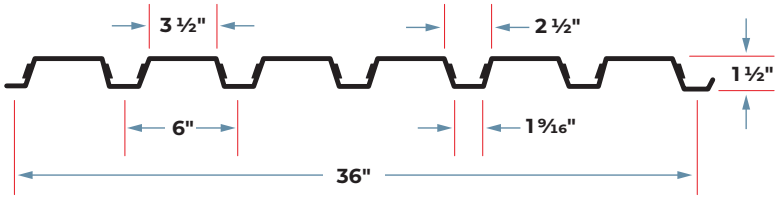
1.5” COMPOSITE DECK

GRADE 50 STEEL

PRODUCTS & SOLUTIONS



Options

Hanger Tabs

Section Properties

Gage	Design Thickness (inches)	Weight (psf)	F_y ksi	S_e + (inch³) per foot	Se - (inch³) per foot	ASD (Ω = 1.67)		I_d + (inch⁴) per ft.	I_d - (inch⁴) per ft.
						M_p/ Ω inch-lbs per ft	M_n/ Ω inch-lbs per foot		
22	0.0295	1.6	50	0.170	0.179	5101	5358	0.144	0.167
20	0.0358	2.0	50	0.216	0.222	6457	6661	0.182	0.210
18	0.0474	2.6	50	0.294	0.310	8812	9291	0.257	0.290
16	0.0598	3.0	50	0.378	0.390	11327	11667	0.341	0.363

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_n/Ω (lbs/ft)	Web Crippling (R_n/Ω), lbs/ft One Flange Loading End Bearing			Web Crippling (R_n/Ω), lbs/ft One Flange Loading Interior Bearing		
		1-1/2”	2”	3”	1-1/2”	2”	3”
22	2424	801	880	1013	1096	1189	1345
20	3803	1143	1253	1436	1605	1735	1953
18	5032	1914	2087	2377	2773	2983	3334
16	6219	2931	3183	3606	4345	4654	5172

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	5'-0"	5”-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9-0"	9'-6"	10'-0"
Single	**22**	136	112	94	80	69	60	53	47	42	38	34
	20	172	142	120	102	88	77	67	60	53	48	43
	18	235	194	163	139	120	104	92	81	73	65	59
	16	302	250	210	179	154	134	118	105	93	84	76
Double	**22**	143	118	99	85	73	64	56	49	44	40	36
	20	178	147	123	105	91	79	69	61	55	49	44
	18	248	205	172	147	126	110	97	86	76	69	62
	16	311	257	216	184	159	138	122	108	96	86	78
Triple	**22**	179	148	124	106	91	79	70	62	55	49	45
	20	222	183	154	131	113	99	87	77	69	62	56
	18	310	256	215	183	158	138	121	107	96	86	77
	16	389	321	270	230	198	173	152	135	120	108	97

Notes

1. 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
2. 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.
3. Bending Moment formulae used for flexural stress limitations are: Simple and Two Span $M=\frac{w\ell^2}{8}$ Three Span or More $M=\frac{w\ell^2}{10}$
4. 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	5'-0"	5"-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9-0"	9'-6"	10'-0"
Single	**22**	76	57	44	35	28	22	19	15	13	11	9
	20	96	72	55	44	35	28	23	19	16	14	12
	18	135	101	78	61	49	40	33	27	23	20	17
	16	179	135	104	82	65	53	44	36	31	26	22
Double	**22**	183	137	106	83	67	54	45	37	31	27	23
	20	230	173	133	105	84	68	56	47	40	34	29
	18	325	244	188	148	118	96	79	66	56	47	41
	16	431	324	250	196	157	128	105	88	74	63	54
Triple	**22**	143	107	83	65	52	42	35	29	25	21	18
	20	180	135	104	82	66	53	44	37	31	26	23
	18	254	191	147	116	93	75	62	52	44	37	32
	16	338	254	195	154	123	100	82	69	58	49	42

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
3.50 (t=2.00) 31 PSF	**1.5x6x22 ga**	6' 6"	7' 8"	7' 9"
	1.5x6x20 ga	7' 8"	8' 12"	9' 1"
	1.5x6x18 ga	9' 5"	10' 9"	11' 1"
	1.5x6x16 ga	11' 2"	12' 0"	12' 5"
4.00 (t=2.50) 37 PSF	**1.5x6x22 ga**	6' 2"	7' 3"	7' 4"
	1.5x6x20 ga	7' 3"	8' 6"	8' 7"
	1.5x6x18 ga	8' 11"	10' 2"	10' 6"
	1.5x6x16 ga	10' 6"	11' 5"	11' 9"
4.50 (t=3.00) 43 PSF	**1.5x6x22 ga**	5' 11"	6' 11"	7' 0"
	1.5x6x20 ga	7' 6"	8' 7"	8' 10"
	1.5x6x18 ga	8' 6"	9' 8"	10' 0"
	1.5x6x16 ga	9' 12"	10' 10"	11' 3"
5.00 (t=3.50) 49 PSF	**1.5x6x22 ga**	5' 8"	6' 8"	6' 9"
	1.5x6x20 ga	6' 8"	7' 9"	7' 10"
	1.5x6x18 ga	8' 2"	9' 3"	9' 7"
	1.5x6x16 ga	9' 6"	10' 5"	10' 9"
5.50 (t=4.00) 55 PSF	**1.5x6x22 ga**	5' 6"	6' 5"	6' 6"
	1.5x6x20 ga	6' 5"	7' 6"	7' 7"
	1.5x6x18 ga	7' 10"	8' 11"	9' 2"
	1.5x6x16 ga	9' 1"	9' 12"	10' 4"
6.00 (t=4.50) 61 PSF	**1.5x6x22 ga**	5' 4"	6' 2"	6' 3"
	1.5x6x20 ga	6' 2"	7' 2"	7' 3"
	1.5x6x18 ga	7' 6"	8' 7"	8' 10"
	1.5x6x16 ga	8' 9"	9' 7"	9' 11"

Lightweight Concrete (115 pcf)				
Total Slab Depth	Deck Type	Maximum Unshored Clear Span		
		1 span	2 span	3 span
3.50 (t=2.00) 23 PSF	**1.5x6x22 ga**	7' 3"	8' 7"	8' 8"
	1.5x6x20 ga	8' 8"	10' 2"	10' 4"
	1.5x6x18 ga	10' 9"	12' 0"	12' 5"
	1.5x6x16 ga	12' 9"	13' 5"	13' 11"
4.00 (t=2.50) 28 PSF	**1.5x6x22 ga**	6' 11"	8' 2"	8' 3"
	1.5x6x20 ga	8' 2"	9' 7"	9' 8"
	1.5x6x18 ga	10' 1"	11' 4"	11' 9"
	1.5x6x16 ga	11' 11"	12' 9"	13' 2"
4.50 (t=3.00) 33 PSF	**1.5x6x22 ga**	6' 7"	7' 9"	7' 10"
	1.5x6x20 ga	8' 6"	9' 8"	10' 0"
	1.5x6x18 ga	9' 7"	10' 10"	11' 2"
	1.5x6x16 ga	11' 3"	12' 1"	12' 6"
5.00 (t=3.50) 37 PSF	**1.5x6x22 ga**	6' 4"	7' 6"	7' 7"
	1.5x6x20 ga	7' 6"	8' 9"	8' 10"
	1.5x6x18 ga	9' 2"	10' 5"	10' 9"
	1.5x6x16 ga	10' 10"	11' 8"	12' 1"
5.50 (t=4.00) 42 PSF	**1.5x6x22 ga**	6' 1"	7' 2"	7' 3"
	1.5x6x20 ga	7' 2"	8' 5"	8' 6"
	1.5x6x18 ga	8' 9"	9' 12"	10' 4"
	1.5x6x16 ga	10' 4"	11' 2"	11' 7"
6.00 (t=4.50) 46 PSF	**1.5x6x22 ga**	5' 11"	6' 11"	7' 0"
	1.5x6x20 ga	6' 11"	8' 1"	8' 3"
	1.5x6x18 ga	8' 6"	9' 8"	10' 0"
	1.5x6x16 ga	9' 12"	10' 10"	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), PSF

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

Slab Thickness (Inches)	Weight (psf)	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0
3.5	31	400	400	372	314	269	232	202
4	37	400	400	400	397	340	293	255
4.5	43	400	400	400	400	400	357	311
5	49	400	400	400	400	400	400	369
5.5	55	400	400	400	400	400	400	400
6	61	400	400	400	400	400	400	400

Slab Thickness (Inches)	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
3.5	177	156	138	123	110	98	88	80
4	224	197	175	156	139	125	113	102
4.5	273	241	213	190	170	153	138	125
5	323	286	253	226	202	182	164	148
5.5	375	331	294	262	235	211	191	173
6	400	378	336	300	269	242	218	197

20/18/16 ga Normalweight Concrete (145 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0
3.5	31	400	400	400	382	327	283	246
4	37	400	400	400	400	400	358	312
4.5	43	400	400	400	400	400	400	381
5	49	400	400	400	400	400	400	400
5.5	55	400	400	400	400	400	400	400
6	61	400	400	400	400	400	400	400

Slab Thickness (Inches)	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
3.5	216	191	170	151	136	122	110	100
4	274	242	215	192	172	155	140	127
4.5	335	296	263	235	211	190	172	156
5	398	352	313	280	251	226	205	186
5.5	400	400	364	325	292	263	238	216
6	400	400	400	372	334	301	272	247

Note
Because of the profile of the embossments, there is no gain in strength for the composite deck-slab when the deck gets thicker than 20 gage. However, the construction spans do get longer for 18 and 16 gage deck.

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

Slab Thickness (Inches)	Weight (psf)	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0
3.5	23	400	400	359	304	260	225	196
4	28	400	400	400	385	329	285	248
4.5	33	400	400	400	400	400	348	304
5	37	400	400	400	400	400	400	362
5.5	42	400	400	400	400	400	400	400
6	46	400	400	400	400	400	400	400

Slab Thickness (Inches)	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
3.5	172	152	135	121	108	97	88	80
4	218	193	172	153	138	124	112	102
4.5	267	236	210	188	168	152	137	125
5	318	281	250	224	201	181	164	149
5.5	369	327	291	260	234	211	191	173
6	400	374	333	298	268	242	219	199

20/18/16 ga Lightweight Concrete (115 pcf, f'c = 3,000 psi)

Slab Thickness (Inches)	Weight (psf)	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0
3.5	23	400	400	400	367	314	272	238
4	28	400	400	400	400	399	346	302
4.5	33	400	400	400	400	400	400	370
5	37	400	400	400	400	400	400	400
5.5	42	400	400	400	400	400	400	400
6	46	400	400	400	400	400	400	400

Slab Thickness (Inches)	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
3.5	209	185	165	147	132	120	108	98
4	266	235	209	187	169	152	138	125
4.5	325	288	257	230	207	187	169	154
5	388	344	306	275	247	223	202	184
5.5	400	400	357	320	288	260	236	215
6	400	400	400	366	330	298	271	246

Note
Because of the profile of the embossments, there is no gain in strength for the composite deck-slab when the deck gets thicker than 20 gage. However, the construction spans do get longer for 18 and 16 gage deck.