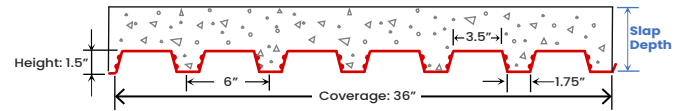


1.5" COMPOSITE DECK 50 ksi

The most widespread use of the floor deck is dual purpose: as formwork during construction and as positive reinforcement of the concrete slab. In this case it is referred to as Composite Floor Deck.

The Composite Floor Deck has embossments designed to interlock with concrete slabs.



Material: Galvanized G90 or G60 ASTM A653 Structural Steel $F_y = 50$ ksi.



Section Properties and Flexural Resistance (Bare Deck)

Gage	Design Thickness (inches)	Weight (psf)	F_y (ksi)	S_{e+} (in ²) per foot	S_{e-} (in ²) per foot	ASD ($\Omega = 1.67$)		I_{d+} (in ⁴) per foot	I_{d-} (in ⁴) per foot
						M_p/Ω inch-lbs per foot	M_n/Ω inch-lbs per foot		
22	0.0295	1.7	50	0.165	0.172	4939	5158	0.149	0.176
20	0.0358	2.1	50	0.221	0.222	6611	6656	0.189	0.218
18	0.0474	2.7	50	0.299	0.312	8962	9331	0.267	0.298
16	0.0598	3.4	50	0.386	0.394	11547	11806	0.356	0.378

Note: All section properties and ASD flexural strengths are calculated in accordance with ANSI/SDI C-2017, ANSI/SDI NC-2017, and AISI S100-2012 and AISI S100-2016.

Shear and Web Crippling (Bare Deck)

Gage	Design Thickness (inches)	F_y (ksi)	V_n/Ω lbs per foot	Web Crippling (R_n/Ω), lbs/ft One Flange Loading End Bearing			Web Crippling (R_n/Ω), lbs/ft One Flange Loading Interior Bearing		
				1.5"	2"	3"	1.5"	2"	3"
				22	0.0295	50	2804	840	923
20	0.0358	50	3392	1194	1309	1500	1938	2095	2358
18	0.0474	50	4465	1988	2168	2470	3247	3493	3905
16	0.0598	50	5599	3032	3293	3730	4984	5339	5934

Note: All section properties and ASD flexural strengths are calculated in accordance with ANSI/SDI C-2017, ANSI/SDI NC-2017, and AISI S100-2012 and AISI S100-2016.

ASD Uniform Superimposed Downward Loads (psf)

Span Cond.	Gage	Fy	5'- 0"	5'- 6"	6'- 0"	6'- 6"	7'- 0"	7'- 6"	8'- 0"	8'- 6"	9'- 0"	9'- 6"	10'- 0"
Single	22	50	132	109	91	78	67	59	51	46	41	36	33
	20	50	176	146	122	104	90	78	69	61	54	49	44
	18	50	239	198	166	141	122	106	93	83	74	66	60
	16	50	308	254	214	182	157	137	120	107	95	85	77
Double	22	50	138	114	96	81	70	61	54	48	42	38	34
	20	50	177	147	123	105	91	79	69	61	55	49	44
	18	50	249	206	173	147	127	111	97	86	77	69	62
	16	50	315	260	219	186	161	140	123	109	97	87	79
Triple	22	50	172	142	119	102	88	76	67	59	53	48	43
	20	50	222	183	154	131	113	99	87	77	68	61	55
	18	50	311	257	216	184	159	138	122	108	96	86	78
	16	50	394	325	273	233	201	175	154	136	121	109	98

Notes:

- All section properties and ASD ($\Omega = 1.67$) uniform loads are calculated in accordance with ANSI/SDI C-2017, ANSI/SDI NC-2017 and AISI S100-2012 and AISI S100-2016.
- Loads shown in tables are uniformly distributed superimposed loads in psf. Span length assumes center-to-centerspacing of supports. Tabulated loads shall not be increased by assuming clear span dimensions.
- Bending Moment formulae used for flexural stress limitations are:
 - Simple and Two Span $M = W l^2/8$.
 - Three Span or More $M = Wl^2/10$.
- Web crippling and shear have not been accounted for in these tables. Required bearing should be determined based on specific span conditions.

Uniform Superimposed Service Load that Causes L/240 Deflection (psf)

Span Cond.	Gage	Fy	5'- 0"	5'- 6"	6'- 0"	6'- 6"	7'- 0"	7'- 6"	8'- 0"	8'- 6"	9'- 0"	9'- 6"	10'- 0"
Single	22	50	78	59	45	36	29	23	19	16	13	11	10
	20	50	99	75	57	45	36	29	24	20	17	14	12
	18	50	140	105	81	64	51	42	34	29	24	20	18
	16	50	187	140	108	85	68	55	46	38	32	27	23
Double	22	50	188	141	109	86	69	56	46	38	32	27	24
	20	50	239	179	138	109	87	71	58	49	41	35	30
	18	50	337	253	195	153	123	100	82	69	58	49	42
	16	50	450	338	260	205	164	133	110	92	77	66	56
Triple	22	50	147	111	85	67	54	44	36	30	25	21	18
	20	50	187	140	108	85	68	55	46	38	32	27	23
	18	50	264	198	153	120	96	78	64	54	45	38	33
	16	50	352	264	204	160	128	104	86	72	60	51	44

Note: For loads that cause L/120 Deflection, multiply by 2.0. For loads that cause L/180 Deflection, multiply by 1.5. For loads that cause L/360 Deflection, multiply by 0.667.



Construction Span Table - 20 psf Construction Load

Normal Weight Concrete (145 pcf)				
Total Slab Depth	Gage	Maximum Unshored Clear Span		
		1 span	2 span	3 span
3.50" (t=2.00) 31 psf	22	6' 3"	7' 4"	7' 5"
	20	7' 8"	8' 11"	9' 1"
	18	8' 8"	10' 6"	10' 11"
	16	9' 6"	11' 10"	12' 3"
4.00" (t=2.50) 37 psf	22	6' 0"	7' 0"	7' 1"
	20	7' 3"	8' 6"	8' 7"
	18	8' 3"	10' 0"	10' 4"
	16	9' 1"	11' 3"	11' 8"
4.50" (t=3.00) 43 psf	22	5' 9"	6' 8"	6' 9"
	20	7' 1"	8' 6"	8' 9"
	18	7' 10"	9' 7"	9' 11"
	16	8' 8"	10' 9"	11' 1"
5.00" (t=3.50) 49 psf	22	5' 6"	6' 5"	6' 6"
	20	6' 8"	7' 9"	7' 10"
	18	7' 7"	9' 2"	9' 6"
	16	8' 4"	10' 4"	10' 8"
5.50" (t=4.00) 55 psf	22	5' 4"	6' 3"	6' 3"
	20	6' 5"	7' 5"	7' 7"
	18	7' 4"	8' 10"	9' 1"
	16	8' 0"	9' 11"	10' 3"
6.00" (t=4.50) 61 psf	22	5' 2"	6' 0"	6' 1"
	20	6' 3"	7' 2"	7' 4"
	18	7' 1"	8' 6"	8' 9"
	16	7' 9"	9' 7"	9' 11"

Lightweight Concrete (115 pcf)				
Total Slab Depth	Gage	Maximum Unshored Clear Span		
		1 span	2 span	3 span
3.50" (t=2.00) 23 psf	22	7' 1"	8' 5"	8' 6"
	20	8' 9"	10' 2"	10' 6"
	18	10' 1"	12' 0"	12' 5"
	16	11' 1"	13' 6"	14' 0"
4.00" (t=2.50) 28 psf	22	6' 9"	7' 11"	8' 1"
	20	8' 3"	9' 7"	9' 10"
	18	9' 5"	11' 5"	11' 9"
	16	10' 4"	12' 10"	13' 3"
4.50" (t=3.00) 33 psf	22	6' 5"	7' 7"	7' 8"
	20	8' 0"	9' 9"	10' 0"
	18	8' 11"	10' 10"	11' 2"
	16	9' 10"	12' 2"	12' 7"
5.00" (t=3.50) 37 psf	22	6' 3"	7' 4"	7' 5"
	20	7' 7"	8' 10"	9' 0"
	18	8' 7"	10' 5"	10' 10"
	16	9' 5"	11' 9"	12' 2"
5.50" (t=4.00) 42 psf	22	6' 0"	7' 0"	7' 1"
	20	7' 3"	8' 6"	8' 7"
	18	8' 3"	10' 0"	10' 4"
	16	9' 1"	11' 3"	11' 8"
6.00" (t=4.50) 46 psf	22	5' 10"	6' 10"	6' 11"
	20	7' 1"	8' 2"	8' 4"
	18	8' 0"	9' 9"	10' 0"
	16	8' 9"	10' 11"	11' 3"

Note: Web crippling and shear have not been accounted for in these tables. Required bearing should be determined based on specific span conditions.



Composite Deck-Slab Allowable Superimposed Load (ASD)

Slab Thickness	F _y : 50 ksi		f' _c : 3000 psi						Normal Weight Concrete (145 pcf)								
	Gage	Weight (psf)	5'- 0"	5'- 6"	6'-0"	6'- 5"	7'-0"	7'-6"	8'-0"	8'- 6"	9'-0"	9'- 6"	10'- 0"	10'- 6"	11'- 0"	11'- 6"	12'- 0"
3.5"	22	31	400	400	400	365	312	268	233	204	179	159	141	126	112	101	91
	20	31	400	400	400	400	374	323	281	246	217	192	171	153	138	124	112
	18	31	400	400	400	400	377	326	283	248	219	194	173	155	139	125	113
	16	31	400	400	400	400	366	315	274	240	212	188	167	150	134	121	109
4"	22	37	400	400	400	400	391	337	293	256	225	200	177	158	142	127	115
	20	37	400	400	400	400	400	400	353	309	273	242	216	193	174	156	141
	18	37	400	400	400	400	400	400	357	313	276	245	219	196	176	158	143
	16	37	400	400	400	400	400	398	347	304	268	238	212	190	170	153	139
4.5"	22	43	400	400	400	400	400	400	355	311	274	242	216	193	173	155	140
	20	43	400	400	400	400	400	400	400	376	332	294	263	235	211	191	173
	18	43	400	400	400	400	400	400	400	381	337	299	266	239	215	194	175
	16	43	400	400	400	400	400	400	400	371	328	291	259	232	209	188	170
5"	22	49	400	400	400	400	400	400	400	367	323	287	255	228	204	184	166
	20	49	400	400	400	400	400	400	400	400	392	348	311	279	251	226	205
	18	49	400	400	400	400	400	400	400	400	399	354	316	283	255	230	208
	16	49	400	400	400	400	400	400	400	400	389	346	308	276	248	224	203
5.5"	22	55	400	400	400	400	400	400	400	400	374	332	295	264	237	213	192
	20	55	400	400	400	400	400	400	400	400	400	400	360	323	291	262	238
	18	55	400	400	400	400	400	400	400	400	400	400	367	329	296	268	242
	16	55	400	400	400	400	400	400	400	400	400	400	359	322	289	261	237
6"	22	61	400	400	400	400	400	400	400	400	400	378	336	301	270	243	220
	20	61	400	400	400	400	400	400	400	400	400	400	400	368	331	299	271
	18	61	400	400	400	400	400	400	400	400	400	400	400	376	338	306	277
	16	61	400	400	400	400	400	400	400	400	400	400	400	368	331	299	271



Composite Deck-Slab Allowable Superimposed Load (ASD)

Slab Thickness	F _y : 50 ksi		f _c : 3000 psi						Lightweight Concrete (115 pcf)								
	Gage	Weight (psf)	5'- 0"	5'- 6"	6'-0"	6'- 5"	7'-0"	7'-6"	8'-0"	8'- 6"	9'-0"	9'- 6"	10'- 0"	10'- 6"	11'- 0"	11'- 6"	12'- 0"
3.5"	22	23	400	400	400	354	302	261	228	200	200	176	156	139	125	112	101
	20	23	400	400	400	400	361	312	272	239	211	188	168	151	136	123	111
	18	23	400	400	400	400	362	313	273	240	212	189	168	151	136	123	112
	16	23	400	400	400	395	338	292	255	224	198	176	157	141	127	114	104
4"	22	28	400	400	400	400	380	329	286	252	251	222	197	176	157	142	128
	20	28	400	400	400	400	400	393	343	301	266	237	212	190	171	155	141
	18	28	400	400	400	400	400	395	345	303	268	238	213	191	172	156	142
	16	28	400	400	400	400	400	382	333	293	259	230	206	184	166	150	136
4.5"	22	33	400	400	400	400	400	399	348	306	305	270	240	214	192	172	156
	20	33	400	400	400	400	400	400	400	367	324	289	258	232	209	189	172
	18	33	400	400	400	400	400	400	400	370	327	291	260	234	211	191	173
	16	33	400	400	400	400	400	400	400	358	317	282	252	226	204	184	167
5"	22	37	400	400	400	400	400	400	400	363	362	320	284	254	228	205	185
	20	37	400	400	400	400	400	400	400	400	385	343	307	276	249	225	205
	18	37	400	400	400	400	400	400	400	400	390	347	310	279	252	228	207
	16	37	400	400	400	400	400	400	400	400	378	337	301	271	244	221	201
5.5"	22	42	400	400	400	400	400	400	400	400	400	371	329	294	264	238	215
	20	42	400	400	400	400	400	400	400	400	400	398	356	320	289	261	238
	18	42	400	400	400	400	400	400	400	400	400	400	361	324	293	265	241
	16	42	400	400	400	400	400	400	400	400	400	393	351	316	285	258	234
6"	22	46	400	400	400	400	400	400	400	400	400	400	376	336	302	272	246
	20	46	400	400	400	400	400	400	400	400	400	400	400	366	330	299	272
	18	46	400	400	400	400	400	400	400	400	400	400	400	372	336	304	276
	16	46	400	400	400	400	400	400	400	400	400	400	400	363	327	297	269

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