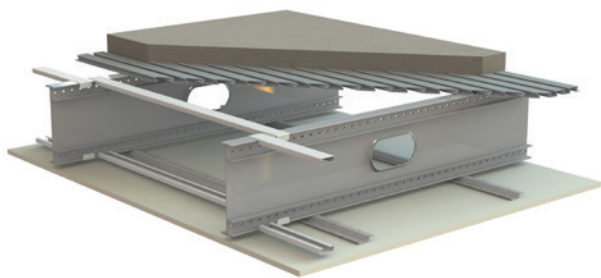


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TABLE 1. COMPOSITE TOTALJOIST PROPERTIES



Slab Depth	Depth	TotalJoist	24" o.c.			36" o.c.			48" o.c.		
			Weight (psf)	I_{xc} (in ⁴)	M_{rc} (k-ft)	Weight (psf)	I_{xc} (in ⁴)	M_{rc} (k-ft)	Weight (psf)	I_{xc} (in ⁴)	M_{rc} (k-ft)
3"	8"	8-ic-3	40	29.9	25	39.2	31.9	25.3	38.9	33.4	25.4
		8-ic-4	40.5	35.5	30.6	39.6	38	31	39.1	39.7	31.2
	10"	10-ic-3	40.2	42.6	31.4	39.4	45	31.7	39	46.7	31.8
		10-ic-4	40.7	50.8	38.4	39.7	53.9	38.9	39.2	56	39.1
	12"	12-ic-3	40.5	58.5	39.9	39.6	61.4	40.2	39.1	63.4	40.4
		12-ic-4	41.1	70	48.9	40	73.8	49.5	39.4	76.3	49.8
	14"	14-ic-3	40.7	76.4	48.3	39.7	79.8	48.8	39.2	82.1	49
		14-ic-4	41.4	91.6	59.4	40.2	96.1	60	39.6	99.1	60.4
	16"	16-ic-3	40.9	97.1	57.5	39.9	101	58	39.3	104	58.3
		16-ic-4	41.7	117	70.7	40.4	122	71.5	39.7	126	71.9
	18"	18-ic-4	42	155	82.9	40.6	162	83.8	39.9	167	84.3
4"	8"	8-ic-3	52.1	38.1	27.7	51.3	41.6	27.9	51	44.7	28.1
		8-ic-4	52.6	44.9	33.9	51.7	48.9	34.3	51.2	52.2	34.5
	10"	10-ic-3	52.3	51.8	34.2	51.4	55.7	34.5	51	58.9	34.7
		10-ic-4	52.8	61.5	42	51.8	66	42.4	51.3	69.6	42.6
	12"	12-ic-3	52.5	68.8	43.1	51.6	73.1	43.4	51.2	76.6	43.6
		12-ic-4	53.2	82.2	52.9	52.1	87.3	53.4	51.5	91.2	53.7
	14"	14-ic-3	52.8	87.8	51.8	51.8	92.5	52.3	51.3	96.2	52.5
		14-ic-4	53.5	105	63.7	52.3	111	64.3	51.6	115	64.7
	16"	16-ic-3	53	110	61.3	51.9	115	61.8	51.4	119	62
		16-ic-4	53.8	132	75.4	52.4	138	76.1	51.8	143	76.5
	18"	18-ic-4	54	174	87.9	52.6	182	88.8	51.9	187	89.3
5"	8"	8-ic-3	64.2	49.2	30.3	63.4	55.7	30.6	63	61.7	30.7
		8-ic-4	64.7	57.2	37.2	63.8	64.1	37.5	63.3	70.4	37.7
	10"	10-ic-3	64.3	63.8	37.1	63.5	70.5	37.4	63.1	76.7	37.5
		10-ic-4	64.9	74.9	45.5	63.9	82.3	45.9	63.4	88.8	46.2
	12"	12-ic-3	64.6	81.8	46.3	63.7	88.9	46.6	63.3	95.3	46.8
		12-ic-4	65.3	96.8	56.8	64.1	105	57.4	63.6	111	57.7
	14"	14-ic-3	64.9	102	55.3	63.9	109	55.7	63.4	116	55.9
		14-ic-4	65.6	121	68	64.3	129	68.6	63.7	136	69
	16"	16-ic-3	65.1	125	65	64	132	65.5	63.5	139	65.8
		16-ic-4	65.8	149	80	64.5	158	80.8	63.9	165	81.1
	18"	18-ic-4	66.1	194	92.9	64.7	204	93.8	64	212	94.2

NOTES

- Available flexural strength calculated in accordance with AISI S100-12 and as outlined in the Composite TotalJoist Span Tables document. See ICC-ESR 3787.
- Composite moment of inertia, I_{xc} , expressed in equivalent steel
- Modulus of elasticity of steel, $E_s = 29,500$ ksi
- Material properties are taken as follows:
 - Yield strength of steel, $f_y = 60$ ksi
 - Compressive Strength of Concrete, $f'_c = 3.0$ ksi

SPAN TABLES

COMPOSITE TOTALJOIST

**TABLE 2. COMPOSITE SPAN TABLES
RESIDENTIAL LOADING, 40 PSF LIVE LOAD**



Vibration Controlled – Open Areas

Slab Depth	Depth	Composite TotalJoist	40 psf Live Load / 15 psf Superimposed Dead Load					40 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 4"	17' 5"	16' 7"	16' 0"	15' 6"	18' 4"	17' 5"	16' 7"	16' 0"	15' 6"
		8-ic-4	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"
	10"	10-ic-3	20' 6"	19' 5"	18' 7"	17' 11"	17' 4"	20' 6"	19' 5"	18' 7"	17' 11"	17' 4"
		10-ic-4	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"
	12"	12-ic-3	22' 11"	21' 8"	20' 8"	19' 11"	19' 2"	22' 11"	21' 8"	20' 8"	19' 11"	19' 2"
		12-ic-4	24' 1"	22' 10"	21' 10"	21' 0"	20' 4"	24' 1"	22' 10"	21' 10"	21' 0"	20' 4"
	14"	14-ic-3	25' 1"	23' 8"	22' 8"	21' 10"	21' 1"	25' 1"	23' 8"	22' 8"	21' 10"	21' 1"
		14-ic-4	26' 7"	25' 0"	23' 11"	23' 0"	22' 2"	26' 7"	25' 0"	23' 11"	23' 0"	22' 2"
	16"	16-ic-3	27' 6"	25' 11"	24' 7"	23' 8"	22' 11"	27' 6"	25' 11"	24' 7"	23' 8"	22' 11"
		16-ic-4	29' 1"	27' 5"	26' 1"	25' 0"	24' 2"	29' 1"	27' 5"	26' 1"	25' 0"	24' 2"
	18"	18-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
4"	8"	8-ic-3	19' 5"	18' 6"	17' 10"	17' 2"	16' 8"	19' 5"	18' 6"	17' 10"	17' 2"	16' 8"
		8-ic-4	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"
	10"	10-ic-3	21' 6"	20' 5"	19' 6"	18' 10"	18' 4"	21' 6"	20' 5"	19' 6"	18' 10"	18' 4"
		10-ic-4	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"
	12"	12-ic-3	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"
		12-ic-4	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"
	14"	14-ic-3	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"
		14-ic-4	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"
	16"	16-ic-3	28' 6"	26' 11"	25' 7"	24' 6"	23' 7"	28' 6"	26' 11"	25' 7"	24' 6"	23' 7"
		16-ic-4	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"
	18"	18-ic-4	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"
5"	8"	8-ic-3	20' 10"	19' 11"	19' 2"	18' 7"	18' 0"	20' 10"	19' 11"	19' 2"	18' 7"	18' 0"
		8-ic-4	21' 10"	20' 10"	20' 0"	19' 5"	18' 11"	21' 10"	20' 10"	20' 0"	19' 5"	18' 11"
	10"	10-ic-3	22' 10"	21' 8"	20' 10"	20' 1"	19' 7"	22' 10"	21' 8"	20' 10"	20' 1"	19' 7"
		10-ic-4	24' 0"	22' 8"	21' 10"	21' 1"	20' 6"	24' 0"	22' 8"	21' 10"	21' 1"	20' 6"
	12"	12-ic-3	25' 1"	23' 8"	22' 8"	21' 11"	21' 4"	25' 1"	23' 8"	22' 8"	21' 11"	21' 4"
		12-ic-4	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"
	14"	14-ic-3	27' 4"	25' 10"	24' 7"	23' 8"	22' 11"	27' 4"	25' 10"	24' 7"	23' 8"	22' 11"
		14-ic-4	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"
	16"	16-ic-3	29' 7"	27' 11"	26' 6"	25' 6"	24' 7"	29' 7"	27' 11"	26' 6"	25' 6"	24' 7"
		16-ic-4	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"
	18"	18-ic-4	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"

Please see **NOTES**, p. 14.

**TABLE 3. COMPOSITE SPAN TABLES
RESIDENTIAL LOADING, 40 PSF LIVE LOAD**



Vibration Controlled – Full Height Partitions

Slab Depth	Depth	Composite TotalJoist	40 psf Live Load / 15 psf Superimposed Dead Load					40 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	19' 4"	18' 2"	17' 5"	16' 10"	16' 4"	19' 4"	18' 2"	17' 5"	16' 10"	16' 4"
		8-ic-4	20' 4"	19' 2"	18' 4"	17' 8"	17' 1"	20' 4"	19' 2"	18' 4"	17' 8"	17' 1"
	10"	10-ic-3	21' 10"	20' 6"	19' 6"	18' 10"	18' 2"	21' 10"	20' 6"	19' 6"	18' 10"	18' 2"
		10-ic-4	23' 1"	21' 10"	20' 8"	19' 10"	19' 1"	23' 1"	21' 10"	20' 8"	19' 10"	19' 1"
	12"	12-ic-3	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"
		12-ic-4	26' 1"	24' 7"	23' 5"	22' 5"	21' 6"	26' 1"	24' 7"	23' 5"	22' 5"	21' 6"
	14"	14-ic-3	27' 4"	25' 8"	24' 5"	23' 5"	22' 6"	27' 4"	25' 8"	24' 5"	23' 5"	22' 6"
		14-ic-4	28' 11"	27' 2"	25' 11"	24' 10"	23' 11"	28' 11"	27' 2"	25' 11"	24' 10"	23' 11"
	16"	16-ic-3	29' 11"	28' 1"	26' 8"	25' 7"	24' 7"	29' 11"	28' 1"	26' 8"	25' 7"	24' 7"
		16-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
	18"	18-ic-4	34' 5"	32' 5"	30' 10"	29' 5"	28' 5"	34' 5"	32' 5"	30' 10"	29' 5"	28' 5"
4"	8"	8-ic-3	20' 10"	19' 8"	18' 11"	18' 2"	17' 8"	20' 10"	19' 8"	18' 11"	18' 2"	17' 8"
		8-ic-4	21' 11"	20' 8"	19' 10"	19' 1"	18' 6"	21' 11"	20' 8"	19' 10"	19' 1"	18' 6"
	10"	10-ic-3	23' 2"	21' 11"	20' 11"	20' 1"	19' 6"	23' 2"	21' 11"	20' 11"	20' 1"	19' 6"
		10-ic-4	24' 6"	23' 1"	22' 0"	21' 2"	20' 6"	24' 6"	23' 1"	22' 0"	21' 2"	20' 6"
	12"	12-ic-3	25' 10"	24' 4"	23' 2"	22' 2"	21' 6"	25' 10"	24' 4"	23' 2"	22' 2"	21' 6"
		12-ic-4	27' 5"	25' 10"	24' 6"	23' 6"	22' 8"	27' 5"	25' 10"	24' 6"	23' 6"	22' 8"
	14"	14-ic-3	28' 6"	26' 8"	25' 5"	24' 4"	23' 6"	28' 6"	26' 8"	25' 5"	24' 4"	23' 6"
		14-ic-4	30' 2"	28' 4"	26' 11"	25' 10"	24' 11"	30' 2"	28' 4"	26' 11"	25' 10"	24' 11"
	16"	16-ic-3	31' 1"	29' 2"	27' 8"	26' 6"	25' 6"	31' 1"	29' 2"	27' 8"	26' 6"	25' 6"
		16-ic-4	33' 1"	31' 0"	29' 5"	28' 1"	27' 1"	33' 1"	31' 0"	29' 5"	28' 1"	27' 1"
	18"	18-ic-4	36' 0"	33' 8"	31' 11"	30' 6"	29' 4"	36' 0"	33' 8"	31' 11"	30' 6"	29' 4"
5"	8"	8-ic-3	22' 6"	21' 6"	20' 8"	19' 3"	18' 0"	22' 6"	21' 6"	20' 8"	19' 3"	18' 0"
		8-ic-4	23' 7"	22' 6"	21' 7"	20' 11"	20' 2"	23' 7"	22' 6"	21' 7"	20' 11"	20' 2"
	10"	10-ic-3	24' 10"	23' 6"	22' 6"	21' 8"	20' 6"	24' 10"	23' 6"	22' 6"	21' 8"	20' 6"
		10-ic-4	26' 1"	24' 8"	23' 7"	22' 10"	22' 1"	26' 1"	24' 8"	23' 7"	22' 10"	22' 1"
	12"	12-ic-3	27' 5"	25' 10"	24' 8"	23' 10"	23' 0"	27' 5"	25' 10"	24' 8"	23' 10"	23' 0"
		12-ic-4	29' 0"	27' 4"	26' 0"	25' 0"	24' 2"	29' 0"	27' 4"	26' 0"	25' 0"	24' 2"
	14"	14-ic-3	30' 0"	28' 2"	26' 10"	25' 10"	24' 11"	30' 0"	28' 2"	26' 10"	25' 10"	24' 11"
		14-ic-4	31' 11"	29' 11"	28' 5"	27' 2"	26' 4"	31' 11"	29' 11"	28' 5"	27' 2"	26' 4"
	16"	16-ic-3	32' 8"	30' 7"	29' 1"	27' 11"	26' 11"	32' 8"	30' 7"	29' 1"	27' 11"	26' 11"
		16-ic-4	34' 11"	32' 7"	30' 11"	29' 7"	28' 6"	34' 11"	32' 7"	30' 11"	29' 7"	28' 6"
	18"	18-ic-4	37' 11"	35' 5"	33' 6"	31' 11"	30' 8"	37' 11"	35' 5"	33' 6"	31' 11"	30' 8"

Please see **NOTES**, p. 14.



**TABLE 4. COMPOSITE SPAN TABLES
OFFICE LOADING, 50 PSF LIVE LOAD**

Vibration Controlled – Open Areas

Slab Depth	Depth	Composite TotalJoist	50 psf Live Load / 15 psf Superimposed Dead Load					50 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 4"	17' 5"	16' 7"	16' 0"	15' 6"	18' 4"	17' 5"	16' 7"	16' 0"	15' 6"
		8-ic-4	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"
	10"	10-ic-3	20' 6"	19' 5"	18' 7"	17' 11"	17' 4"	20' 6"	19' 5"	18' 7"	17' 11"	17' 4"
		10-ic-4	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"
	12"	12-ic-3	22' 11"	21' 8"	20' 8"	19' 11"	19' 2"	22' 11"	21' 8"	20' 8"	19' 11"	19' 2"
		12-ic-4	24' 1"	22' 10"	21' 10"	21' 0"	20' 4"	24' 1"	22' 10"	21' 10"	21' 0"	20' 4"
	14"	14-ic-3	25' 1"	23' 8"	22' 8"	21' 10"	21' 1"	25' 1"	23' 8"	22' 8"	21' 10"	21' 1"
		14-ic-4	26' 7"	25' 0"	23' 11"	23' 0"	22' 2"	26' 7"	25' 0"	23' 11"	23' 0"	22' 2"
	16"	16-ic-3	27' 6"	25' 11"	24' 7"	23' 8"	22' 11"	27' 6"	25' 11"	24' 7"	23' 8"	22' 11"
		16-ic-4	29' 1"	27' 5"	26' 1"	25' 0"	24' 2"	29' 1"	27' 5"	26' 1"	25' 0"	24' 2"
	18"	18-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
4"	8"	8-ic-3	19' 5"	18' 6"	17' 10"	17' 2"	16' 8"	19' 5"	18' 6"	17' 10"	17' 2"	16' 8"
		8-ic-4	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"
	10"	10-ic-3	21' 6"	20' 5"	19' 6"	18' 10"	18' 4"	21' 6"	20' 5"	19' 6"	18' 10"	18' 4"
		10-ic-4	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"
	12"	12-ic-3	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"
		12-ic-4	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"
	14"	14-ic-3	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"
		14-ic-4	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"
	16"	16-ic-3	28' 6"	26' 11"	25' 7"	24' 6"	23' 7"	28' 6"	26' 11"	25' 7"	24' 6"	23' 7"
		16-ic-4	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"
	18"	18-ic-4	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"
5"	8"	8-ic-3	20' 10"	19' 11"	19' 2"	18' 7"	18' 0"	20' 10"	19' 11"	19' 2"	18' 7"	18' 0"
		8-ic-4	21' 10"	20' 10"	20' 0"	19' 5"	18' 11"	21' 10"	20' 10"	20' 0"	19' 5"	18' 11"
	10"	10-ic-3	22' 10"	21' 8"	20' 10"	20' 1"	19' 7"	22' 10"	21' 8"	20' 10"	20' 1"	19' 7"
		10-ic-4	24' 0"	22' 8"	21' 10"	21' 1"	20' 6"	24' 0"	22' 8"	21' 10"	21' 1"	20' 6"
	12"	12-ic-3	25' 1"	23' 8"	22' 8"	21' 11"	21' 4"	25' 1"	23' 8"	22' 8"	21' 11"	21' 4"
		12-ic-4	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"
	14"	14-ic-3	27' 4"	25' 10"	24' 7"	23' 8"	22' 11"	27' 4"	25' 10"	24' 7"	23' 8"	22' 11"
		14-ic-4	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"
	16"	16-ic-3	29' 7"	27' 11"	26' 6"	25' 6"	24' 7"	29' 7"	27' 11"	26' 6"	25' 6"	24' 7"
		16-ic-4	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"
	18"	18-ic-4	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"

Please see **NOTES**, p. 14.

SPAN TABLES

COMPOSITE TOTALJOIST

**TABLE 5. COMPOSITE SPAN TABLES
OFFICE LOADING, 50 PSF LIVE LOAD**



Vibration Controlled – Full Height Partitions

Slab Depth	Depth	Composite TotalJoist	50 psf Live Load / 15 psf Superimposed Dead Load					50 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	19' 4"	18' 2"	17' 5"	16' 10"	16' 4"	19' 4"	18' 2"	17' 5"	16' 10"	16' 4"
		8-ic-4	20' 4"	19' 2"	18' 4"	17' 8"	17' 1"	20' 4"	19' 2"	18' 4"	17' 8"	17' 1"
	10"	10-ic-3	21' 10"	20' 6"	19' 6"	18' 10"	18' 2"	21' 10"	20' 6"	19' 6"	18' 10"	18' 2"
		10-ic-4	23' 1"	21' 10"	20' 8"	19' 10"	19' 1"	23' 1"	21' 10"	20' 8"	19' 10"	19' 1"
	12"	12-ic-3	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"
		12-ic-4	26' 1"	24' 7"	23' 5"	22' 5"	21' 6"	26' 1"	24' 7"	23' 5"	22' 5"	21' 6"
	14"	14-ic-3	27' 4"	25' 8"	24' 5"	23' 5"	22' 6"	27' 4"	25' 8"	24' 5"	23' 5"	22' 6"
		14-ic-4	28' 11"	27' 2"	25' 11"	24' 10"	23' 11"	28' 11"	27' 2"	25' 11"	24' 10"	23' 11"
	16"	16-ic-3	29' 11"	28' 1"	26' 8"	25' 7"	24' 7"	29' 11"	28' 1"	26' 8"	25' 7"	24' 7"
		16-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
	18"	18-ic-4	34' 5"	32' 5"	30' 10"	29' 5"	28' 5"	34' 5"	32' 5"	30' 10"	29' 5"	28' 5"
4"	8"	8-ic-3	20' 10"	19' 8"	18' 11"	18' 2"	17' 8"	20' 10"	19' 8"	18' 11"	18' 2"	17' 8"
		8-ic-4	21' 11"	20' 8"	19' 10"	19' 1"	18' 6"	21' 11"	20' 8"	19' 10"	19' 1"	18' 6"
	10"	10-ic-3	23' 2"	21' 11"	20' 11"	20' 1"	19' 6"	23' 2"	21' 11"	20' 11"	20' 1"	19' 6"
		10-ic-4	24' 6"	23' 1"	22' 0"	21' 2"	20' 6"	24' 6"	23' 1"	22' 0"	21' 2"	20' 6"
	12"	12-ic-3	25' 10"	24' 4"	23' 2"	22' 2"	21' 6"	25' 10"	24' 4"	23' 2"	22' 2"	21' 6"
		12-ic-4	27' 5"	25' 10"	24' 6"	23' 6"	22' 8"	27' 5"	25' 10"	24' 6"	23' 6"	22' 8"
	14"	14-ic-3	28' 6"	26' 8"	25' 5"	24' 4"	23' 6"	28' 6"	26' 8"	25' 5"	24' 4"	23' 6"
		14-ic-4	30' 2"	28' 4"	26' 11"	25' 10"	24' 11"	30' 2"	28' 4"	26' 11"	25' 10"	24' 11"
	16"	16-ic-3	31' 1"	29' 2"	27' 8"	26' 6"	25' 6"	31' 1"	29' 2"	27' 8"	26' 6"	25' 6"
		16-ic-4	33' 1"	31' 0"	29' 5"	28' 1"	27' 1"	33' 1"	31' 0"	29' 5"	28' 1"	27' 1"
	18"	18-ic-4	36' 0"	33' 8"	31' 11"	30' 6"	29' 4"	36' 0"	33' 8"	31' 11"	30' 6"	29' 4"
5"	8"	8-ic-3	22' 6"	21' 6"	20' 8"	19' 3"	18' 0"	22' 6"	21' 6"	20' 8"	19' 3"	18' 0"
		8-ic-4	23' 7"	22' 6"	21' 7"	20' 11"	20' 2"	23' 7"	22' 6"	21' 7"	20' 11"	20' 2"
	10"	10-ic-3	24' 10"	23' 6"	22' 6"	21' 8"	20' 6"	24' 10"	23' 6"	22' 6"	21' 6"	20' 1"
		10-ic-4	26' 1"	24' 8"	23' 7"	22' 10"	22' 1"	26' 1"	24' 8"	23' 7"	22' 10"	22' 1"
	12"	12-ic-3	27' 5"	25' 10"	24' 8"	23' 10"	23' 0"	27' 5"	25' 10"	24' 8"	23' 10"	22' 5"
		12-ic-4	29' 0"	27' 4"	26' 0"	25' 0"	24' 2"	29' 0"	27' 4"	26' 0"	25' 0"	24' 2"
	14"	14-ic-3	30' 0"	28' 2"	26' 10"	25' 10"	24' 11"	30' 0"	28' 2"	26' 10"	25' 10"	24' 6"
		14-ic-4	31' 11"	29' 11"	28' 5"	27' 2"	26' 4"	31' 11"	29' 11"	28' 5"	27' 2"	26' 4"
	16"	16-ic-3	32' 8"	30' 7"	29' 1"	27' 11"	26' 11"	32' 8"	30' 7"	29' 1"	27' 11"	26' 7"
		16-ic-4	34' 11"	32' 7"	30' 11"	29' 7"	28' 6"	34' 11"	32' 7"	30' 11"	29' 7"	28' 6"
	18"	18-ic-4	37' 11"	35' 5"	33' 6"	31' 11"	30' 8"	37' 11"	35' 5"	33' 6"	31' 11"	30' 8"

Please see **NOTES**, p. 14.

**TABLE 6. COMPOSITE SPAN TABLES
MECHANICAL ROOM LOADING, 75 PSF LIVE LOAD**



Vibration Controlled – Open Areas

Slab Depth	Depth	Composite TotalJoist	75 psf Live Load / 15 psf Superimposed Dead Load					75 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 4"	17' 5"	16' 7"	16' 0"	15' 5"	18' 4"	17' 5"	16' 7"	16' 0"	15' 5"
		8-ic-4	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"
	10"	10-ic-3	20' 6"	19' 5"	18' 7"	17' 11"	17' 3"	20' 6"	19' 5"	18' 7"	17' 11"	17' 3"
		10-ic-4	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"
	12"	12-ic-3	22' 11"	21' 8"	20' 8"	19' 10"	19' 1"	22' 11"	21' 8"	20' 8"	19' 10"	19' 1"
		12-ic-4	24' 1"	22' 10"	21' 10"	21' 0"	20' 3"	24' 1"	22' 10"	21' 10"	21' 0"	20' 3"
	14"	14-ic-3	25' 1"	23' 8"	22' 8"	21' 8"	20' 9"	25' 1"	23' 8"	22' 8"	21' 8"	20' 9"
		14-ic-4	26' 7"	25' 0"	23' 11"	23' 0"	22' 1"	26' 7"	25' 0"	23' 11"	23' 0"	22' 1"
	16"	16-ic-3	27' 6"	25' 11"	24' 6"	23' 5"	22' 6"	27' 6"	25' 11"	24' 6"	23' 5"	22' 6"
		16-ic-4	29' 1"	27' 5"	26' 1"	24' 11"	23' 11"	29' 1"	27' 5"	26' 1"	24' 11"	23' 11"
	18"	18-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
4"	8"	8-ic-3	19' 5"	18' 6"	17' 10"	17' 2"	16' 8"	19' 5"	18' 6"	17' 10"	17' 2"	16' 4"
		8-ic-4	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"	20' 5"	19' 4"	18' 7"	18' 0"	17' 6"
	10"	10-ic-3	21' 6"	20' 5"	19' 6"	18' 10"	18' 4"	21' 6"	20' 5"	19' 6"	18' 10"	18' 1"
		10-ic-4	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"	22' 8"	21' 6"	20' 6"	19' 8"	19' 1"
	12"	12-ic-3	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"	23' 11"	22' 7"	21' 7"	20' 8"	20' 0"
		12-ic-4	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"
	14"	14-ic-3	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"	26' 2"	24' 8"	23' 6"	22' 7"	21' 10"
		14-ic-4	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"
	16"	16-ic-3	28' 6"	26' 11"	25' 7"	24' 5"	23' 6"	28' 6"	26' 11"	25' 7"	24' 5"	23' 6"
		16-ic-4	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"
	18"	18-ic-4	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"
5"	8"	8-ic-3	20' 10"	19' 11"	19' 2"	18' 1"	16' 11"	20' 10"	19' 11"	19' 0"	17' 7"	16' 6"
		8-ic-4	21' 10"	20' 10"	20' 0"	19' 5"	18' 9"	21' 10"	20' 10"	20' 0"	19' 5"	18' 3"
	10"	10-ic-3	22' 10"	21' 8"	20' 10"	20' 0"	18' 9"	22' 10"	21' 8"	20' 10"	19' 6"	18' 3"
		10-ic-4	24' 0"	22' 8"	21' 10"	21' 1"	20' 6"	24' 0"	22' 8"	21' 10"	21' 1"	20' 3"
	12"	12-ic-3	25' 1"	23' 8"	22' 8"	21' 11"	20' 11"	25' 1"	23' 8"	22' 8"	21' 9"	20' 4"
		12-ic-4	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"	26' 6"	25' 0"	23' 11"	23' 0"	22' 4"
	14"	14-ic-3	27' 4"	25' 10"	24' 7"	23' 8"	22' 10"	27' 4"	25' 10"	24' 7"	23' 8"	22' 3"
		14-ic-4	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"	28' 11"	27' 2"	26' 0"	25' 0"	24' 1"
	16"	16-ic-3	29' 7"	27' 11"	26' 6"	25' 6"	24' 7"	29' 7"	27' 11"	26' 6"	25' 6"	24' 1"
		16-ic-4	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"	31' 5"	29' 6"	28' 1"	27' 0"	26' 0"
	18"	18-ic-4	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"	33' 11"	31' 10"	30' 4"	29' 0"	27' 11"

Please see **NOTES**, p. 14.

SPAN TABLES

**TABLE 7. COMPOSITE SPAN TABLES
MECHANICAL ROOM LOADING, 75 PSF LIVE LOAD**



Vibration Controlled – Full Height Partitions

Slab Depth	Depth	Composite TotalJoist	75 psf Live Load / 15 psf Superimposed Dead Load					75 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 8"	17' 7"	16' 8"	16' 0"	15' 5"	18' 8"	17' 7"	16' 8"	16' 0"	15' 5"
		8-ic-4	19' 10"	18' 7"	17' 8"	16' 11"	16' 4"	19' 10"	18' 7"	17' 8"	16' 11"	16' 4"
	10"	10-ic-3	21' 0"	19' 9"	18' 9"	17' 11"	17' 3"	21' 0"	19' 9"	18' 9"	17' 11"	17' 3"
		10-ic-4	22' 4"	20' 11"	19' 10"	19' 0"	18' 3"	22' 4"	20' 11"	19' 10"	19' 0"	18' 3"
	12"	12-ic-3	23' 5"	21' 11"	20' 9"	19' 10"	19' 1"	23' 5"	21' 11"	20' 9"	19' 10"	19' 1"
		12-ic-4	24' 10"	23' 3"	22' 1"	21' 1"	20' 3"	24' 10"	23' 3"	22' 1"	21' 1"	20' 3"
	14"	14-ic-3	25' 7"	23' 11"	22' 8"	21' 8"	20' 9"	25' 7"	23' 11"	22' 8"	21' 8"	20' 9"
		14-ic-4	27' 2"	25' 5"	24' 1"	23' 0"	22' 1"	27' 2"	25' 5"	24' 1"	23' 0"	22' 1"
	16"	16-ic-3	27' 8"	25' 11"	24' 6"	23' 5"	22' 6"	27' 8"	25' 11"	24' 6"	23' 5"	22' 6"
		16-ic-4	29' 5"	27' 7"	26' 1"	24' 11"	23' 11"	29' 5"	27' 7"	26' 1"	24' 11"	23' 11"
	18"	18-ic-4	32' 4"	30' 4"	28' 9"	27' 5"	26' 4"	32' 4"	30' 4"	28' 9"	27' 5"	26' 4"
4"	8"	8-ic-3	20' 3"	19' 1"	18' 3"	17' 6"	16' 9"	20' 3"	19' 1"	18' 3"	17' 5"	16' 4"
		8-ic-4	21' 5"	20' 2"	19' 3"	18' 6"	17' 10"	21' 5"	20' 2"	19' 3"	18' 6"	17' 10"
	10"	10-ic-3	22' 5"	21' 1"	20' 1"	19' 3"	18' 7"	22' 5"	21' 1"	20' 1"	19' 3"	18' 1"
		10-ic-4	23' 9"	22' 4"	21' 3"	20' 5"	19' 8"	23' 9"	22' 4"	21' 3"	20' 5"	19' 8"
	12"	12-ic-3	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"	24' 8"	23' 2"	22' 0"	21' 1"	20' 4"
		12-ic-4	26' 2"	24' 7"	23' 4"	22' 4"	21' 6"	26' 2"	24' 7"	23' 4"	22' 4"	21' 6"
	14"	14-ic-3	26' 9"	25' 1"	23' 10"	22' 9"	21' 11"	26' 9"	25' 1"	23' 10"	22' 9"	21' 11"
		14-ic-4	28' 5"	26' 8"	25' 3"	24' 2"	23' 3"	28' 5"	26' 8"	25' 3"	24' 2"	23' 3"
	16"	16-ic-3	28' 10"	27' 0"	25' 7"	24' 5"	23' 6"	28' 10"	27' 0"	25' 7"	24' 5"	23' 6"
		16-ic-4	30' 8"	28' 9"	27' 3"	26' 0"	25' 0"	30' 8"	28' 9"	27' 3"	26' 0"	25' 0"
	18"	18-ic-4	33' 7"	31' 6"	29' 10"	28' 6"	27' 4"	33' 7"	31' 6"	29' 10"	28' 6"	27' 4"
5"	8"	8-ic-3	22' 1"	20' 11"	19' 6"	18' 1"	16' 11"	22' 1"	20' 9"	19' 0"	17' 7"	16' 6"
		8-ic-4	23' 3"	22' 0"	21' 1"	20' 1"	18' 9"	23' 3"	22' 0"	21' 0"	19' 6"	18' 3"
	10"	10-ic-3	24' 1"	22' 9"	21' 7"	20' 0"	18' 9"	24' 1"	22' 9"	21' 0"	19' 6"	18' 3"
		10-ic-4	25' 5"	24' 0"	22' 11"	22' 0"	20' 9"	25' 5"	24' 0"	22' 11"	21' 7"	20' 3"
	12"	12-ic-3	26' 2"	24' 8"	23' 6"	22' 4"	20' 11"	26' 2"	24' 8"	23' 5"	21' 9"	20' 4"
		12-ic-4	27' 8"	26' 0"	24' 10"	23' 10"	23' 0"	27' 8"	26' 0"	24' 10"	23' 10"	22' 7"
	14"	14-ic-3	28' 1"	26' 5"	25' 2"	24' 2"	22' 10"	28' 1"	26' 5"	25' 2"	23' 9"	22' 3"
		14-ic-4	29' 9"	28' 0"	26' 7"	25' 6"	24' 7"	29' 9"	28' 0"	26' 7"	25' 6"	24' 7"
	16"	16-ic-3	30' 1"	28' 3"	26' 10"	25' 8"	24' 9"	30' 1"	28' 3"	26' 10"	25' 8"	24' 1"
		16-ic-4	31' 11"	29' 11"	28' 5"	27' 3"	26' 3"	31' 11"	29' 11"	28' 5"	27' 3"	26' 3"
	18"	18-ic-4	34' 10"	32' 8"	31' 0"	29' 8"	28' 6"	34' 10"	32' 8"	31' 0"	29' 8"	28' 6"

Please see **NOTES**, p. 14.

SPAN TABLES

COMPOSITE TOTALJOIST

**TABLE 8. COMPOSITE SPAN TABLES
ASSEMBLY LOADING, 100 PSF LIVE LOAD**



Vibration Controlled – Open Areas

Slab Depth	Depth	Composite TotalJoist	100 psf Live Load / 15 psf Superimposed Dead Load					100 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 4"	17' 5"	16' 7"	16' 0"	15' 0"	18' 4"	17' 5"	16' 7"	15' 8"	14' 8"
		8-ic-4	19' 2"	18' 4"	17' 6"	16' 10"	16' 4"	19' 2"	18' 4"	17' 6"	16' 10"	16' 3"
	10"	10-ic-3	20' 6"	19' 5"	18' 7"	17' 11"	16' 10"	20' 6"	19' 5"	18' 7"	17' 6"	16' 5"
		10-ic-4	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"	21' 7"	20' 5"	19' 7"	18' 10"	18' 2"
	12"	12-ic-3	22' 11"	21' 8"	20' 8"	19' 10"	19' 0"	22' 11"	21' 8"	20' 8"	19' 9"	18' 6"
		12-ic-4	24' 1"	22' 10"	21' 10"	21' 0"	20' 3"	24' 1"	22' 10"	21' 10"	21' 0"	20' 3"
	14"	14-ic-3	25' 1"	23' 8"	22' 8"	21' 8"	20' 9"	25' 1"	23' 8"	22' 8"	21' 8"	20' 4"
		14-ic-4	26' 7"	25' 0"	23' 11"	23' 0"	22' 1"	26' 7"	25' 0"	23' 11"	23' 0"	22' 1"
	16"	16-ic-3	27' 6"	25' 11"	24' 6"	23' 5"	22' 6"	27' 6"	25' 11"	24' 6"	23' 5"	22' 2"
		16-ic-4	29' 1"	27' 5"	26' 1"	24' 11"	23' 11"	29' 1"	27' 5"	26' 1"	24' 11"	23' 11"
	18"	18-ic-4	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"	31' 8"	29' 10"	28' 4"	27' 1"	26' 1"
4"	8"	8-ic-3	19' 5"	18' 6"	17' 8"	16' 4"	15' 4"	19' 5"	18' 6"	17' 2"	15' 11"	14' 11"
		8-ic-4	20' 5"	19' 4"	18' 7"	18' 0"	17' 0"	20' 5"	19' 4"	18' 7"	17' 8"	16' 7"
	10"	10-ic-3	21' 6"	20' 5"	19' 6"	18' 2"	17' 0"	21' 6"	20' 5"	19' 1"	17' 9"	16' 7"
		10-ic-4	22' 8"	21' 6"	20' 6"	19' 8"	18' 10"	22' 8"	21' 6"	20' 6"	19' 8"	18' 5"
	12"	12-ic-3	23' 11"	22' 7"	21' 7"	20' 5"	19' 1"	23' 11"	22' 7"	21' 5"	19' 11"	18' 8"
		12-ic-4	25' 4"	23' 10"	22' 8"	21' 11"	21' 1"	25' 4"	23' 10"	22' 8"	21' 11"	20' 8"
	14"	14-ic-3	26' 2"	24' 8"	23' 6"	22' 4"	20' 11"	26' 2"	24' 8"	23' 6"	21' 10"	20' 5"
		14-ic-4	27' 8"	26' 1"	24' 11"	23' 11"	23' 1"	27' 8"	26' 1"	24' 11"	23' 11"	22' 8"
	16"	16-ic-3	28' 6"	26' 11"	25' 7"	24' 3"	22' 9"	28' 6"	26' 11"	25' 7"	23' 8"	22' 2"
		16-ic-4	30' 2"	28' 6"	27' 1"	26' 0"	25' 0"	30' 2"	28' 6"	27' 1"	26' 0"	24' 8"
	18"	18-ic-4	32' 8"	30' 10"	29' 4"	28' 0"	27' 0"	32' 8"	30' 10"	29' 4"	28' 0"	26' 7"
5"	8"	8-ic-3	20' 10"	19' 7"	17' 11"	16' 7"	15' 7"	20' 10"	19' 2"	17' 6"	16' 3"	15' 2"
		8-ic-4	21' 10"	20' 10"	19' 10"	18' 5"	17' 3"	21' 10"	20' 10"	19' 5"	18' 0"	16' 10"
	10"	10-ic-3	22' 10"	21' 8"	19' 10"	18' 4"	17' 2"	22' 10"	21' 2"	19' 4"	17' 11"	16' 10"
		10-ic-4	24' 0"	22' 8"	21' 10"	20' 4"	19' 1"	24' 0"	22' 8"	21' 5"	19' 11"	18' 8"
	12"	12-ic-3	25' 1"	23' 8"	22' 1"	20' 6"	19' 2"	25' 1"	23' 7"	21' 7"	20' 0"	18' 9"
		12-ic-4	26' 6"	25' 0"	23' 11"	22' 9"	21' 4"	26' 6"	25' 0"	23' 11"	22' 3"	20' 10"
	14"	14-ic-3	27' 4"	25' 10"	24' 2"	22' 5"	21' 0"	27' 4"	25' 10"	23' 7"	21' 11"	20' 6"
		14-ic-4	28' 11"	27' 2"	26' 0"	24' 10"	23' 3"	28' 11"	27' 2"	26' 0"	24' 3"	22' 9"
	16"	16-ic-3	29' 7"	27' 11"	26' 2"	24' 3"	22' 9"	29' 7"	27' 11"	25' 7"	23' 9"	22' 2"
		16-ic-4	31' 5"	29' 6"	28' 1"	26' 11"	25' 3"	31' 5"	29' 6"	28' 1"	26' 4"	24' 8"
	18"	18-ic-4	33' 11"	31' 10"	30' 4"	29' 0"	27' 2"	33' 11"	31' 10"	30' 4"	28' 4"	26' 7"

Please see **NOTES**, p. 14.

**TABLE 9. COMPOSITE SPAN TABLES
ASSEMBLY LOADING, 100 PSF LIVE LOAD**



Vibration Controlled – Full Height Partitions

Slab Depth	Depth	Composite TotalJoist	100 psf Live Load / 15 psf Superimposed Dead Load					100 psf Live Load / 25 psf Superimposed Dead Load				
			24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
3"	8"	8-ic-3	18' 8"	17' 7"	16' 8"	16' 0"	15' 0"	18' 8"	17' 7"	16' 8"	15' 8"	14' 8"
		8-ic-4	19' 10"	18' 7"	17' 8"	16' 11"	16' 4"	19' 10"	18' 7"	17' 8"	16' 11"	16' 3"
	10"	10-ic-3	21' 0"	19' 9"	18' 9"	17' 11"	16' 10"	21' 0"	19' 9"	18' 9"	17' 6"	16' 5"
		10-ic-4	22' 4"	20' 11"	19' 10"	19' 0"	18' 3"	22' 4"	20' 11"	19' 10"	19' 0"	18' 2"
	12"	12-ic-3	23' 5"	21' 11"	20' 9"	19' 10"	19' 0"	23' 5"	21' 11"	20' 9"	19' 9"	18' 6"
		12-ic-4	24' 10"	23' 3"	22' 1"	21' 1"	20' 3"	24' 10"	23' 3"	22' 1"	21' 1"	20' 3"
	14"	14-ic-3	25' 7"	23' 11"	22' 8"	21' 8"	20' 9"	25' 7"	23' 11"	22' 8"	21' 8"	20' 4"
		14-ic-4	27' 2"	25' 5"	24' 1"	23' 0"	22' 1"	27' 2"	25' 5"	24' 1"	23' 0"	22' 1"
	16"	16-ic-3	27' 8"	25' 11"	24' 6"	23' 5"	22' 6"	27' 8"	25' 11"	24' 6"	23' 5"	22' 2"
		16-ic-4	29' 5"	27' 7"	26' 1"	24' 11"	23' 11"	29' 5"	27' 7"	26' 1"	24' 11"	23' 11"
	18"	18-ic-4	32' 4"	30' 4"	28' 9"	27' 5"	26' 4"	32' 4"	30' 4"	28' 9"	27' 5"	26' 4"
4"	8"	8-ic-3	20' 3"	19' 1"	17' 8"	16' 4"	15' 4"	20' 3"	18' 10"	17' 2"	15' 11"	14' 11"
		8-ic-4	21' 5"	20' 2"	19' 3"	18' 1"	17' 0"	21' 5"	20' 2"	19' 1"	17' 8"	16' 7"
	10"	10-ic-3	22' 5"	21' 1"	19' 7"	18' 2"	17' 0"	22' 5"	20' 11"	19' 1"	17' 9"	16' 7"
		10-ic-4	23' 9"	22' 4"	21' 3"	20' 2"	18' 10"	23' 9"	22' 4"	21' 2"	19' 8"	18' 5"
	12"	12-ic-3	24' 8"	23' 2"	22' 0"	20' 5"	19' 1"	24' 8"	23' 2"	21' 5"	19' 11"	18' 8"
		12-ic-4	26' 2"	24' 7"	23' 4"	22' 4"	21' 2"	26' 2"	24' 7"	23' 4"	22' 1"	20' 8"
	14"	14-ic-3	26' 9"	25' 1"	23' 10"	22' 4"	20' 11"	26' 9"	25' 1"	23' 6"	21' 10"	20' 5"
		14-ic-4	28' 5"	26' 8"	25' 3"	24' 2"	23' 3"	28' 5"	26' 8"	25' 3"	24' 2"	22' 8"
	16"	16-ic-3	28' 10"	27' 0"	25' 7"	24' 3"	22' 9"	28' 10"	27' 0"	25' 7"	23' 8"	22' 2"
		16-ic-4	30' 8"	28' 9"	27' 3"	26' 0"	25' 0"	30' 8"	28' 9"	27' 3"	26' 0"	24' 8"
	18"	18-ic-4	33' 7"	31' 6"	29' 10"	28' 6"	27' 3"	33' 7"	31' 6"	29' 10"	28' 5"	26' 7"
5"	8"	8-ic-3	21' 10"	19' 7"	17' 11"	16' 7"	15' 7"	21' 4"	19' 2"	17' 6"	16' 3"	15' 2"
		8-ic-4	23' 3"	21' 8"	19' 10"	18' 5"	17' 3"	23' 3"	21' 2"	19' 5"	18' 0"	16' 10"
	10"	10-ic-3	24' 1"	21' 8"	19' 10"	18' 4"	17' 2"	23' 7"	21' 2"	19' 4"	17' 11"	16' 10"
		10-ic-4	25' 5"	23' 11"	21' 11"	20' 4"	19' 1"	25' 5"	23' 5"	21' 5"	19' 11"	18' 8"
	12"	12-ic-3	26' 2"	24' 2"	22' 1"	20' 6"	19' 2"	26' 2"	23' 7"	21' 7"	20' 0"	18' 9"
		12-ic-4	27' 8"	26' 0"	24' 6"	22' 9"	21' 4"	27' 8"	26' 0"	23' 11"	22' 3"	20' 10"
	14"	14-ic-3	28' 1"	26' 5"	24' 2"	22' 5"	21' 0"	28' 1"	25' 10"	23' 7"	21' 11"	20' 6"
		14-ic-4	29' 9"	28' 0"	26' 7"	24' 10"	23' 3"	29' 9"	28' 0"	26' 2"	24' 3"	22' 9"
	16"	16-ic-3	30' 1"	28' 3"	26' 2"	24' 3"	22' 9"	30' 1"	28' 0"	25' 7"	23' 9"	22' 2"
		16-ic-4	31' 11"	29' 11"	28' 5"	26' 11"	25' 3"	31' 11"	29' 11"	28' 5"	26' 4"	24' 8"
	18"	18-ic-4	34' 10"	32' 8"	31' 0"	29' 0"	27' 2"	34' 10"	32' 8"	30' 7"	28' 4"	26' 7"

Please see **NOTES**, p. 14.

SPAN TABLES

TABLE 10. COMPOSITE SPAN TABLES
ROOF LOADING



Depth	Composite TotalJoist	3" Slab				
		20 psf Snow Load / 20 psf Superimposed Dead Load				
		24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
8"	8-ic-3	29' 1"	26' 11"	24' 8"	22' 10"	21' 5"
	8-ic-4	30' 9"	28' 11"	27' 6"	25' 6"	23' 11"
10"	10-ic-3	32' 8"	30' 7"	28' 0"	26' 0"	24' 4"
	10-ic-4	34' 8"	32' 6"	30' 11"	29' 1"	27' 3"
12"	12-ic-3	36' 4"	34' 0"	31' 5"	29' 2"	27' 4"
	12-ic-4	38' 7"	36' 2"	34' 3"	32' 9"	30' 8"
14"	14-ic-3	39' 8"	37' 2"	34' 4"	31' 10"	29' 10"
	14-ic-4	42' 2"	39' 6"	37' 5"	35' 9"	33' 7"
16"	16-ic-3	43' 0"	40' 3"	36' 11"	34' 4"	32' 2"
	16-ic-4	45' 9"	42' 10"	40' 7"	38' 7"	36' 2"
18"	18-ic-4	50' 3"	47' 1"	44' 4"	41' 2"	38' 8"

3" Slab + 3" Topping For Roof Slope				
20 psf Snow Load / 57.5 psf Superimposed Dead Load				
24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
23' 4"	21' 11"	20' 10"	19' 10"	18' 7"
24' 8"	23' 2"	22' 1"	21' 1"	20' 4"
26' 3"	24' 7"	23' 4"	22' 2"	20' 9"
27' 10"	26' 1"	24' 9"	23' 8"	22' 9"
29' 2"	27' 4"	25' 10"	24' 9"	23' 5"
30' 11"	29' 0"	27' 6"	26' 3"	25' 3"
31' 10"	29' 10"	28' 3"	26' 11"	25' 9"
33' 10"	31' 8"	30' 0"	28' 8"	27' 7"
34' 6"	32' 3"	30' 7"	29' 2"	28' 0"
36' 8"	34' 4"	32' 6"	31' 1"	29' 10"
40' 4"	37' 9"	35' 9"	34' 2"	32' 10"

Depth	Composite TotalJoist	3" Slab				
		30 psf Snow Load / 20 psf Superimposed Dead Load				
		24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
8"	8-ic-3	27' 0"	25' 4"	23' 9"	22' 1"	20' 8"
	8-ic-4	28' 7"	26' 10"	25' 6"	24' 5"	22' 11"
10"	10-ic-3	30' 4"	28' 5"	26' 7"	24' 8"	23' 2"
	10-ic-4	32' 2"	30' 2"	28' 8"	27' 4"	25' 8"
12"	12-ic-3	33' 9"	31' 7"	29' 11"	27' 10"	26' 1"
	12-ic-4	35' 10"	33' 7"	31' 10"	30' 5"	28' 11"
14"	14-ic-3	36' 10"	34' 6"	32' 8"	30' 7"	28' 8"
	14-ic-4	39' 2"	36' 8"	34' 9"	33' 2"	31' 10"
16"	16-ic-3	39' 11"	37' 4"	35' 4"	33' 4"	31' 3"
	16-ic-4	42' 5"	39' 9"	37' 8"	35' 11"	34' 6"
18"	18-ic-4	46' 8"	43' 9"	41' 5"	39' 6"	37' 6"

3" Slab + 3" Topping For Roof Slope				
30 psf Snow Load / 57.5 psf Superimposed Dead Load				
24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
22' 5"	21' 0"	20' 0"	18' 10"	17' 7"
23' 8"	22' 3"	21' 2"	20' 3"	19' 6"
25' 2"	23' 7"	22' 5"	21' 0"	19' 9"
26' 8"	25' 1"	23' 9"	22' 9"	21' 10"
28' 0"	26' 3"	24' 10"	23' 8"	22' 2"
29' 8"	27' 10"	26' 5"	25' 3"	24' 3"
30' 7"	28' 8"	27' 1"	25' 11"	24' 5"
32' 6"	30' 5"	28' 10"	27' 7"	26' 6"
33' 2"	31' 0"	29' 4"	28' 0"	26' 8"
35' 3"	33' 0"	31' 3"	29' 10"	28' 8"
38' 9"	36' 3"	34' 4"	32' 10"	31' 6"

Please see **NOTES**, p. 14.

SPAN TABLES

COMPOSITE TOTALJOIST

TABLE 10. COMPOSITE SPAN TABLES (continued)
ROOF LOADING



Depth	Composite TotalJoist	3" Slab					3" Slab + 3" Topping For Roof Slope				
		40 psf Snow Load / 20 psf Superimposed Dead Load					40 psf Snow Load / 57.5 psf Superimposed Dead Load				
		24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
8"	8-ic-3	25' 5"	23' 10"	22' 4"	20' 9"	19' 5"	21' 7"	20' 3"	19' 3"	17' 11"	16' 10"
	8-ic-4	26' 10"	25' 3"	24' 0"	22' 11"	21' 6"	22' 10"	21' 6"	20' 5"	19' 7"	18' 7"
10"	10-ic-3	28' 7"	26' 9"	25' 0"	23' 2"	21' 9"	24' 3"	22' 9"	21' 7"	20' 1"	18' 10"
	10-ic-4	30' 3"	28' 5"	27' 0"	25' 8"	24' 1"	25' 9"	24' 2"	22' 11"	21' 11"	20' 10"
12"	12-ic-3	31' 9"	29' 9"	28' 2"	26' 1"	24' 6"	27' 0"	25' 3"	24' 0"	22' 7"	21' 2"
	12-ic-4	33' 8"	31' 7"	29' 11"	28' 8"	27' 1"	28' 8"	26' 10"	25' 6"	24' 4"	23' 5"
14"	14-ic-3	34' 8"	32' 6"	30' 9"	28' 9"	26' 11"	29' 6"	27' 7"	26' 2"	24' 11"	23' 4"
	14-ic-4	36' 10"	34' 6"	32' 9"	31' 3"	29' 10"	31' 4"	29' 4"	27' 10"	26' 7"	25' 6"
16"	16-ic-3	37' 7"	35' 2"	33' 3"	31' 4"	29' 4"	32' 0"	29' 11"	28' 4"	27' 0"	25' 5"
	16-ic-4	39' 11"	37' 5"	35' 5"	33' 10"	32' 6"	34' 0"	31' 10"	30' 2"	28' 9"	27' 8"
18"	18-ic-4	43' 11"	41' 2"	39' 0"	37' 2"	35' 3"	37' 4"	35' 0"	33' 2"	31' 8"	30' 5"

Depth	Composite TotalJoist	3" Slab					3" Slab + 3" Topping For Roof Slope				
		50 psf Snow Load / 20 psf Superimposed Dead Load					50 psf Snow Load / 57.5 psf Superimposed Dead Load				
		24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.	24" o.c.	30" o.c.	36" o.c.	42" o.c.	48" o.c.
8"	8-ic-3	23' 7"	22' 2"	21' 0"	19' 7"	18' 4"	20' 11"	19' 8"	18' 6"	17' 2"	16' 1"
	8-ic-4	24' 11"	23' 5"	22' 3"	21' 4"	20' 4"	22' 1"	20' 10"	19' 9"	18' 11"	17' 10"
10"	10-ic-3	26' 6"	24' 10"	23' 7"	21' 11"	20' 7"	23' 6"	22' 1"	20' 9"	19' 3"	18' 0"
	10-ic-4	28' 1"	26' 5"	25' 0"	23' 11"	22' 9"	24' 11"	23' 5"	22' 2"	21' 3"	20' 0"
12"	12-ic-3	29' 5"	27' 7"	26' 2"	24' 8"	23' 2"	26' 2"	24' 6"	23' 2"	21' 8"	20' 4"
	12-ic-4	31' 3"	29' 4"	27' 10"	26' 7"	25' 7"	27' 9"	26' 0"	24' 8"	23' 7"	22' 6"
14"	14-ic-3	32' 2"	30' 2"	28' 7"	27' 2"	25' 6"	28' 7"	26' 9"	25' 4"	23' 10"	22' 4"
	14-ic-4	34' 2"	32' 1"	30' 4"	29' 0"	27' 10"	30' 4"	28' 5"	26' 11"	25' 9"	24' 9"
16"	16-ic-3	34' 11"	32' 8"	30' 11"	29' 6"	27' 9"	30' 11"	28' 11"	27' 5"	26' 0"	24' 5"
	16-ic-4	37' 1"	34' 9"	32' 11"	31' 5"	30' 2"	32' 11"	30' 10"	29' 2"	27' 10"	26' 9"
18"	18-ic-4	40' 9"	38' 2"	36' 2"	34' 6"	33' 2"	36' 2"	33' 10"	32' 1"	30' 8"	29' 3"

Please see **NOTES**, p. 14.



NOTES

- 1 Spans based on the following criteria:
 - a) Spans are based on center to center of bearing assuming 3" bearing both sides
 - b) Strength
 - c) Deflection
 - i) Live load deflection limited to $L/480$ for floors except for 100psf Live Load, where live load deflection is limited to $L/360$
 - ii) Live load deflection limited to $L/360$ for roofs
 - iii) Total load deflection limited to $L/240$
 - d) Vibration, see note 2
 - e) Construction Loads, see note 3
- 2 Listed spans are based on conservative analysis for vibration consideration:
 - a) Vibration analysis was performed with following assumptions:
 - i) Spans listed under "OPEN AREAS – NO PARTITIONS" are for floors without full height non-load bearing partitions on the floor.
Spans listed under "FULL HEIGHT PARTITIONS" are for floors with full height non-load bearing partitions on the floor.
Note, while partition walls are assumed to be non-load bearing, they will have significant impact on the spans as shown.
 - ii) Floor width assumed to be 35' (direction perpendicular to the joist). Wider or narrower floor widths, as well as different boundary conditions, can impact floor vibration performance, contact TotalJoist for further info.
 - iii) Joists are supported by walls at each end. Introduction of beam supports can impact the vibration performance of a floor and require project specific analysis. Contact TotalJoist for spans supported by steel beams and/or girders.
 - iv) Vibration analysis based on walking excitations in residential or office areas. For areas where rhythmic activity may occur, such as aerobics studios, contact TotalJoist.
 - b) Contact TotalJoist for a detailed analysis in order to find solutions for increasing spans or modifying joist spacing.
- 3 Floors have been checked for construction loads based on SDI C-2017 and do not require shoring during concrete placement.
- 4 Dead loads shown are superimposed and are in addition to the self weight of the floor.

HOW TO USE COMPOSITE SPAN TABLES

1. Determine live and dead loads.
2. Start at the largest acceptable spacing.
3. Scan table to find a span that is equal to or greater than the desired span.
4. Select the TotalJoist.

See example on page 27 for more guidance.



**TABLE 11. COMPOSITE SPAN TABLES
RESIDENTIAL GARAGE LOADING**



Composite TotalJoist	Joist Spacing	Concrete Slab Thickness	Max Span
8-ic-4	24" o.c.	4" w/ 6 x 6 6/6 Welded Wire Mesh	16' 2"
10-ic-4			18' 11"
12-ic-4			21' 10"
14-ic-4			24' 8"
16-ic-4			27' 6"

MAX. SPANS ARE BASED ON THE FOLLOWING:

1 Load for passenger vehicles accommodating not more than 9 people:

- a) 40 psf uniform live load
- b) 3,000 lbs point load at midspan on single joist
- c) a & b are not considered concurrently

2 Based on the following deflection limitations:

- a) Live load deflection limit for uniform load of $L/480$
- b) Total load deflection limit for uniform load of $L/300$
- c) Live load deflection limit for point load of $L/420$
- d) Total load deflection limit for point load of $L/260$

3 Loads in accordance with the ASCE/SEI 7-10.



1. DESCRIPTION

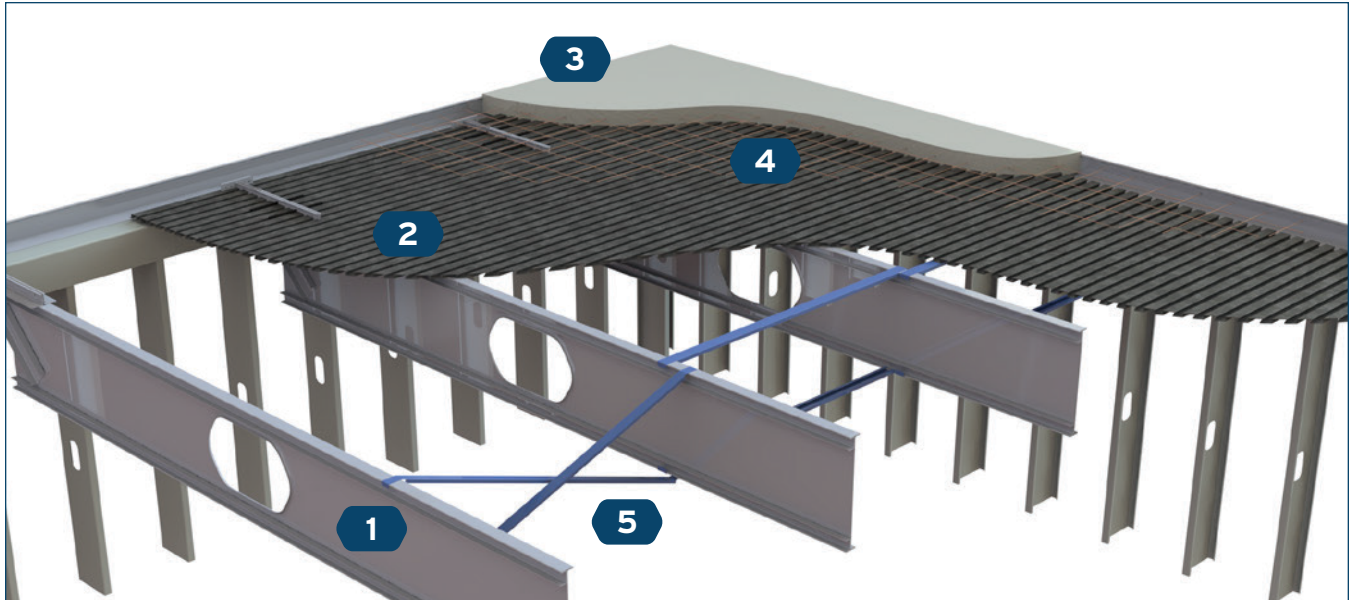


Fig. 1. Composite TotalJoist Components

The Composite TotalJoist is comprised of:

1. TotalJoist
2. Total-Lewis-Deck
3. Concrete Slab
4. Welded Wire Mesh
5. Bridging and Cross-Bridging

During construction (non-composite stage), the TotalJoist must fully support all dead loads and construction live loads. The joists are designed in accordance with AISI S100-07 and loading guidance has been taken from SDI NC-2017 (see below for details).

In service, the TotalJoist acts in full composite action as a result of a strong connection between the concrete slab and the joist via the Total-Lewis-Deck combined with strong horizontal end restraint via the joist shoe. In the transverse direction, the slab is considered to be a one-way slab supported on each joist.

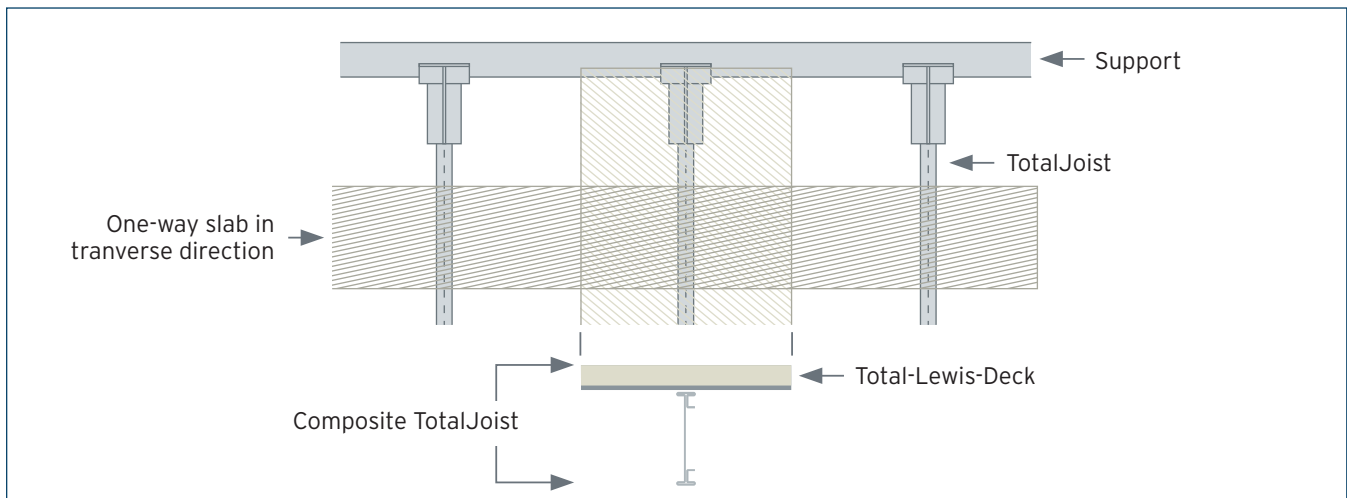


Fig. 2. Design Approach

2. DESIGN FOR CONSTRUCTION (NON-COMPOSITE DESIGN)



2.1 GENERAL

In the construction stage, the TotalJoist and Total-Lewis-Deck act as permanent formwork. The dead loads and construction live loads must be supported by the TotalJoist without consideration of any composite action. Composite TotalJoists are designed to be unshored during construction. Composite TotalJoists come cambered to reduce the permanent curvature in the floor following the pour. Because Composite TotalJoists are cambered, the unshored span is limited by strength considerations only. The non-composite joist properties are tabulated in [Table 12](#).

TABLE 12. NON-COMPOSITE JOIST PROPERTIES

Joist Depth	TotalJoist	Gross Properties					Torsional		Effective Properties		Factored		
		Weight (plf)	Area (in ²)	I_x (in ⁴)	r_x (in)	S_x (in ³)	J (x10 ⁻³ in ⁴)	C_w (in ⁶)	I_{xd} (in ⁴)	S_{xe} (in ³)	M_r (k-ft)	V_r (kip)	V_{rh} (kip)
8"	8-ic-3	4.52	1.18	11.6	3.14	2.91	1.42	2.69	11.6	2.84	13.5	8.18	5.73
	8-ic-4	5.58	1.46	14.2	3.13	3.56	2.73	3.41	14.2	3.56	16.9	12.8	8.95
12"	12-ic-3	5.44	1.42	30.5	4.63	5.08	1.71	6.13	29.8	4.64	22.1	8.18	5.73
	12-ic-4	6.73	1.76	37.4	4.61	6.23	3.30	7.78	36.9	5.90	28.0	12.8	8.95
14"	14-ic-3	5.90	1.54	44.1	5.35	6.29	1.85	8.38	42.5	5.55	26.4	8.18	5.73
	14-ic-4	7.30	1.91	54.1	5.33	7.73	3.58	10.6	52.7	7.07	33.6	12.8	8.95
16"	16-ic-3	6.36	1.66	60.7	6.04	7.59	1.99	11.0	57.5	6.45	30.7	8.18	5.73
	16-ic-4	7.88	2.06	74.6	6.02	9.33	3.86	13.9	71.7	8.24	39.1	12.8	8.95
18"	18-ic-4	8.45	2.21	99.2	6.71	11.0	4.14	17.7	93.8	9.41	44.7	12.8	8.95

NOTATION

I_x moment of inertia about strong axis
 r_x radius of gyration about strong axis
 S_x section modulus about strong axis
 J torsional constant
 C_w warping constant
 I_{xd} moment of inertia for deflection calculation
 S_{xe} effective section modulus
 M_r factored flexural strength
 V_r factored shear strength at gross section (solid web)
 V_{rh} factored shear strength at net section (hole location)

NOTES

- All steel is ASTM A653 Grade 60
- Calculated in accordance with ANSI/AISI S100-12 North American Specification for the Design of Cold-Formed Steel Structural Members, Load and Resistance Factor Design (LRFD)
- Use I_{xd} for calculating deflections.

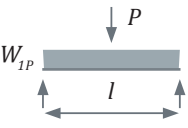
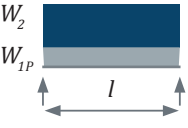
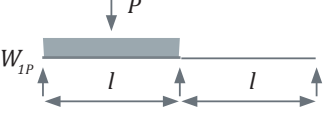
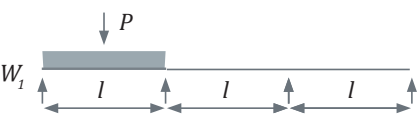
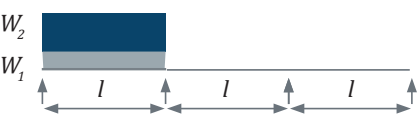


2.2 LOADING

2.2.1 DECK DESIGN FOR CONSTRUCTION

During construction, the steel deck of the Composite TotalJoist is used as a stay-in-place form deck and is designed in accordance with SDI NC1.0. SDI recommended loads and load cases are shown in **Table 13**.

TABLE 13. CONSTRUCTION LOADING ON DECK AS PER SDI NC-1.0

	Bending Moments	Deflection
Simple Span Condition	 $+M = 0.25Pl + 0.125W_{1P}l^2$	 $\Delta = \frac{(5W_1l^4)}{384EI}$
	 $+M = 0.125(W_{1P} + W_2)l^2$	
Double Span Condition	 $+M = 0.203Pl + 0.096W_1l^2$	 $\Delta = 0.42 \frac{(5W_1l^4)}{384EI}$
	 $+M = 0.096(W_1 + W_2)l^2$	
	 $-M = 0.125(W_1 + W_2)l^2$	
Triple Span Condition	 $+M = 0.20Pl + 0.094W_1Sl^2$	 $\Delta = 0.53 \frac{(5W_1l^4)}{384EI}$
	 $+M = 0.094(W_1 + W_2)l^2$	
	 $-M = 0.117(W_1 + W_2)l^2$	

NOTATION

P = 150 lbs/ft concrete load
 I = deck moment of inertia
 W_1 = slab weight + deck weight
 W_2 = 20 psf construction load

LRFD Load Factors

1.2
 1.2
 1.6

E = 29,500 psi
 l = joist span
 $W_{1P} = 1.5 \times W_1 \leq W_1 + 30$ psf

NOTES

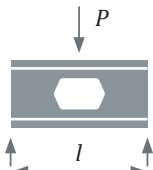
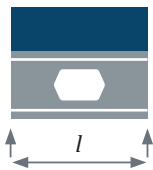
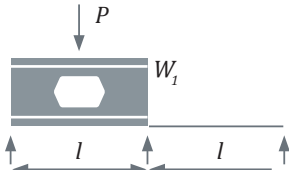
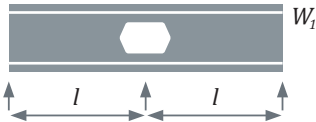
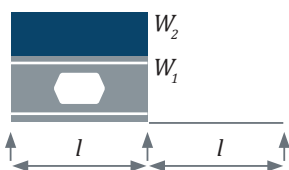
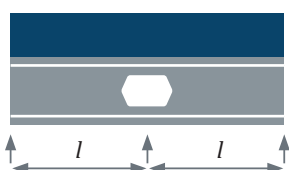
- SDI NC-2017 limits the deflection caused by the wet concrete and the weight of the steel deck (W_1) to the lesser of $L/180$ or $3/4"$.



2.2.2 JOIST DESIGN FOR CONSTRUCTION

Composite TotalJoist are designed similar to the deck during the construction phase. However, due to the significantly larger tributary area of a joist with respect to the deck, the factor of 1.5 applied to simple spans of deck is not required. Further, shear must also be taken into consideration. The relevant parameters are summarized in [Table 14](#).

TABLE 14. CONSTRUCTION LOADING ON JOIST

	Bending Moments And Shear Values	Deflection
Simple Span Condition	 $+M = 0.25Pl + 0.125W_{1P}l^2$ $V = 0.50P + 0.50W_{1P}l$	 $\Delta = \frac{(5W_1l^4)}{384EI}$
	 $+M = 0.125(W_{1P} + W_2)l^2$ $V = 0.50(W_{1P} + W_2)l$	
Double Span Condition	 $+M = 0.203Pl + 0.096W_1l^2$ $V = 0.594P + 0.562W_1l$	 $\Delta = 0.42 \frac{(5W_1l^4)}{384EI}$
	 $+M = 0.096(W_1 + W_2)l^2$ $V = 0.562(W_1 + W_2)l$	
	 $-M = 0.125(W_1 + W_2)l^2$ $V = 0.625(W_1 + W_2)l$	

NOTATION

P = 150/ft lbs concrete load
 I = joist moment of inertia
 W_1 = slab weight + deck weight + joist weight
 W_2 = 20 psf construction load
 E = 29,500 psi
 l = joist span

LRFD Load Factors

1.2
 1.2
 1.6

NOTES

- Composite TotalJoists are cambered to reduce the final camber after the pour, no deflection limitations are required during the construction phase.



3. DESIGN FOR SERVICE LIFE (COMPOSITE DESIGN)

3.1 GENERAL

The Composite TotalJoist is designed in accordance with ANSI/AISC 360-10. Composite action is achieved using the Total-Lewis-Deck in combination with the horizontal end restraint from the joist shoes. In the transverse direction, the slab is designed as a conventional one way slab in accordance with ACI 318.

3.2 SLAB DESIGN

3.2.1 LOADING

The slab is loaded with a uniformly distributed load specified for the given occupancy (in accordance with IBC or ASCE 7), any superimposed dead load, as well as the self-weight of the slab itself. A requirement of both the IBC and ASCE 7 is to consider partial loading. However, as noted in SDI C-2011, most slabs are considered as simple spans and it is assumed that a continuous span cracks over each joist and the load is carried on a series of simple spans. Based on this assumption, the design moment for the slab is:

$$M = \frac{wl^2}{8}$$

Where,

w = uniform load on unit of slab ([lbs/ft] / [ft width])

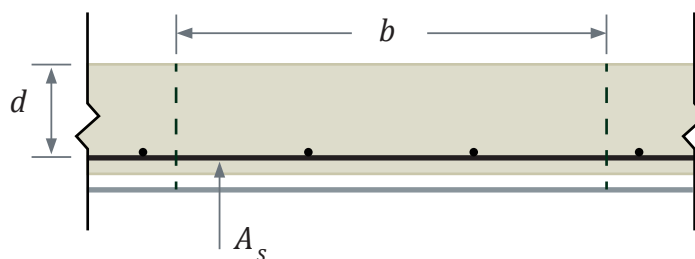
l = joist spacing

3.2.2 ONE WAY SLAB DESIGN MOMENT

The slab is designed using conventional ultimate strength design principles in accordance with ACI 318. Accordingly, the design moment of the slab can be calculated as:

$$M_d = \phi A_s f_y (d - a/2)$$

Fig. 3. Slab Design



Where,

ϕ = strength reduction factor = 0.90

A_s = area of welded wire mesh (in² / ft width)

$$a = \frac{A_s f_y}{0.85 f'_c b}$$

f_y = yield strength of welded wire mesh (60,000 psi)

f'_c = compressive strength of concrete (3,000 psi)

d = distance from extreme compression fiber to centroid of welded wire mesh (see Figure 3)

b = unit slab width = 12"

TABLE 15. EFFECTIVE DEPTHS FOR SLAB DESIGN



Total Slab Depth	Effective Depth, d
3"	2.30"
4"	3.30"
5"	4.30"

NOTES

- Table 15 is based on a depth of steel deck of 0.70"

Regardless of the amount of steel required to achieve the required design moment, a minimum area of steel of 0.00075 times the area of the concrete above the deck (per foot of width), but not less than the area provided by 6 x 6-W1.4 x W1.4 (6x6 10/10) welded wire mesh is required in accordance with ANSI/SDI C-2017. For typical loads, the composite Total-Lewis Deck provides the required reinforcing and macro-synthetic fibers may be used as an alternate to welded wire mesh.

A quick reference table for maximum nominal live loads is provided in [Table 16](#). Note, the maximum loads given may exceed the maximum load on the composite joist for any given span. The minimum of the composite joist load and the slab load governs the maximum load on the floor.

TABLE 16. MAXIMUM NOMINAL LIVE LOAD ON SLAB

Slab Depth	Slab Weight (psf)	Mesh Size	Maximum Nominal Live Load on slab (psf) based on joist spacing		
			24" o.c.	36" o.c.	48" o.c.
3	33	6 x 6 10/10	289	141	69
		6 x 6 8/8	289	216	111
		6 x 6 6/6	289	289	164
		6 x 6 4/4	289	289	234
4	46	6 x 6 8/8	279	279	162
		6 x 6 6/6	279	279	240
		6 x 6 4/4	279	279	279
5	58	6 x 6 6/6	270	270	270
		6 x 6 4/4	270	270	270

NOTES

- Check load versus safe load on the composite joist
- To use the table, the applied live load (LL) and dead load (DL) must be less than the nominal load (NL) listed:
 - $(1.2 / 1.60 \times DL) + LL \leq NL$
 - Conservatively, $DL + LL \leq NL$



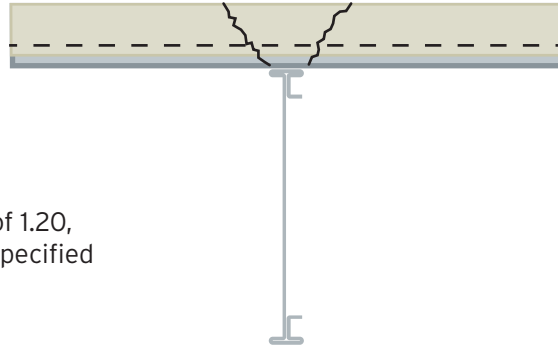
3.2.3 ONE WAY SLAB DESIGN SHEAR

In accordance with ACI 318 the shear strength provided by the slab is:

$$V_c = \left(1 + \frac{2}{\beta_c}\right) 0.19 \lambda \phi_c \sqrt{f'_c}$$

Given a live load factor of 1.60 and a dead load factor of 1.20, and for a 3" slab with joists at 48" o.c., the maximum specified live load based on shear would be 344 psf.

Fig. 4. Slab Shear



3.2.4 ONE WAY SLAB DEFLECTION

In accordance with ACI 318, if a slab thickness is greater than the joist spacing divided by 20, deflection need not be checked. Accordingly, based on a maximum joist spacing of 48" o.c., deflection of the slab only needs to be considered when it is 2-3/4" thick or less. In those cases, deflection of the slab can be calculated in accordance with ACI 318 as follows:

$$\Delta = \frac{5wL^4}{384EI_e}$$

Where,

$$I_e = \left(\frac{M_{cr}}{M_a}\right)^3 I_g + \left[1 - \left(\frac{M_{cr}}{M_a}\right)^3\right] I_{cr}$$

Note, the user can refer to ACI 318 for further explanation of calculating the effective moment of inertia. Deflection rarely governs the slab design.

3.3 COMPOSITE TOTALJOIST DESIGN



3.3.1 GENERAL

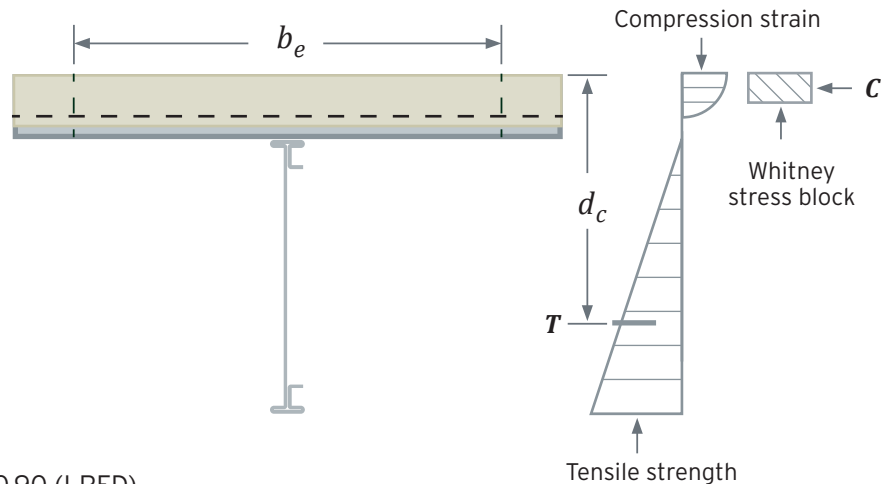
Composite TotalJoist properties (M_{rc} and I_{xc}) are presented in [Table 1](#). Span tables are presented in [Tables 2 to 10](#).

3.3.2 FLEXURAL DESIGN

Composite TotalJoist is designed following ANSI/AISC 360-10. The behavior of the Composite TotalJoist is similar to that of a steel beam with headed studs in composite action with a concrete slab. As shown in Figure 5, at ultimate load failure is initiated by yielding of the steel joist. At this point, the compressive strains in the concrete are non-linear along the depth of the slab. The total compressive stress is approximated using the traditional Whitney stress block ($0.85f'_c$). Equating the resultant tensile and compressive forces leads to the determination of the depth of the Whitney stress block and ultimately the design moment:

$$M_{rc} = \phi A_{sj} f_y (d_c - a/2)$$

Fig. 5. Composite TotalJoist Design



Where,

ϕ = strength reduction factor = 0.90 (LRFD)

A_{sj} = effective area of steel area of joist (in²)

f_y = yield strength of steel (50,000 psi)

f'_c = compressive strength of concrete (3,000 psi)

d_c = distance from extreme compression fiber to resultant tension force

$$a = \frac{A_s f_y}{0.85 f'_c b_e}$$

b_e = effective width of concrete slab = joist spacing

3.3.3 COMPOSITE ACTION



In order to achieve full composite action, sufficient slab restraint against dislodgment must be provided between the TotalJoist and the concrete slab. Sufficient restraint is provided by the Composite TotalJoist by two means, (1) the Total-Lewis-Deck fastened to the top chord of the joist along the length, and (2) horizontal end restraint provided by the joist shoe at either end. Due to the anchorage of the Total-Lewis-Deck, the Composite TotalJoist does not rely on “shear bond” or friction between the slab and the joist.

Full scale flexural and shear tests have been conducted and confirm that the system is able to achieve full composite action under uniform loads for the spans given. Special consideration needs to be given to situations with concentrated loads, contact TotalJoist for design assistance.

In addition to the shear flow strength from the Total-Lewis-Deck, additional restraint is provided by the shoe at both ends of the joists. Based on a concrete with f'_c of 3,000 psi and given the bearing area provided by the Composite TotalJoist shoe, the limiting horizontal end restraint is 38,250 lbs.

3.3.4 WEB SHEAR

The design shear of the Composite TotalJoist joist is the same as the non-composite design shear. Refer to [Table 12](#) for the shear values.

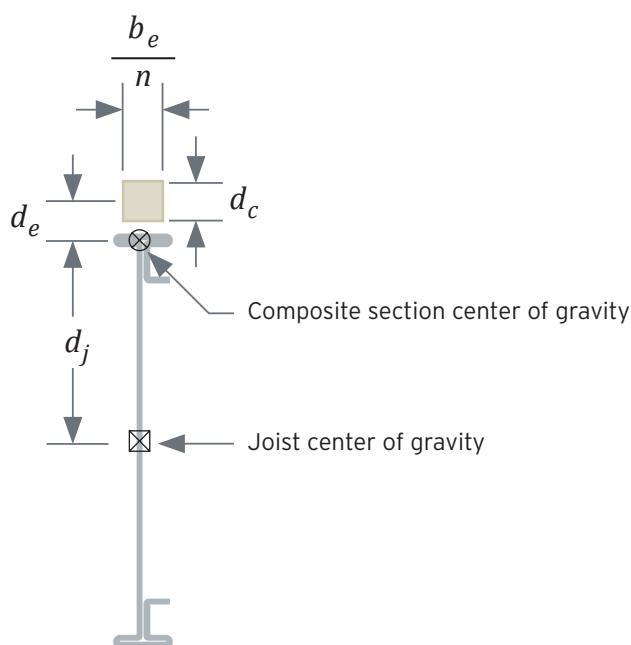


3.3.5 DEFLECTION

The deflection of the Composite TotalJoist is based on traditional transformed section calculations. Due to the proportioning of the joist relative to the slab, the neutral axis of the composite section typically falls within the slab. Only the concrete over the deck is considered in the calculation of the transformed section. Tests have shown good correlation between the predicted stiffness and the actual stiffness. Shown in Figure 6 is the transformed section used to calculate the composite moment of inertia. The composite moment of inertia is calculated as follows:

$$I_{xc} = I_j + \frac{\frac{b_e}{n} d_c^3}{12} + A_j d_j^2 + \left(\frac{b_e}{n} d_c \right) d_e^2$$

Fig. 6. Transformed Composite Section



Where,

b_e = effective width of concrete slab = joist spacing

d_c = concrete cover over steel deck

n = modular ratio = $\frac{E_s}{E_c}$

d_j = distance from joist center of gravity to center of gravity of composite section

d_c = distance from transformed concrete center of gravity to center of gravity of composite section

REFERENCE WEIGHTS[†]

FINISHED FLOOR

3/4" Ceramic/Quarry Tile	11 psf
1/2" Mortar Bed	6.0 psf
3/4" Hardwood	3.5 psf
Vinyl (resilient) floor	1.5 psf
Carpet and underpad	2.0 psf
Acoustical Mats	0.2 psf

TOPPING (per inch thickness)

Normal Weight Concrete	12.5 psf
Lightweight Concrete	10 psf
Gypsum Concrete	8.5 psf

ROOFING MATERIALS

Felt with gravel, 3 Ply	5.5 psf
Felt and gravel, 4 Ply	6.0 psf
Felt and gravel, 5 Ply	6.5 psf
Felt, no gravel, 3 Ply	3.0 psf
Felt, no gravel, 4 Ply	3.5 psf
Felt, no gravel, 5 Ply	4.0 psf
Waterproofing Membrane	1.0 psf

SUBFLOOR / UNDERLAYMENT

Plywood, 1/4"	1.0 psf
Plywood / OSB, 1/2"	2.0 psf
Plywood / OSB, 5/8"	2.5 psf
Plywood / OSB, 3/4"	3.0 psf
Cement Board, 1/4"	1.5 psf
Cement Board, 3/4"	4.5 psf

INSULATION (per inch thickness)

Polyisocyanurate	0.5 psf
Rockwool	0.2 psf
Glass Fiber Batts	0.1 psf

CEILING

Gypsum Board, 1/2"	1.6 psf
Gypsum Board, 5/8"	2.2 psf
Resilient Channel (12" o.c.)	0.2 psf
Suspended Tile System	5.0 psf
Plaster (per 1/2" thickness)	4.0 psf

[†] Weights are provided for reference purposes only and should be checked against actual product specified.

DESIGN EXAMPLE

Select a joist for a 22' span, residential loading, with a joist spacing of 48" o.c.
Design floor based on a 25 psf superimposed dead load. There are no non-load bearing walls on the floor.

SOLUTION

Option 1

Select joist using Span Tables

1. Since there are no non-load bearing walls on the floor, use tables for "OPEN AREAS".
Use the **Composite Span Table** for 40 psf live load found on page 4.
2. Scan down column for 25 psf dead load and 48" spacing.
3. **Select 14-ic-4 at 48" o.c. with a 3" slab thickness:**
Maximum Span = 22' 2" > 22' **OK**