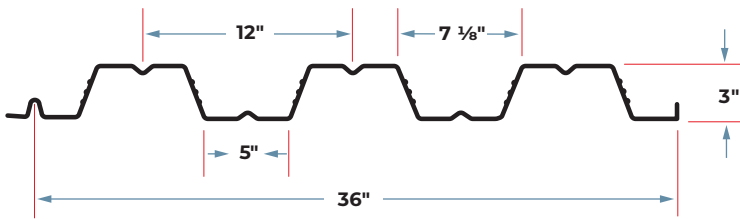


# 3" COMPOSITE DECK

GRADE 40 STEEL



## Section Properties

Gage	Design Thickness (inches)	Weight (psf)	F <sub>y</sub> (ksi)	S <sub>e</sub> + (inch <sup>3</sup> ) per foot	S <sub>e</sub> - (inch <sup>3</sup> ) per foot	ASD (Ω = 1.67)		I <sub>d</sub> + (inch <sup>4</sup> ) per ft.	I <sub>d</sub> - (inch <sup>4</sup> ) per ft.
						M <sub>p</sub> /Ω (inch-lbs per ft)	M <sub>n</sub> /Ω (inch-lbs per foot)		
22	0.0295	1.7	40	0.417	0.481	9999	11531	0.738	0.700
20	0.0358	2.1	40	0.550	0.591	13174	14164	0.928	0.893
18	0.0474	2.7	40	0.764	0.789	18299	18898	1.252	1.227
16	0.0598	3.5	40	1.013	1.012	24255	24248	1.627	1.623

**Note**

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

## Shear and Web Crippling

Gage	V <sub>n</sub> /Ω (lbs/ft)	Web Crippling (R <sub>n</sub> /Ω), lbs/ft One Flange Loading End Bearing			Web Crippling (R <sub>n</sub> /Ω), lbs/ft One Flange Loading Interior Bearing		
		2"	3"	4"	2"	3"	4"
22	1720	322	371	412	515	582	639
20	2634	463	530	587	743	836	915
18	5062	779	888	979	1260	1408	1534
16	5896	1198	1357	1491	1948	2165	2348

**Note**

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

## Allowable Uniform Downward Loads, ASD (PSF)

Span	Gage	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
Single	22	185	136	104	82	67	55	46	39	34	30	26
	20	244	179	137	108	88	73	61	52	45	39	34
	18	339	249	191	151	122	101	85	72	62	54	48
	16	449	330	253	200	162	134	112	96	83	72	63
Double	22	214	157	120	95	77	64	53	45	39	34	30
	20	262	193	148	117	94	78	66	56	48	42	37
	18	350	257	197	156	126	104	87	75	64	56	49
	16	449	330	253	200	162	134	112	96	82	72	63
Triple	22	267	196	150	119	96	79	67	57	49	43	38
	20	328	241	184	146	118	98	82	70	60	52	46
	18	437	321	246	194	157	130	109	93	80	70	62
	16	561	412	316	249	202	167	140	120	103	90	79

**Notes**

- All section properties and ASD (Ω = 1.67) uniform loads are calculated in accordance with ANSI/SDI RD-2017, AISI S100-2012 and AISI S100-2016
- Loads shown in tables are uniformly distributed superimposed loads in psf. Span length assumes center-to-center spacing 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  $M = \frac{wL^2}{8}$  Three Span or More  $M = \frac{wL^2}{10}$
- 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	Gage	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
Single	22	213	134	90	63	46	35	27	21	17	14	11
	20	272	171	115	80	59	44	34	27	21	17	14
	18	373	235	157	110	81	61	47	37	29	24	20
	16	493	311	208	146	107	80	62	49	39	32	26
Double	22	512	323	216	152	111	83	64	50	40	33	27
	20	654	412	276	194	141	106	82	64	51	42	34
	18	898	565	379	266	194	146	112	88	71	57	47
	16	1188	748	501	352	257	193	148	117	94	76	63
Triple	22	401	252	169	119	87	65	50	39	32	26	21
	20	512	322	216	152	111	83	64	50	40	33	27
	18	703	442	296	208	152	114	88	69	55	45	37
	16	930	585	392	275	201	151	116	91	73	60	49

**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	Deck Type	Maximum Unshored Clear Span		
		1 span	2 span	3 span
5.00 (t=2.00) 46 PSF	3x12x22 ga	9' 3"	10' 9"	10' 10"
	3x12x20 ga	10' 11"	11' 12"	12' 4"
	3x12x18 ga	13' 4"	13' 10"	14' 3"
	3x12x16 ga	14' 7"	15' 8"	16' 2"
5.50 (t=2.50) 52 PSF	3x12x22 ga	8' 10"	10' 3"	10' 4"
	3x12x20 ga	10' 5"	11' 5"	11' 10"
	3x12x18 ga	12' 8"	13' 3"	13' 8"
	3x12x16 ga	14' 0"	14' 12"	15' 6"
6.00 (t=3.00) 58 PSF	3x12x22 ga	8' 5"	9' 10"	9' 11"
	3x12x20 ga	10' 10"	11' 5"	11' 10"
	3x12x18 ga	12' 2"	12' 9"	13' 2"
	3x12x16 ga	13' 6"	14' 5"	14' 11"
6.50 (t=3.50) 64 PSF	3x12x22 ga	8' 2"	9' 5"	9' 6"
	3x12x20 ga	9' 7"	10' 7"	11' 0"
	3x12x18 ga	11' 8"	12' 3"	12' 8"
	3x12x16 ga	13' 1"	13' 10"	14' 4"
7.00 (t=4.00) 70 PSF	3x12x22 ga	7' 10"	9' 1"	9' 2"
	3x12x20 ga	9' 3"	10' 3"	10' 7"
	3x12x18 ga	11' 3"	11' 10"	12' 3"
	3x12x16 ga	12' 8"	13' 5"	13' 10"
7.50 (t=4.50) 76 PSF	3x12x22 ga	7' 7"	8' 10"	8' 11"
	3x12x20 ga	8' 11"	9' 11"	10' 3"
	3x12x18 ga	10' 10"	11' 5"	11' 10"
	3x12x16 ga	12' 4"	13' 0"	13' 5"

Lightweight Concrete (115 pcf)				
Total Slab Depth	Deck Type	Maximum Unshored Clear Span		
		1 span	2 span	3 span
5.00 (t=2.00) 37 PSF	3x12x22 ga	10' 0"	11' 7"	11' 9"
	3x12x20 ga	11' 11"	12' 10"	13' 4"
	3x12x18 ga	14' 4"	14' 10"	15' 4"
	3x12x16 ga	15' 8"	16' 10"	17' 5"
5.50 (t=2.50) 42 PSF	3x12x22 ga	9' 6"	11' 1"	11' 3"
	3x12x20 ga	11' 4"	12' 4"	12' 9"
	3x12x18 ga	13' 9"	14' 3"	14' 9"
	3x12x16 ga	15' 0"	16' 2"	16' 8"
6.00 (t=3.00) 47 PSF	3x12x22 ga	9' 2"	10' 8"	10' 9"
	3x12x20 ga	12' 1"	12' 8"	13' 1"
	3x12x18 ga	13' 3"	13' 9"	14' 2"
	3x12x16 ga	14' 6"	15' 6"	16' 1"
6.50 (t=3.50) 49 PSF	3x12x22 ga	9' 0"	10' 6"	10' 7"
	3x12x20 ga	10' 8"	11' 8"	12' 1"
	3x12x18 ga	13' 0"	13' 6"	14' 0"
	3x12x16 ga	14' 3"	15' 4"	15' 10"
7.00 (t=4.00) 52 PSF	3x12x22 ga	8' 10"	10' 3"	10' 4"
	3x12x20 ga	10' 5"	11' 5"	11' 10"
	3x12x18 ga	12' 8"	13' 3"	13' 8"
	3x12x16 ga	14' 0"	14' 12"	15' 6"
7.50 (t=4.50) 59 PSF	3x12x22 ga	8' 5"	9' 9"	9' 10"
	3x12x20 ga	9' 11"	10' 11"	11' 4"
	3x12x18 ga	12' 1"	12' 8"	13' 1"
	3x12x16 ga	13' 5"	14' 4"	14' 9"

**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), PSF****22 ga Normalweight Concrete (145 pcf, f'c = 3,000 psi)**

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	46	213	185	163	143	127	112	100
5.5	52	258	225	197	174	154	137	122
6	58	304	266	233	206	183	163	145
6.5	64	352	308	271	239	212	189	169
7	70	400	351	309	273	242	216	193
7.5	76	400	395	347	307	273	244	218

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	89	80	72	64	58	52	46	42
5.5	109	98	88	79	71	64	58	52
6	130	117	105	95	85	77	70	63
6.5	152	136	123	111	100	90	82	74
7	174	156	141	127	115	104	94	86
7.5	196	176	159	144	130	118	107	97

**20 ga Normalweight Concrete (145 pcf, f'c = 3,000 psi)**

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	46	258	225	198	175	156	139	124
5.5	52	312	273	240	213	189	169	151
6	58	368	322	284	252	224	200	179
6.5	64	400	374	329	292	260	232	208
7	70	400	400	376	333	297	265	238
7.5	76	400	400	400	375	334	299	269

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	111	100	90	81	73	66	60	55
5.5	136	122	110	100	90	82	74	67
6	161	145	131	119	108	98	89	81
6.5	188	169	153	139	126	115	104	95
7	215	194	176	159	145	132	120	110
7.5	242	219	198	180	164	149	136	124

18 ga Normalweight Concrete (145 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	46	386	339	299	266	237	213	192
5.5	52	400	397	351	312	278	250	225
6	58	400	400	400	360	322	289	260
6.5	64	400	400	400	400	368	330	297
7	70	400	400	400	400	400	373	336
7.5	76	400	400	400	400	400	400	375

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	173	157	142	130	118	108	99	91
5.5	203	184	167	153	139	127	117	107
6	235	213	194	177	162	148	136	125
6.5	269	244	222	203	185	170	156	143
7	304	276	251	229	210	192	176	162
7.5	340	309	281	256	235	215	198	182

16 ga Normalweight Concrete (145 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	46	400	368	326	290	259	232	209
5.5	52	400	400	395	351	314	282	254
6	58	400	400	400	400	372	335	302
6.5	64	400	400	400	400	400	389	351
7	70	400	400	400	400	400	400	400
7.5	76	400	400	400	400	400	400	400

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	189	172	156	142	130	119	109	100
5.5	230	209	190	174	159	146	134	123
6	273	248	226	207	189	174	160	147
6.5	318	289	264	241	221	203	187	172
7	365	332	302	277	254	233	215	198
7.5	400	375	342	313	287	264	243	224

22 ga Lightweight Concrete (115 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	37	206	180	159	140	125	111	99
5.5	42	251	219	193	171	152	135	121
6	47	297	260	229	203	180	161	144
6.5	49	346	303	267	237	211	189	170
7	52	396	347	307	272	243	217	195
7.5	59	400	390	344	305	272	244	219

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	89	80	72	65	59	53	48	44
5.5	109	98	88	80	72	66	60	54
6	130	117	106	96	87	79	72	65
6.5	153	138	125	114	103	94	86	78
7	176	159	145	131	120	109	100	91
7.5	198	179	162	147	134	122	112	102

20 ga Lightweight Concrete (115 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	37	248	218	192	170	151	135	121
5.5	42	301	264	233	207	184	165	148
6	47	357	313	276	245	219	196	176
6.5	49	400	365	323	287	256	230	207
7	52	400	400	370	329	294	264	238
7.5	59	400	400	400	370	330	297	267

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	109	99	89	81	74	67	61	56
5.5	133	121	109	99	90	82	75	69
6	159	144	130	118	108	98	90	82
6.5	187	169	154	140	128	117	107	98
7	215	195	177	162	148	135	124	114
7.5	242	219	199	182	166	152	139	128

18 ga Lightweight Concrete (115 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	37	373	328	291	259	231	208	187
5.5	42	400	384	340	303	271	244	220
6	47	400	400	393	350	314	282	254
6.5	49	400	400	400	400	360	324	293
7	52	400	400	400	400	400	367	332
7.5	59	400	400	400	400	400	400	370

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	170	154	140	128	117	108	99	91
5.5	199	181	165	151	138	127	116	107
6	231	210	191	175	160	147	135	124
6.5	265	241	220	202	185	170	157	144
7	301	274	250	229	210	193	178	165
7.5	335	305	279	255	234	215	198	183

16 ga Lightweight Concrete (115 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0
5	37	396	349	309	275	246	221	200
5.5	42	400	400	376	335	300	270	243
6	47	400	400	400	398	356	321	290
6.5	49	400	400	400	400	400	376	340
7	52	400	400	400	400	400	400	391
7.5	59	400	400	400	400	400	400	400

Slab Thickness (Inches)	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-6	15'-0
5	181	164	150	137	125	115	106	98
5.5	221	201	183	167	154	141	130	120
6	263	239	218	200	183	169	155	143
6.5	309	281	257	235	216	199	184	170
7	355	324	296	272	250	230	212	197
7.5	400	365	334	306	282	260	240	222