

The **Deck Section Properties** are per foot of width. The I value is for positive bending (in.⁴); t is the gage thickness in inches; w is the weight in pounds per square foot; S_p and S_n are the section moduli for positive and negative bending (in.³); R_b and ϕV_n are the interior reaction and the shear in pounds (per foot of width); studs is the number of studs required per foot in order to obtain the full resisting moment, ϕM_n .



DECK PROPERTIES									
Gage	t	w	As	I	S _p	S _n	R _b	ϕV_n	studs
22	0.0295	1.5	0.440	0.338	0.284	0.302	714	1990	0.36
20	0.0358	1.8	0.540	0.420	0.367	0.387	1010	2410	0.43
19	0.0418	2.1	0.630	0.490	0.445	0.458	1330	2810	0.51
18	0.0474	2.4	0.710	0.560	0.523	0.529	1680	3180	0.57
16	0.0598	3.1	0.900	0.700	0.654	0.654	2470	3990	0.72

The **Composite Properties** are a list of values for the composite slab. The **slab depth** is the distance from the bottom of the steel deck to the top of the slab in inches as shown on the sketch. U.L. ratings generally refer to the cover over the top of the deck so it is important to be aware of the difference in names. ϕM_n is the factored resisting moment provided by the composite slab when the "full" number of studs as shown in the upper table are in place; inch kips (per foot of width). A_c is the area of concrete available to resist shear, in.² per foot of width. **Vol.** is the volume of concrete in ft.³ per ft.² needed to make up the slab; no allowance for frame or deck deflection is included. **W** is the concrete weight in pounds per ft.². S_c is the section modulus of the "cracked" concrete composite slab; in.³ per foot of width. I_{av} is the average of the "cracked" and "uncracked" moments of inertia of the transformed composite slab; in.⁴ per foot of width. The I_{av} transformed section analysis is based on steel; therefore, to calculate deflections the appropriate modulus of elasticity to use is 29.5×10^6 psi. ϕM_{no} is the factored resisting moment of the composite slab if there are **no studs** on the beams (the deck is attached to the beams or walls on which it is resting) inch kips (per foot of width). ϕV_n is the factored vertical shear resistance of the composite system; it is the sum of the shear resistances of the steel deck and the concrete but is not allowed to exceed $\phi 4(f'_c)^{1/2} A_c$; pounds (per foot of width). The next three columns list the **maximum unshored spans** in feet; these values are obtained by using the construction loading requirements of the SDI; combined bending and shear, deflection, and interior reactions are considered in calculating these values. A_{wvf} is the minimum area of welded wire fabric recommended for temperature reinforcing in the composite slab; square inches per foot.

COMPOSITE PROPERTIES													
	Slab Depth	ϕM_n in.k	A_c in ²	Vol. ft ³ /ft ²	W psf	S_c in ³	I_{av} in ⁴	ϕM_{no} in.k	ϕV_n lbs.	Max. unshored spans, ft.			A_{wvf}
										1span	2span	3span	
22 gage	4.50	40.27	32.6	0.292	42	1.05	5.9	29.40	5030	5.82	7.83	7.92	0.023
	5.00	46.44	37.5	0.333	48	1.23	8.0	34.53	5480	5.54	7.47	7.56	0.027
	5.25	49.53	40.0	0.354	51	1.32	9.2	37.16	5720	5.41	7.31	7.39	0.029
	5.50	52.61	42.6	0.375	54	1.42	10.5	39.81	5960	5.30	7.16	7.24	0.032
	6.00	58.78	48.0	0.417	60	1.61	13.5	45.21	6460	5.09	6.89	6.97	0.036
	6.25	61.87	50.8	0.438	63	1.71	15.3	47.95	6720	5.03	6.76	6.84	0.038
	6.50	64.95	53.6	0.458	66	1.81	17.1	50.70	6980	4.97	6.65	6.72	0.041
	7.00	71.12	59.5	0.500	73	2.01	21.2	56.26	7530	4.85	6.43	6.51	0.045
20 gage	7.25	74.21	61.9	0.521	76	2.11	23.5	59.07	7750	4.79	6.32	6.41	0.047
	7.50	77.29	64.3	0.542	79	2.21	26.0	61.88	7970	4.74	6.22	6.31	0.050
	4.50	48.60	32.6	0.292	42	1.26	6.3	35.43	5450	6.81	8.97	9.27	0.023
	5.00	56.18	37.5	0.333	48	1.48	8.6	41.65	5900	6.47	8.55	8.83	0.027
	5.25	59.96	40.0	0.354	51	1.60	9.8	44.84	6140	6.32	8.36	8.63	0.029
	5.50	63.75	42.6	0.375	54	1.71	11.3	48.07	6380	6.18	8.18	8.45	0.032
	6.00	71.32	48.0	0.417	60	1.95	14.5	54.63	6880	5.94	7.85	8.11	0.036
	6.25	75.11	50.8	0.438	63	2.07	16.3	57.96	7140	5.86	7.70	7.95	0.038
19 gage	6.50	78.90	53.6	0.458	66	2.19	18.2	61.31	7400	5.79	7.56	7.80	0.041
	7.00	86.47	59.5	0.500	73	2.43	22.6	68.09	7950	5.65	7.29	7.53	0.045
	7.25	90.26	61.9	0.521	76	2.55	25.0	71.50	8170	5.58	7.17	7.41	0.047
	7.50	94.05	64.3	0.542	79	2.67	27.6	74.93	8390	5.52	7.05	7.28	0.050
	4.50	55.85	32.6	0.292	42	1.45	6.7	40.69	5850	7.65	9.76	10.08	0.023
	5.00	64.68	37.5	0.333	48	1.71	9.0	47.87	6300	7.26	9.30	9.61	0.027
	5.25	69.10	40.0	0.354	51	1.84	10.4	51.56	6540	7.09	9.09	9.39	0.029
	5.50	73.52	42.6	0.375	54	1.97	11.9	55.30	6780	6.93	8.90	9.19	0.032
18 gage	6.00	82.35	48.0	0.417	60	2.24	15.2	62.90	7280	6.65	8.54	8.83	0.036
	6.25	86.77	50.8	0.438	63	2.38	17.1	66.76	7540	6.56	8.38	8.66	0.038
	6.50	91.19	53.6	0.458	66	2.52	19.2	70.65	7800	6.48	8.23	8.50	0.041
	7.00	100.03	59.5	0.500	73	2.80	23.8	78.50	8350	6.32	7.94	8.20	0.045
	7.25	104.44	61.9	0.521	76	2.94	26.3	82.46	8570	6.24	7.81	8.07	0.047
	7.50	108.86	64.3	0.542	79	3.08	29.0	86.45	8790	6.17	7.68	7.94	0.050
	4.50	62.08	32.6	0.292	42	1.62	7.0	45.34	6080	8.42	10.48	10.83	0.023
	5.00	72.04	37.5	0.333	48	1.90	9.5	53.36	6670	7.98	9.99	10.32	0.027
16 gage	5.25	77.02	40.0	0.354	51	2.05	10.9	57.48	6910	7.79	9.77	10.10	0.029
	5.50	82.00	42.6	0.375	54	2.20	12.4	61.66	7150	7.61	9.56	9.88	0.032
	6.00	91.95	48.0	0.417	60	2.50	15.9	70.18	7650	7.30	9.18	9.49	0.036
	6.25	96.93	50.8	0.438	63	2.66	17.9	74.50	7910	7.20	9.01	9.31	0.038
	6.50	101.91	53.6	0.458	66	2.81	20.0	78.85	8170	7.11	8.85	9.14	0.041
	7.00	111.87	59.5	0.500	73	3.13	24.8	87.66	8720	6.93	8.54	8.82	0.045
	7.25	116.85	61.9	0.521	76	3.28	27.4	92.10	8940	6.85	8.40	8.68	0.047
	7.50	121.83	64.3	0.542	79	3.44	30.2	96.57	9160	6.77	8.26	8.54	0.050
16 gage	4.50	62.08	32.6	0.292	42	1.99	7.7	45.34	6080	9.58	11.63	12.02	0.023
	5.00	72.04	37.5	0.333	48	2.35	10.4	53.36	6980	9.08	11.10	11.47	0.027
	5.25	77.02	40.0	0.354	51	2.53	11.9	57.48	7450	8.85	10.85	11.22	0.029
	5.50	82.00	42.6	0.375	54	2.72	13.6	61.66	7940	8.65	10.63	10.98	0.032
	6.00	91.95	48.0	0.417	60	3.10	17.4	70.18	8460	8.29	10.21	10.55	0.036
	6.25	96.93	50.8	0.438	63	3.29	19.5	74.50	8720	8.17	10.02	10.35	0.038
	6.50	101.91	53.6	0.458	66	3.48	21.8	78.85	8980	8.07	9.84	10.17	0.041
	7.00	111.87	59.5	0.500	73	3.88	27.0	87.66	9530	7.86	9.50	9.82	0.045
7.25	116.85	61.9	0.521	76	4.08	29.8	92.10	9750	7.77	9.35	9.66	0.047	
7.50	121.83	64.3	0.542	79	4.28	32.8	96.57	9970	7.67	9.20	9.50	0.050	



		L ₁ Uniform Live Loads, psf *														
		Slab Depth	φM _n in. k	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00
22 gage	4.50	40.27	400	365	310	265	230	200	175	155	135	120	105	95	85	
	5.00	46.44	400	400	360	305	265	230	200	175	155	140	125	110	95	
	5.50	52.61	400	400	400	350	300	260	230	200	175	155	140	125	110	
	6.00	58.78	400	400	400	390	335	295	255	225	200	175	155	140	125	
	6.50	64.95	400	400	400	400	370	325	285	250	220	195	175	155	135	
	7.00	71.12	400	400	400	400	400	355	310	275	240	215	190	170	150	
	7.25	74.21	400	400	400	400	400	370	325	285	250	225	200	175	155	
	7.50	77.29	400	400	400	400	400	385	340	295	260	230	205	185	165	
20 gage	4.50	48.60	400	400	380	325	285	245	215	190	170	150	135	120	110	
	5.00	56.18	400	400	400	380	330	285	250	220	195	175	155	140	125	
	5.50	63.75	400	400	400	400	375	325	285	250	225	200	175	160	140	
	6.00	71.32	400	400	400	400	400	365	320	285	250	225	200	180	160	
	6.50	78.90	400	400	400	400	400	400	355	315	280	245	220	195	175	
	7.00	86.47	400	400	400	400	400	400	390	345	305	270	240	215	195	
	7.25	90.26	400	400	400	400	400	400	400	360	320	285	255	225	205	
	7.50	94.05	400	400	400	400	400	400	400	375	330	295	265	235	210	
19 gage	4.50	55.85	400	400	400	380	330	290	255	225	200	180	160	145	130	
	5.00	64.68	400	400	400	400	385	335	295	260	230	205	185	165	150	
	5.50	73.52	400	400	400	400	400	380	335	295	265	235	210	190	170	
	6.00	82.35	400	400	400	400	400	400	375	335	295	265	235	215	190	
	6.50	91.19	400	400	400	400	400	400	400	370	330	295	265	235	210	
	7.00	100.03	400	400	400	400	400	400	400	400	360	320	290	260	235	
	7.25	104.44	400	400	400	400	400	400	400	400	375	335	300	270	245	
	7.50	108.86	400	400	400	400	400	400	400	400	395	350	315	280	255	
18 gage	4.50	62.08	400	400	400	400	370	325	285	255	225	200	180	160	145	
	5.00	72.04	400	400	400	400	400	375	335	295	260	235	210	190	170	
	5.50	82.00	400	400	400	400	400	400	380	335	300	265	240	215	195	
	6.00	91.95	400	400	400	400	400	400	400	375	335	300	270	245	220	
	6.50	101.91	400	400	400	400	400	400	400	400	375	335	300	270	245	
	7.00	111.87	400	400	400	400	400	400	400	400	400	365	330	295	270	
	7.25	116.85	400	400	400	400	400	400	400	400	400	385	345	310	280	
	7.50	121.83	400	400	400	400	400	400	400	400	400	400	360	325	290	
16 gage	4.50	62.08	400	400	400	400	370	325	285	255	225	200	180	160	145	
	5.00	72.04	400	400	400	400	400	375	335	295	260	235	210	190	170	
	5.50	82.00	400	400	400	400	400	400	380	335	300	265	240	215	195	
	6.00	91.95	400	400	400	400	400	400	400	375	335	300	270	245	220	
	6.50	101.91	400	400	400	400	400	400	400	400	375	335	300	270	245	
	7.00	111.87	400	400	400	400	400	400	400	400	400	365	330	295	270	
	7.25	116.85	400	400	400	400	400	400	400	400	400	385	345	310	280	
	7.50	121.83	400	400	400	400	400	400	400	400	400	400	360	325	290	
22 gage	4.50	29.40	305	255	215	185	160	135	120	105	90	80	70	60	50	
	5.00	34.53	360	305	255	220	185	160	140	120	105	95	80	70	65	
	5.50	39.81	400	350	295	255	215	190	165	140	125	110	95	85	75	
	6.00	45.21	400	400	340	290	250	215	185	160	140	125	110	95	85	
	6.50	50.70	400	400	380	325	280	240	210	185	160	140	125	110	95	
	7.00	56.26	400	400	400	360	310	270	235	205	180	155	140	120	105	
	7.25	59.07	400	400	400	380	325	285	245	215	190	165	145	130	115	
	7.50	61.88	400	400	400	400	345	295	260	225	200	175	155	135	120	
20 gage	4.50	35.43	375	315	270	230	200	170	150	130	115	100	90	80	70	
	5.00	41.65	400	375	315	270	235	205	175	155	135	120	105	95	85	
	5.50	48.07	400	400	365	315	270	235	205	180	160	140	125	110	95	
	6.00	54.63	400	400	400	360	310	270	235	205	180	160	140	125	110	
	6.50	61.31	400	400	400	400	350	300	265	230	205	180	160	140	125	
	7.00	68.09	400	400	400	400	390	335	295	260	230	200	180	160	140	
	7.25	71.50	400	400	400	400	400	355	310	270	240	210	190	165	150	
	7.50	74.93	400	400	400	400	400	370	325	285	250	225	200	175	155	
19 gage	4.50	40.69	400	370	315	270	230	200	175	155	135	120	105	95	85	
	5.00	47.87	400	400	370	315	275	240	210	185	160	145	125	115	100	
	5.50	55.30	400	400	400	365	320	275	240	215	190	165	150	130	120	
	6.00	62.90	400	400	400	400	365	315	275	245	215	190	170	150	135	
	6.50	70.65	400	400	400	400	400	355	310	275	245	215	190	170	155	
	7.00	78.50	400	400	400	400	400	395	350	305	270	240	215	190	170	
	7.25	82.46	400	400	400	400	400	400	365	320	285	255	225	200	180	
	7.50	86.45	400	400	400	400	400	400	385	340	300	265	235	210	190	
18 gage	4.50	45.34	400	400	350	300	260	230	200	175	155	140	125	110	100	
	5.00	53.36	400	400	400	355	310	270	235	210	185	165	145	130	115	
	5.50	61.66	400	400	400	400	360	315	275	240	215	190	170	150	135	
	6.00	70.18	400	400	400	400	400	360	315	275	245	220	195	175	155	
	6.50	78.85	400	400	400	400	400	400	355	310	275	245	220	195	175	
	7.00	87.66	400	400	400	400	400	400	395	350	310	275	245	220	195	
	7.25	92.10	400	400	400	400	400	400	400	365	325	290	260	230	210	
	7.50	96.57	400	400	400	400	400	400	400	385	340	305	270	245	220	
16 gage	4.50	45.34	400	400	350	300	260	230	200	175	155	140	125	110	100	
	5.00	53.36	400	400	400	355	310	270	235	210	185	165	145	130	115	
	5.50	61.66	400	400	400	400	360	315	275	240	215	190	170	150	135	
	6.00	70.18	400	400	400	400	400	360	315	275	245	220	195	175	155	
	6.50	78.85	400	400	400	400	400	400	355	310	275	245	220	195	175	
	7.00	87.66	400	400	400	400	400	400	395	350	310	275	245	220	195	
	7.25	92.10	400	400	400	400	400	400	400	365	325	290	260	230	210	
	7.50	96.57	400	400	400	400	400	400	400	385	340	305	270	245	220	

 1 STUD/FT.
 NO STUDS

* The Uniform Live Loads are based on the LRFD equation $\phi M_n = (1.6L + 1.2D)P/8$. Although there are other load combinations that may require investigation, this will control most of the time. The equation assumes there is no negative bending reinforcement over the beams and therefore each composite slab is a single span. Two sets of values are shown; ϕM_{ni} is used to calculate the uniform load when the full required number of studs is present; ϕM_{no} is used to calculate the load when no studs are present. A straight line interpolation can be done if the average number of studs is between zero and the required number needed to develop the "full" factored moment. The tabulated loads are checked for shear controlling (it seldom does), and also limited to a live load deflection of 1/360 of the span.

An upper limit of 400 psf has been applied to the tabulated loads. This has been done to guard against equating large concentrated to uniform loads. Concentrated loads may require special analysis and design to take care of serviceability requirements not covered by simply using a uniform load value. On the other hand, for any load combination the values provided by the composite properties can be used in the calculations.

Welded wire fabric in the required amount is assumed for the table values. If welded wire fabric is not present, deduct 10% from the listed loads.

Refer to the example problems for the use of the tables.