3.5" Versa-Dek® LS Composite (3.5VLSC)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in.^{2}/ft)	I_D (in.^{4}/ft)		S_p (in.^{3}/ft)	S_n (in.^{3}/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.36	40	0.989	1.944	1.971	0.733	0.901	26371	32442	5136	950	1951
19	24	3.92	40	1.153	2.306	2.334	0.906	1.075	32621	38705	7004	1273	2591
18	24	4.44	40	1.306	2.645	2.673	1.061	1.227	38179	44189	9009	1614	3262
16	24	5.59	40	1.643	3.377	3.415	1.425	1.566	51313	56368	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

CONSTRUCTION CLEAR SPANS AND UNIFORM SUPERIMPOSED SERVICE LOAD CAPACITY

LRFD

Concrete	Slab Depth (in), Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in)				Uniform Service Load Capacity, PSF / Spans (ft)													
							Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required					
			Single	Double	Triple	Canti-lever	14	15	16	17	18	19	20	21	19	20	21	22	23	24	25
4000 PSI Normal Weight Concrete (145 PCF)	5 1/2	20	11 - 8	12 - 10	13 - 5	4 - 6	154	130	110	82	60	42			84	72	61	52	43		
	56 PSF	19	13 - 2	14 - 5	14 - 11	5 - 0	208	158	120	90	66	47			84	71	60	51	43		
	1.43 cu.yd/(100sq.ft)	18	14 - 4	15 - 5	15 - 11	5 - 4	201	168	128	96	72	52			83	71	60	51	43		
	6x6 - W1.4 x W1.4	16	15 - 3	17 - 4	17 - 11	6 - 0	246	189	145	110	83	62	44		83	70	59	50	42		
	5 3/4	20	11 - 5	12 - 4	12 - 10	4 - 3	164	138	117	98	72	52			97	83	71	60	51	43	
	59 PSF	19	12 - 10	14 - 2	14 - 8	4 - 11	221	183	140	106	79	58	41		96	82	70	60	51	43	
	1.5 cu.yd/(100sq.ft)	18	14 - 0	15 - 2	15 - 8	5 - 3	253	194	149	113	86	63	45		96	82	70	59	50	42	
	6x6 - W1.4 x W1.4	16	15 - 1	17 - 0	17 - 7	5 - 10	267	217	167	129	98	74	54		95	81	69	59	49	41	
	6	20	11 - 2	11 - 11	12 - 5	4 - 2	173	146	124	106	86	63	45		110	94	81	69	59	51	41
	62 PSF	19	12 - 7	13 - 11	14 - 4	4 - 9	234	202	162	124	94	70	51		109	94	81	69	59	50	42
	1.58 cu.yd/(100sq.ft)	18	13 - 9	14 - 10	15 - 4	5 - 1	289	222	172	132	101	76	55		109	94	80	69	59	50	42
	6x6 - W1.4 x W1.4	16	14 - 11	16 - 9	17 - 3	5 - 9	289	245	192	149	115	88	66	47	108	93	79	68	58	49	41
	6 1/2	20	10 - 9	11 - 1	11 - 7	3 - 10	193	163	139	118	101	86	66	48	130	114	99	86	75	65	57
	68 PSF	19	12 - 1	13 - 5	13 - 10	4 - 7	260	225	196	164	127	97	73	53	138	120	103	89	77	67	57
	1.74 cu.yd/(100sq.ft)	18	13 - 3	14 - 4	14 - 10	4 - 11	323	283	224	175	136	105	79	59	138	119	103	89	77	66	57
	6x6 - W1.4 x W1.4	16	14 - 7	16 - 2	16 - 8	5 - 7	409	318	249	196	153	119	92	69	137	118	102	88	76	65	56
	7	20	10 - 5	10 - 4	10 - 10	3 - 7	213	180	153	130	111	95	81	69	144	125	109	95	83	72	63
	74 PSF	19	11 - 8	13 - 0	13 - 5	4 - 6	287	248	217	190	167	130	100	76	170	148	129	112	98	85	74
	1.89 cu.yd/(100sq.ft)	18	12 - 9	13 - 10	14 - 4	4 - 9	356	312	276	225	177	139	108	82	170	148	128	112	97	84	73
	6x6 - W2.0 x W2.0	16	14 - 4	15 - 7	16 - 2	5 - 5	500	401	316	250	198	157	123	95	169	147	127	111	96	84	72
	7 1/4	20	10 - 3	10 - 1	10 - 6	3 - 6	223	188	160	137	117	100	85	73	151	131	115	100	87	76	66
	77 PSF	19	11 - 6	12 - 9	13 - 2	4 - 5	300	260	227	199	175	148	116	89	187	163	142	124	109	95	83
	1.97 cu.yd/(100sq.ft)	18	12 - 6	13 - 8	14 - 1	4 - 8	372	327	289	253	200	158	124	96	187	163	142	124	108	94	82
	6x6 - W2.0 x W2.0	16	14 - 2	15 - 4	15 - 11	5 - 3	500	446	353	281	224	178	141	110	186	162	141	123	107	94	81
	8	20	9 - 9	9 - 2	9 - 7	3 - 3	253	214	182	155	133	114	97	83	171	149	130	114	99	87	76
	86 PSF	19	11 - 0	12 - 2	12 - 7	4 - 2	340	294	257	225	199	176	156	133	235	210	187	165	145	128	112
	2.2 cu.yd/(100sq.ft)	18	11 - 11	13 - 0	13 - 6	4 - 6	421	370	327	291	260	224	179	143	243	213	187	164	145	127	112
	4x4 - W1.4 x W1.4	16	13 - 10	14 - 8	15 - 2	5 - 1	500	500	453	385	310	250	201	161	243	212	186	163	144	126	111

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022. The slab weight has been subtracted from the service loads listed above.
6. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
7. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
8. Long-term deflection has not been taken into consideration.
9. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
10. Negative moment (top) reinforcement is required over supports of continuous spans.
11. Continuous spans should be approximately equal with the span length difference not exceeding 20%.
12. The continuous slab values are based on deck sheets staggered over the interior supports.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite (3.5VLSC)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in^2/ft)	I_D (in^4/ft)		S_p ($in.^3$/ft)	S_n ($in.^3$/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.36	40	0.989	1.944	1.971	0.733	0.901	26371	32442	5136	950	1951
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F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=40 psf	LL=55 psf	LL=100 psf	LL=40 psf; SDL=20 psf		LL=55 psf; SDL=10 psf		LL=100 psf; SDL=15 psf					
	SDL=20 psf	SDL=10 psf	SDL=15 psf	Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	18 - 0	17 - 9	15 - 10	22 - 9	21 - 7	22 - 0	20 - 10	18 - 2	17 - 3	11 - 8	12 - 10	13 - 5	4 - 6
5 3/4	18 - 7	18 - 4	16 - 4	23 - 9	22 - 7	22 - 11	21 - 9	19 - 1	18 - 1	11 - 5	12 - 4	12 - 10	4 - 3
6	19 - 2	18 - 11	16 - 8	24 - 9	23 - 6	23 - 11	22 - 8	19 - 11	18 - 11	11 - 2	11 - 11	12 - 5	4 - 2
6 1/2	20 - 4	20 - 1	17 - 4	26 - 8	25 - 1	25 - 9	24 - 4	21 - 8	20 - 2	10 - 9	11 - 1	11 - 7	3 - 10
7	21 - 5	21 - 2	18 - 0	28 - 6	25 - 11	27 - 7	25 - 1	23 - 3	20 - 11	10 - 5	10 - 4	10 - 10	3 - 7
7 1/4	22 - 0	21 - 9	18 - 4	29 - 5	26 - 3	28 - 6	25 - 5	24 - 1	21 - 3	10 - 3	10 - 1	10 - 6	3 - 6
8	23 - 7	22 - 9	19 - 2	32 - 0	27 - 2	31 - 0	26 - 4	26 - 6	22 - 2	9 - 9	9 - 2	9 - 7	3 - 3
19 GA Deck													
5 1/2	18 - 4	18 - 1	16 - 2	22 - 9	21 - 7	21 - 11	20 - 10	18 - 2	17 - 3	13 - 2	14 - 5	14 - 11	5 - 0
5 3/4	18 - 11	18 - 8	16 - 8	23 - 9	22 - 6	22 - 11	21 - 9	19 - 1	18 - 1	12 - 10	14 - 2	14 - 8	4 - 11
6	19 - 6	19 - 3	17 - 3	24 - 8	23 - 5	23 - 10	22 - 8	19 - 11	18 - 11	12 - 7	13 - 11	14 - 4	4 - 9
6 1/2	20 - 8	20 - 5	18 - 5	26 - 7	25 - 3	25 - 9	24 - 5	21 - 7	20 - 6	12 - 1	13 - 5	13 - 10	4 - 7
7	21 - 9	21 - 6	19 - 6	28 - 5	26 - 11	27 - 6	26 - 2	23 - 3	22 - 1	11 - 8	13 - 0	13 - 5	4 - 6
7 1/4	22 - 4	22 - 1	20 - 0	29 - 4	27 - 7	28 - 5	27 - 0	24 - 1	22 - 10	11 - 6	12 - 9	13 - 2	4 - 5
8	24 - 0	23 - 9	21 - 7	31 - 11	29 - 8	31 - 0	29 - 4	26 - 5	25 - 1	11 - 0	12 - 2	12 - 7	4 - 2
18 GA Deck													
5 1/2	18 - 7	18 - 4	16 - 5	22 - 8	21 - 6	21 - 11	20 - 9	18 - 2	17 - 3	14 - 4	15 - 5	15 - 11	5 - 4
5 3/4	19 - 2	18 - 11	16 - 11	23 - 8	22 - 6	22 - 10	21 - 8	19 - 0	18 - 1	14 - 0	15 - 2	15 - 8	5 - 3
6	19 - 9	19 - 6	17 - 6	24 - 8	23 - 5	23 - 10	22 - 7	19 - 11	18 - 10	13 - 9	14 - 10	15 - 4	5 - 1
6 1/2	20 - 11	20 - 8	18 - 8	26 - 7	25 - 2	25 - 8	24 - 4	21 - 7	20 - 6	13 - 3	14 - 4	14 - 10	4 - 11
7	22 - 1	21 - 10	19 - 9	28 - 5	26 - 11	27 - 6	26 - 1	23 - 3	22 - 0	12 - 9	13 - 10	14 - 4	4 - 9
7 1/4	22 - 8	22 - 5	20 - 4	29 - 3	27 - 9	28 - 5	26 - 11	24 - 0	22 - 10	12 - 6	13 - 8	14 - 1	4 - 8
8	24 - 4	24 - 0	21 - 11	31 - 10	30 - 0	30 - 11	29 - 4	26 - 5	25 - 1	11 - 11	13 - 0	13 - 6	4 - 6
16 GA Deck													
5 1/2	19 - 1	18 - 10	16 - 10	22 - 7	21 - 5	21 - 10	20 - 8	18 - 1	17 - 2	15 - 3	17 - 4	17 - 11	6 - 0
5 3/4	19 - 8	19 - 5	17 - 5	23 - 7	22 - 4	22 - 9	21 - 7	19 - 0	18 - 0	15 - 1	17 - 0	17 - 7	5 - 10
6	20 - 3	20 - 0	18 - 0	24 - 7	23 - 4	23 - 9	22 - 6	19 - 10	18 - 10	14 - 11	16 - 9	17 - 3	5 - 9
6 1/2	21 - 6	21 - 3	19 - 2	26 - 5	25 - 1	25 - 7	24 - 3	21 - 6	20 - 5	14 - 7	16 - 2	16 - 8	5 - 7
7	22 - 8	22 - 5	20 - 3	28 - 3	26 - 10	27 - 5	26 - 0	23 - 2	22 - 0	14 - 4	15 - 7	16 - 2	5 - 5
7 1/4	23 - 3	22 - 11	20 - 10	29 - 2	27 - 8	28 - 3	26 - 10	24 - 0	22 - 9	14 - 2	15 - 4	15 - 11	5 - 3
8	24 - 11	24 - 8	22 - 6	31 - 9	30 - 2	30 - 10	29 - 3	26 - 4	25 - 0	13 - 10	14 - 8	15 - 2	5 - 1

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
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3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
9. Negative moment (top) reinforcement is required over supports of continuous spans.
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18	24	4.44	40	1.306	2.645	2.673	1.061	1.227	38179	44189	9009	1614	3262
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NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=20 psf SDL=20 psf	LL=100 psf SDL=20 psf	LL=100 psf SDL=40 psf	LL=20 psf; SDL=20 psf		LL=100 psf; SDL=20 psf		LL=100 psf; SDL=40 psf					
				Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	19 - 2	15 - 9	15 - 0	25 - 6	23 - 8	18 - 0	17 - 1	17 - 2	16 - 4	11 - 8	12 - 10	13 - 5	4 - 6
5 3/4	19 - 9	16 - 1	15 - 4	26 - 6	24 - 5	18 - 10	17 - 11	18 - 0	17 - 1	11 - 5	12 - 4	12 - 10	4 - 3
6	20 - 4	16 - 6	15 - 9	27 - 7	25 - 1	19 - 9	18 - 8	18 - 10	17 - 11	11 - 2	11 - 11	12 - 5	4 - 2
6 1/2	21 - 6	17 - 2	16 - 5	29 - 6	26 - 6	21 - 5	19 - 11	20 - 6	19 - 0	10 - 9	11 - 1	11 - 7	3 - 10
7	22 - 7	17 - 10	17 - 0	31 - 5	27 - 11	23 - 0	20 - 8	22 - 1	19 - 9	10 - 5	10 - 4	10 - 10	3 - 7
7 1/4	23 - 2	18 - 1	17 - 4	32 - 4	28 - 7	23 - 10	21 - 0	22 - 10	20 - 1	10 - 3	10 - 1	10 - 6	3 - 6
8	24 - 9	18 - 11	18 - 2	35 - 0	30 - 0	26 - 2	21 - 11	25 - 2	21 - 0	9 - 9	9 - 2	9 - 7	3 - 3
19 GA Deck													
5 1/2	19 - 5	16 - 0	15 - 5	25 - 5	24 - 0	18 - 0	17 - 1	17 - 2	16 - 4	13 - 2	14 - 5	14 - 11	5 - 0
5 3/4	20 - 1	16 - 7	16 - 0	26 - 5	24 - 9	18 - 10	17 - 10	18 - 0	17 - 1	12 - 10	14 - 2	14 - 8	4 - 11
6	20 - 8	17 - 1	16 - 6	27 - 6	25 - 6	19 - 8	18 - 8	18 - 10	17 - 11	12 - 7	13 - 11	14 - 4	4 - 9
6 1/2	21 - 10	18 - 3	17 - 8	29 - 5	26 - 11	21 - 4	20 - 3	20 - 6	19 - 5	12 - 1	13 - 5	13 - 10	4 - 7
7	22 - 11	19 - 4	18 - 8	31 - 4	28 - 4	23 - 0	21 - 10	22 - 1	20 - 11	11 - 8	13 - 0	13 - 5	4 - 6
7 1/4	23 - 6	19 - 10	19 - 3	32 - 3	29 - 1	23 - 10	22 - 7	22 - 10	21 - 8	11 - 6	12 - 9	13 - 2	4 - 5
8	25 - 2	21 - 5	20 - 10	34 - 11	31 - 1	26 - 2	24 - 10	25 - 2	23 - 10	11 - 0	12 - 2	12 - 7	4 - 2
18 GA Deck													
5 1/2	19 - 9	16 - 3	15 - 8	25 - 4	24 - 1	17 - 11	17 - 0	17 - 2	16 - 3	14 - 4	15 - 5	15 - 11	5 - 4
5 3/4	20 - 4	16 - 10	16 - 3	26 - 5	25 - 0	18 - 10	17 - 10	18 - 0	17 - 1	14 - 0	15 - 2	15 - 8	5 - 3
6	20 - 11	17 - 4	16 - 9	27 - 5	25 - 10	19 - 8	18 - 8	18 - 10	17 - 10	13 - 9	14 - 10	15 - 4	5 - 1
6 1/2	22 - 1	18 - 6	17 - 11	29 - 5	27 - 4	21 - 4	20 - 3	20 - 5	19 - 5	13 - 3	14 - 4	14 - 10	4 - 11
7	23 - 3	19 - 7	19 - 0	31 - 3	28 - 9	23 - 0	21 - 10	22 - 0	20 - 11	12 - 9	13 - 10	14 - 4	4 - 9
7 1/4	23 - 10	20 - 1	19 - 6	32 - 2	29 - 5	23 - 9	22 - 7	22 - 10	21 - 8	12 - 6	13 - 8	14 - 1	4 - 8
8	25 - 6	21 - 9	21 - 1	34 - 10	31 - 6	26 - 2	24 - 9	25 - 1	23 - 10	11 - 11	13 - 0	13 - 6	4 - 6
16 GA Deck													
5 1/2	20 - 3	16 - 8	16 - 2	25 - 3	23 - 11	17 - 11	17 - 0	17 - 1	16 - 3	15 - 3	17 - 4	17 - 11	6 - 0
5 3/4	20 - 10	17 - 3	16 - 8	26 - 3	24 - 11	18 - 9	17 - 10	17 - 11	17 - 0	15 - 1	17 - 0	17 - 7	5 - 10
6	21 - 6	17 - 10	17 - 3	27 - 3	25 - 10	19 - 7	18 - 7	18 - 9	17 - 10	14 - 11	16 - 9	17 - 3	5 - 9
6 1/2	22 - 8	19 - 0	18 - 4	29 - 3	27 - 9	21 - 3	20 - 2	20 - 5	19 - 4	14 - 7	16 - 2	16 - 8	5 - 7
7	23 - 10	20 - 1	19 - 6	31 - 1	29 - 6	22 - 11	21 - 9	22 - 0	20 - 10	14 - 4	15 - 7	16 - 2	5 - 5
7 1/4	24 - 5	20 - 8	20 - 0	32 - 0	30 - 2	23 - 9	22 - 6	22 - 9	21 - 7	14 - 2	15 - 4	15 - 11	5 - 3
8	26 - 1	22 - 3	21 - 8	34 - 8	32 - 3	26 - 1	24 - 9	25 - 1	23 - 9	13 - 10	14 - 8	15 - 2	5 - 1

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
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10. Continuous spans should be approximately equal with the span length difference not exceeding 20%.
11. The continuous slab values are based on deck sheets staggered over the interior supports.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite (3.5VLSC)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in.^{2}/ft)	I_D (in.^{4}/ft)		S_p (in.^{3}/ft)	S_n (in.^{3}/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.36	40	0.989	1.944	1.971	0.733	0.901	26371	32442	5136	950	1951
19	24	3.92	40	1.153	2.306	2.334	0.906	1.075	32621	38705	7004	1273	2591
18	24	4.44	40	1.306	2.645	2.673	1.061	1.227	38179	44189	9009	1614	3262
16	24	5.59	40	1.643	3.377	3.415	1.425	1.566	51313	56368	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

LIGHTWEIGHT CONCRETE (110 PCF), f'c=4000 PSI

STAGGERED ENDS

CONSTRUCTION CLEAR SPANS AND UNIFORM SUPERIMPOSED SERVICE LOAD CAPACITY

LRFD

Concrete	Slab Depth (in), Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in)				Uniform Service Load Capacity, PSF / Spans (ft)													
							Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required					
			Single	Double	Triple	Canti-lever	14	15	16	17	18	19	20	21	19	20	21	22	23	24	25
4000 PSI Lightweight Concrete (110 PCF)	5 1/2	20	13 - 0	14 - 7	15 - 1	5 - 0	150	113	85	64	46				94	81	64	49			
	42 PSF	19	14 - 8	15 - 11	16 - 6	5 - 6	162	123	94	70	52				94	81	70	55	43		
	1.43 cu.yd/(100sq.ft)	18	15 - 4	17 - 0	17 - 7	5 - 10	174	133	101	77	57	42			94	81	70	61	47		
	6x6 - W1.4 x W1.4	16	16 - 3	19 - 1	19 - 1	6 - 4	199	153	118	90	68	51			93	80	69	60	52	45	
	5 3/4	20	12 - 9	14 - 4	14 - 10	4 - 11	172	131	100	75	56	40			107	93	75	59	46		
	45 PSF	19	14 - 4	15 - 8	16 - 2	5 - 5	186	142	108	82	62	45			107	93	81	65	51		
	1.5 cu.yd/(100sq.ft)	18	15 - 2	16 - 8	17 - 3	5 - 9	198	152	116	89	67	50			106	93	80	70	56	43	
	6x6 - W1.4 x W1.4	16	16 - 0	18 - 9	18 - 10	6 - 3	224	172	133	103	79	59	44		106	92	80	69	60	52	41
	6	20	12 - 6	14 - 1	14 - 7	4 - 10	185	151	115	88	66	49			121	106	88	70	55	42	
	47 PSF	19	14 - 1	15 - 5	15 - 11	5 - 4	212	163	125	96	73	54			121	105	92	77	61	47	
	1.58 cu.yd/(100sq.ft)	18	15 - 0	16 - 5	17 - 0	5 - 8	225	173	134	103	79	59	43		120	105	91	80	66	52	40
	6x6 - W1.4 x W1.4	16	15 - 10	18 - 5	18 - 8	6 - 3	252	195	151	117	91	69	52		119	104	91	79	69	60	48
	6 1/2	20	12 - 0	13 - 7	14 - 1	4 - 8	206	176	151	117	90	68	50		143	126	111	95	76	60	47
	52 PSF	19	13 - 7	14 - 11	15 - 4	5 - 1	271	210	163	127	98	75	56	41	151	132	116	102	83	67	53
	1.74 cu.yd/(100sq.ft)	18	14 - 8	15 - 11	16 - 5	5 - 6	287	222	173	135	105	81	61	45	150	131	115	101	89	72	58
	6x6 - W1.4 x W1.4	16	15 - 6	17 - 10	18 - 3	6 - 1	319	249	195	153	120	93	72	54	149	131	114	100	88	78	68
	7	20	11 - 8	12 - 10	13 - 4	4 - 5	226	193	166	144	118	91	70	52	157	139	123	109	97	82	65
	56 PSF	19	13 - 1	14 - 5	14 - 11	5 - 0	300	262	207	163	128	100	77	58	184	161	142	126	110	89	72
	1.89 cu.yd/(100sq.ft)	18	14 - 4	15 - 5	15 - 11	5 - 4	358	280	220	173	137	107	83	64	183	161	142	125	111	96	78
	6x6 - W2.0 x W2.0	16	15 - 3	17 - 4	17 - 11	6 - 0	398	312	246	195	155	122	96	74	182	160	141	124	110	97	86
	7 1/2	20	11 - 3	12 - 1	12 - 7	4 - 2	247	211	182	157	137	118	92	71	172	152	134	119	106	94	84
	61 PSF	19	12 - 8	14 - 0	14 - 6	4 - 10	328	286	251	205	162	128	101	78	220	194	171	152	135	116	95
	2.04 cu.yd/(100sq.ft)	18	13 - 10	15 - 0	15 - 6	5 - 2	403	347	274	218	173	137	109	85	220	193	171	151	134	119	103
	6x6 - W2.0 x W2.0	16	15 - 0	16 - 10	17 - 5	5 - 10	488	385	305	243	195	156	124	98	219	192	170	150	133	118	105
	8	20	10 - 11	11 - 5	11 - 11	4 - 0	268	229	197	171	148	129	113	93	187	165	146	129	115	102	91
	65 PSF	19	12 - 4	13 - 7	14 - 1	4 - 8	355	310	272	241	202	162	129	102	251	225	203	180	160	143	122
	2.2 cu.yd/(100sq.ft)	18	13 - 5	14 - 7	15 - 0	5 - 0	437	385	336	268	215	172	138	110	259	229	202	180	160	143	127
	4x4 - W1.4 x W1.4	16	14 - 9	16 - 5	16 - 11	5 - 8	500	467	373	299	241	194	156	125	258	228	202	179	159	142	127

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022. The slab weight has been subtracted from the service loads listed above.
6. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
7. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
8. Long-term deflection has not been taken into consideration.
9. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
10. Negative moment (top) reinforcement is required over supports of continuous spans.
11. Continuous spans should be approximately equal with the span length difference not exceeding 20%.
12. The continuous slab values are based on deck sheets staggered over the interior supports.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite (3.5VLSC)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in^2/ft)	I_D (in^4/ft)		S_p ($in.^3$/ft)	S_n ($in.^3$/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.36	40	0.989	1.944	1.971	0.733	0.901	26371	32442	5136	950	1951
19	24	3.92	40	1.153	2.306	2.334	0.906	1.075	32621	38705	7004	1273	2591
18	24	4.44	40	1.306	2.645	2.673	1.061	1.227	38179	44189	9009	1614	3262
16	24	5.59	40	1.643	3.377	3.415	1.425	1.566	51313	56368	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

LIGHTWEIGHT CONCRETE (110 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=40 psf	LL=55 psf	LL=100 psf	LL=40 psf; SDL=20 psf		LL=55 psf; SDL=10 psf		LL=100 psf; SDL=15 psf					
	SDL=20 psf	SDL=10 psf	SDL=15 psf	Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	17 - 2	16 - 11	14 - 11	24 - 0	21 - 3	23 - 1	20 - 11	18 - 10	17 - 10	13 - 0	14 - 7	15 - 1	5 - 0
5 3/4	17 - 9	17 - 6	15 - 6	25 - 2	21 - 11	24 - 2	21 - 7	19 - 9	18 - 9	12 - 9	14 - 4	14 - 10	4 - 11
6	18 - 4	18 - 1	16 - 0	26 - 2	22 - 8	25 - 2	22 - 4	20 - 8	19 - 7	12 - 6	14 - 1	14 - 7	4 - 10
6 1/2	19 - 5	19 - 2	17 - 1	28 - 4	24 - 0	27 - 3	23 - 8	22 - 6	21 - 0	12 - 0	13 - 7	14 - 1	4 - 8
7	20 - 6	20 - 3	18 - 1	30 - 4	25 - 4	29 - 3	25 - 0	24 - 3	21 - 10	11 - 8	12 - 10	13 - 4	4 - 5
7 1/2	21 - 7	21 - 4	19 - 1	32 - 0	26 - 8	31 - 2	26 - 4	26 - 0	22 - 7	11 - 3	12 - 1	12 - 7	4 - 2
8	22 - 8	22 - 4	20 - 1	33 - 7	28 - 0	33 - 1	27 - 8	27 - 8	23 - 3	10 - 11	11 - 5	11 - 11	4 - 0
19 GA Deck													
5 1/2	17 - 6	17 - 3	15 - 3	24 - 0	21 - 8	23 - 0	21 - 4	18 - 10	17 - 10	14 - 8	15 - 11	16 - 6	5 - 6
5 3/4	18 - 1	17 - 10	15 - 9	25 - 1	22 - 4	24 - 1	22 - 0	19 - 9	18 - 9	14 - 4	15 - 8	16 - 2	5 - 5
6	18 - 8	18 - 5	16 - 4	26 - 2	23 - 1	25 - 2	22 - 9	20 - 8	19 - 7	14 - 1	15 - 5	15 - 11	5 - 4
6 1/2	19 - 9	19 - 6	17 - 5	28 - 3	24 - 5	27 - 3	24 - 1	22 - 5	21 - 4	13 - 7	14 - 11	15 - 4	5 - 1
7	20 - 11	20 - 7	18 - 5	30 - 3	25 - 10	29 - 2	25 - 6	24 - 3	22 - 9	13 - 1	14 - 5	14 - 11	5 - 0
7 1/2	22 - 0	21 - 8	19 - 6	32 - 3	27 - 2	31 - 2	26 - 10	26 - 0	24 - 1	12 - 8	14 - 0	14 - 6	4 - 10
8	23 - 1	22 - 9	20 - 6	34 - 2	28 - 6	33 - 0	28 - 2	27 - 8	25 - 4	12 - 4	13 - 7	14 - 1	4 - 8
18 GA Deck													
5 1/2	17 - 10	17 - 7	15 - 6	23 - 11	22 - 0	23 - 0	21 - 8	18 - 9	17 - 10	15 - 4	17 - 0	17 - 7	5 - 10
5 3/4	18 - 5	18 - 1	16 - 0	25 - 0	22 - 9	24 - 1	22 - 4	19 - 8	18 - 8	15 - 2	16 - 8	17 - 3	5 - 9
6	18 - 11	18 - 8	16 - 7	26 - 1	23 - 5	25 - 1	23 - 1	20 - 7	19 - 7	15 - 0	16 - 5	17 - 0	5 - 8
6 1/2	20 - 1	19 - 10	17 - 8	28 - 2	24 - 10	27 - 2	24 - 6	22 - 5	21 - 3	14 - 8	15 - 11	16 - 5	5 - 6
7	21 - 2	20 - 11	18 - 9	30 - 3	26 - 2	29 - 2	25 - 10	24 - 2	22 - 11	14 - 4	15 - 5	15 - 11	5 - 4
7 1/2	22 - 4	22 - 0	19 - 9	32 - 2	27 - 7	31 - 1	27 - 3	25 - 11	24 - 5	13 - 10	15 - 0	15 - 6	5 - 2
8	23 - 5	23 - 1	20 - 9	34 - 1	28 - 11	33 - 0	28 - 6	27 - 8	25 - 8	13 - 5	14 - 7	15 - 0	5 - 0
16 GA Deck													
5 1/2	18 - 5	18 - 2	16 - 1	23 - 10	22 - 7	22 - 11	21 - 9	18 - 9	17 - 9	16 - 3	19 - 1	19 - 1	6 - 4
5 3/4	19 - 0	18 - 8	16 - 7	24 - 11	23 - 5	23 - 11	22 - 9	19 - 8	18 - 8	16 - 0	18 - 9	18 - 10	6 - 3
6	19 - 6	19 - 3	17 - 1	26 - 0	24 - 1	25 - 0	23 - 9	20 - 7	19 - 6	15 - 10	18 - 5	18 - 8	6 - 3
6 1/2	20 - 8	20 - 4	18 - 2	28 - 1	25 - 6	27 - 1	25 - 2	22 - 4	21 - 3	15 - 6	17 - 10	18 - 3	6 - 1
7	21 - 10	21 - 6	19 - 3	30 - 1	26 - 11	29 - 0	26 - 7	24 - 2	22 - 11	15 - 3	17 - 4	17 - 11	6 - 0
7 1/2	22 - 11	22 - 8	20 - 4	32 - 1	28 - 4	31 - 0	28 - 0	25 - 10	24 - 6	15 - 0	16 - 10	17 - 5	5 - 10
8	24 - 0	23 - 9	21 - 5	34 - 0	29 - 8	32 - 10	29 - 4	27 - 7	26 - 2	14 - 9	16 - 5	16 - 11	5 - 8

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
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3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
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   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
9. Negative moment (top) reinforcement is required over supports of continuous spans.
10. Continuous spans should be approximately equal with the span length difference not exceeding 20%.
11. The continuous slab values are based on deck sheets staggered over the interior supports.

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3.5" Versa-Dek® LS Composite (3.5VLSC)

DECK PROPERTIES

LRFD

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					single	multi							
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19	24	3.92	40	1.153	2.306	2.334	0.906	1.075	32621	38705	7004	1273	2591
18	24	4.44	40	1.306	2.645	2.673	1.061	1.227	38179	44189	9009	1614	3262
16	24	5.59	40	1.643	3.377	3.415	1.425	1.566	51313	56368	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

LIGHTWEIGHT CONCRETE (110 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=20 psf	LL=100 psf	LL=100 psf	LL=20 psf; SDL=20 psf		LL=100 psf; SDL=20 psf		LL=100 psf; SDL=40 psf					
	SDL=20 psf	SDL=20 psf	SDL=40 psf	Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	18 - 5	14 - 10	14 - 3	27 - 3	22 - 9	18 - 7	17 - 8	17 - 9	16 - 10	13 - 0	14 - 7	15 - 1	5 - 0
5 3/4	19 - 0	15 - 4	14 - 9	28 - 2	23 - 6	19 - 6	18 - 6	18 - 7	17 - 8	12 - 9	14 - 4	14 - 10	4 - 11
6	19 - 7	15 - 10	15 - 3	29 - 0	24 - 2	20 - 5	19 - 4	19 - 6	18 - 6	12 - 6	14 - 1	14 - 7	4 - 10
6 1/2	20 - 9	16 - 11	16 - 4	30 - 9	25 - 7	22 - 3	20 - 9	21 - 3	19 - 9	12 - 0	13 - 7	14 - 1	4 - 8
7	21 - 10	17 - 11	17 - 4	32 - 4	27 - 0	24 - 0	21 - 6	22 - 11	20 - 6	11 - 8	12 - 10	13 - 4	4 - 5
7 1/2	22 - 11	18 - 11	18 - 4	34 - 0	28 - 4	25 - 8	22 - 4	24 - 7	21 - 3	11 - 3	12 - 1	12 - 7	4 - 2
8	24 - 0	19 - 10	19 - 0	35 - 7	29 - 7	27 - 5	23 - 0	26 - 3	22 - 0	10 - 11	11 - 5	11 - 11	4 - 0
19 GA Deck													
5 1/2	18 - 9	15 - 1	14 - 6	27 - 2	23 - 3	18 - 7	17 - 7	17 - 8	16 - 9	14 - 8	15 - 11	16 - 6	5 - 6
5 3/4	19 - 4	15 - 7	15 - 1	28 - 4	23 - 11	19 - 6	18 - 6	18 - 7	17 - 8	14 - 4	15 - 8	16 - 2	5 - 5
6	19 - 11	16 - 2	15 - 7	29 - 6	24 - 8	20 - 5	19 - 4	19 - 6	18 - 6	14 - 1	15 - 5	15 - 11	5 - 4
6 1/2	21 - 1	17 - 3	16 - 7	31 - 3	26 - 1	22 - 2	21 - 1	21 - 2	20 - 1	13 - 7	14 - 11	15 - 4	5 - 1
7	22 - 2	18 - 3	17 - 8	32 - 11	27 - 5	23 - 11	22 - 7	22 - 11	21 - 9	13 - 1	14 - 5	14 - 11	5 - 0
7 1/2	23 - 4	19 - 3	18 - 8	34 - 7	28 - 10	25 - 8	23 - 10	24 - 7	23 - 0	12 - 8	14 - 0	14 - 6	4 - 10
8	24 - 5	20 - 4	19 - 8	36 - 2	30 - 2	27 - 4	25 - 1	26 - 2	24 - 3	12 - 4	13 - 7	14 - 1	4 - 8
18 GA Deck													
5 1/2	19 - 1	15 - 4	14 - 10	27 - 1	23 - 7	18 - 6	17 - 7	17 - 8	16 - 9	15 - 4	17 - 0	17 - 7	5 - 10
5 3/4	19 - 8	15 - 11	15 - 4	28 - 3	24 - 4	19 - 5	18 - 6	18 - 7	17 - 7	15 - 2	16 - 8	17 - 3	5 - 9
6	20 - 3	16 - 5	15 - 10	29 - 5	25 - 0	20 - 4	19 - 4	19 - 5	18 - 5	15 - 0	16 - 5	17 - 0	5 - 8
6 1/2	21 - 5	17 - 6	16 - 10	31 - 8	26 - 5	22 - 2	21 - 0	21 - 2	20 - 1	14 - 8	15 - 11	16 - 5	5 - 6
7	22 - 6	18 - 6	17 - 11	33 - 5	27 - 10	23 - 11	22 - 8	22 - 10	21 - 8	14 - 4	15 - 5	15 - 11	5 - 4
7 1/2	23 - 8	19 - 7	18 - 11	35 - 1	29 - 3	25 - 8	24 - 2	24 - 6	23 - 3	13 - 10	15 - 0	15 - 6	5 - 2
8	24 - 9	20 - 7	19 - 11	36 - 8	30 - 7	27 - 4	25 - 6	26 - 2	24 - 8	13 - 5	14 - 7	15 - 0	5 - 0
16 GA Deck													
5 1/2	19 - 9	15 - 11	15 - 4	27 - 0	24 - 5	18 - 6	17 - 6	17 - 8	16 - 9	16 - 3	19 - 1	19 - 1	6 - 4
5 3/4	20 - 3	16 - 5	15 - 10	28 - 1	25 - 1	19 - 5	18 - 5	18 - 6	17 - 7	16 - 0	18 - 9	18 - 10	6 - 3
6	20 - 10	16 - 11	16 - 4	29 - 3	25 - 9	20 - 4	19 - 3	19 - 5	18 - 5	15 - 10	18 - 5	18 - 8	6 - 3
6 1/2	22 - 0	18 - 0	17 - 4	31 - 6	27 - 2	22 - 1	21 - 0	21 - 1	20 - 0	15 - 6	17 - 10	18 - 3	6 - 1
7	23 - 2	19 - 1	18 - 5	33 - 7	28 - 7	23 - 10	22 - 7	22 - 10	21 - 8	15 - 3	17 - 4	17 - 11	6 - 0
7 1/2	24 - 3	20 - 2	19 - 6	35 - 8	30 - 0	25 - 7	24 - 3	24 - 6	23 - 3	15 - 0	16 - 10	17 - 5	5 - 10
8	25 - 5	21 - 2	20 - 6	37 - 8	31 - 5	27 - 3	25 - 10	26 - 1	24 - 9	14 - 9	16 - 5	16 - 11	5 - 8

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
9. Negative moment (top) reinforcement is required over supports of continuous spans.
10. Continuous spans should be approximately equal with the span length difference not exceeding 20%.
11. The continuous slab values are based on deck sheets staggered over the interior supports.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in.^{2}/ft)	I_D (in.^{4}/ft)		S_p (in.^{3}/ft)	S_n (in.^{3}/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.20	40	0.886	1.736	1.739	0.716	0.793	25761	28538	5136	950	1951
19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
18	24	4.23	40	1.170	2.357	2.357	1.023	1.117	36811	40219	9009	1614	3262
16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

CONSTRUCTION CLEAR SPANS AND UNIFORM SUPERIMPOSED SERVICE LOAD CAPACITY

LRFD

Concrete	Slab Depth (in), Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in)				Uniform Service Load Capacity, PSF / Spans (ft)														
			Single	Double	Triple	Canti-lever	Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required						
							9	10	11	12	13	14	15	16	14	15	16	17	18	19	20
4000 PSI Normal Weight Concrete (145 PCF)	5 1/2	20	12 - 7	13 - 6	13 - 11	4 - 8	438	390	316	246	183	137	103	76							
	45 PSF	19	14 - 1	14 - 10	15 - 4	5 - 1	494	441	357	267	200	150	113	85							
	1.14 cu.yd/(100sq.ft)	18	14 - 9	16 - 0	16 - 6	5 - 6	500	447	363	286	214	162	123	92							
	6x6 - W1.4 x W1.4	16	15 - 7	18 - 4	18 - 4	6 - 1	500	500	435	325	245	186	142	108							
	5 3/4	20	12 - 3	13 - 2	13 - 7	4 - 6	466	415	336	275	212	159	120	90							
	48 PSF	19	13 - 9	14 - 6	15 - 0	5 - 0	500	469	380	306	230	174	132	100							
	1.22 cu.yd/(100sq.ft)	18	14 - 7	15 - 7	16 - 2	5 - 5	500	500	422	327	246	187	142	108							
	6x6 - W1.4 x W1.4	16	15 - 5	17 - 11	18 - 0	6 - 0	500	500	470	370	280	214	164	126							
	6	20	12 - 0	12 - 11	13 - 4	4 - 5	494	440	356	292	242	184	139	105							
	51 PSF	19	13 - 5	14 - 2	14 - 8	4 - 11	500	497	403	332	263	200	152	116							
	1.29 cu.yd/(100sq.ft)	18	14 - 4	15 - 3	15 - 9	5 - 3	500	500	447	369	281	214	164	125							
	6x6 - W1.4 x W1.4	16	15 - 2	17 - 7	17 - 9	5 - 11	500	500	500	420	319	244	188	145							
	6 1/2	20	11 - 5	12 - 4	12 - 9	4 - 3	500	490	396	325	270	226	183	141							
	57 PSF	19	12 - 10	13 - 7	14 - 0	4 - 8	500	500	449	370	308	259	199	154							
	1.45 cu.yd/(100sq.ft)	18	14 - 0	14 - 8	15 - 2	5 - 1	500	500	498	411	343	277	214	165							
	6x6 - W1.4 x W1.4	16	14 - 9	16 - 10	17 - 4	5 - 9	500	500	500	500	407	313	243	189							
	7	20	11 - 0	11 - 10	12 - 3	4 - 1	500	500	437	358	297	249	210	178							
	63 PSF	19	12 - 3	13 - 1	13 - 6	4 - 6	500	500	495	407	339	285	242	199							
	1.6 cu.yd/(100sq.ft)	18	13 - 5	14 - 1	14 - 7	4 - 10	500	500	500	453	378	319	271	213							
	6x6 - W2.0 x W2.0	16	14 - 5	16 - 3	16 - 9	5 - 7	500	500	500	500	465	394	308	242							
	7 1/4	20	10 - 9	11 - 5	11 - 10	4 - 0	500	500	457	375	311	261	220	186							
	66 PSF	19	12 - 1	12 - 10	13 - 3	4 - 5	500	500	500	426	355	298	253	216							
	1.68 cu.yd/(100sq.ft)	18	13 - 2	13 - 10	14 - 4	4 - 9	500	500	500	474	396	334	284	240							
	6x6 - W2.0 x W2.0	16	14 - 3	16 - 0	16 - 6	5 - 6	500	500	500	500	486	412	345	272							
	8	20	10 - 3	10 - 4	10 - 9	3 - 7	500	500	500	425	352	295	249	211							
	75 PSF	19	11 - 5	12 - 3	12 - 7	4 - 2	500	500	500	483	402	338	287	244							
	1.91 cu.yd/(100sq.ft)	18	12 - 5	13 - 2	13 - 8	4 - 6	500	500	500	500	448	378	322	275							
	4x4 - W1.4 x W1.4	16	13 - 10	15 - 2	15 - 8	5 - 3	500	500	500	500	500	467	399	344							

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022. The slab weight has been subtracted from the service loads listed above.
6. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
7. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
8. Long-term deflection has not been taken into consideration.
9. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
10. Negative moment (top) reinforcement is required over supports of continuous spans.
11. Continuous spans should be approximately equal with the span length difference not exceeding 20%.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in^2/ft)	I_D (in^4/ft)		S_p ($in.^3$/ft)	S_n ($in.^3$/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.20	40	0.886	1.736	1.739	0.716	0.793	25761	28538	5136	950	1951
19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
18	24	4.23	40	1.170	2.357	2.357	1.023	1.117	36811	40219	9009	1614	3262
16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=40 psf	LL=55 psf	LL=100 psf	LL=40 psf; SDL=20 psf		LL=55 psf; SDL=10 psf		LL=100 psf; SDL=15 psf					
	SDL=20 psf	SDL=10 psf	SDL=15 psf	Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	16 - 9	16 - 6	14 - 7	-	-	-	-	-	-	12 - 7	13 - 6	13 - 11	4 - 8
5 3/4	17 - 4	17 - 1	15 - 2	-	-	-	-	-	-	12 - 3	13 - 2	13 - 7	4 - 6
6	17 - 11	17 - 8	15 - 8	-	-	-	-	-	-	12 - 0	12 - 11	13 - 4	4 - 5
6 1/2	19 - 0	18 - 9	16 - 9	-	-	-	-	-	-	11 - 5	12 - 4	12 - 9	4 - 3
7	20 - 1	19 - 10	17 - 9	-	-	-	-	-	-	11 - 0	11 - 10	12 - 3	4 - 1
7 1/4	20 - 7	20 - 4	18 - 4	-	-	-	-	-	-	10 - 9	11 - 5	11 - 10	4 - 0
8	22 - 2	21 - 11	19 - 10	-	-	-	-	-	-	10 - 3	10 - 4	10 - 9	3 - 7
19 GA Deck													
5 1/2	17 - 2	16 - 11	14 - 11	-	-	-	-	-	-	14 - 1	14 - 10	15 - 4	5 - 1
5 3/4	17 - 8	17 - 5	15 - 6	-	-	-	-	-	-	13 - 9	14 - 6	15 - 0	5 - 0
6	18 - 3	18 - 0	16 - 0	-	-	-	-	-	-	13 - 5	14 - 2	14 - 8	4 - 11
6 1/2	19 - 5	19 - 1	17 - 1	-	-	-	-	-	-	12 - 10	13 - 7	14 - 0	4 - 8
7	20 - 6	20 - 3	18 - 2	-	-	-	-	-	-	12 - 3	13 - 1	13 - 6	4 - 6
7 1/4	21 - 0	20 - 9	18 - 8	-	-	-	-	-	-	12 - 1	12 - 10	13 - 3	4 - 5
8	22 - 7	22 - 4	20 - 3	-	-	-	-	-	-	11 - 5	12 - 3	12 - 7	4 - 2
18 GA Deck													
5 1/2	17 - 5	17 - 2	15 - 3	-	-	-	-	-	-	14 - 9	16 - 0	16 - 6	5 - 6
5 3/4	18 - 0	17 - 9	15 - 9	-	-	-	-	-	-	14 - 7	15 - 7	16 - 2	5 - 5
6	18 - 7	18 - 4	16 - 4	-	-	-	-	-	-	14 - 4	15 - 3	15 - 9	5 - 3
6 1/2	19 - 9	19 - 5	17 - 5	-	-	-	-	-	-	14 - 0	14 - 8	15 - 2	5 - 1
7	20 - 10	20 - 7	18 - 6	-	-	-	-	-	-	13 - 5	14 - 1	14 - 7	4 - 10
7 1/4	21 - 4	21 - 1	19 - 0	-	-	-	-	-	-	13 - 2	13 - 10	14 - 4	4 - 9
8	23 - 0	22 - 9	20 - 7	-	-	-	-	-	-	12 - 5	13 - 2	13 - 8	4 - 6
16 GA Deck													
5 1/2	18 - 1	17 - 10	15 - 9	-	-	-	-	-	-	15 - 7	18 - 4	18 - 4	6 - 1
5 3/4	18 - 8	18 - 4	16 - 4	-	-	-	-	-	-	15 - 5	17 - 11	18 - 0	6 - 0
6	19 - 3	18 - 11	16 - 11	-	-	-	-	-	-	15 - 2	17 - 7	17 - 9	5 - 11
6 1/2	20 - 4	20 - 1	18 - 0	-	-	-	-	-	-	14 - 9	16 - 10	17 - 4	5 - 9
7	21 - 6	21 - 3	19 - 1	-	-	-	-	-	-	14 - 5	16 - 3	16 - 9	5 - 7
7 1/4	22 - 1	21 - 9	19 - 7	-	-	-	-	-	-	14 - 3	16 - 0	16 - 6	5 - 6
8	23 - 8	23 - 5	21 - 3	-	-	-	-	-	-	13 - 10	15 - 2	15 - 8	5 - 3

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
9. Negative moment (top) reinforcement is required over supports of continuous spans.
10. Continuous spans should be approximately equal with the span length difference not exceeding 20%.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in^2/ft)	I_D (in^4/ft)		S_p ($in.^3$/ft)	S_n ($in.^3$/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.20	40	0.886	1.736	1.739	0.716	0.793	25761	28538	5136	950	1951
19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
18	24	4.23	40	1.170	2.357	2.357	1.023	1.117	36811	40219	9009	1614	3262
16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

NORMAL WEIGHT CONCRETE (145 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=20 psf SDL=20 psf	LL=100 psf SDL=20 psf	LL=100 psf SDL=40 psf	LL=20 psf; SDL=20 psf		LL=100 psf; SDL=20 psf		LL=100 psf; SDL=40 psf					
				Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	17 - 11	14 - 6	13 - 11	-	-	-	-	-	-	12 - 7	13 - 6	13 - 11	4 - 8
5 3/4	18 - 6	15 - 0	14 - 5	-	-	-	-	-	-	12 - 3	13 - 2	13 - 7	4 - 6
6	19 - 1	15 - 6	15 - 0	-	-	-	-	-	-	12 - 0	12 - 11	13 - 4	4 - 5
6 1/2	20 - 2	16 - 7	16 - 0	-	-	-	-	-	-	11 - 5	12 - 4	12 - 9	4 - 3
7	21 - 3	17 - 8	17 - 0	-	-	-	-	-	-	11 - 0	11 - 10	12 - 3	4 - 1
7 1/4	21 - 10	18 - 2	17 - 7	-	-	-	-	-	-	10 - 9	11 - 5	11 - 10	4 - 0
8	23 - 5	19 - 8	19 - 1	-	-	-	-	-	-	10 - 3	10 - 4	10 - 9	3 - 7
19 GA Deck													
5 1/2	18 - 4	14 - 10	14 - 3	-	-	-	-	-	-	14 - 1	14 - 10	15 - 4	5 - 1
5 3/4	18 - 11	15 - 4	14 - 9	-	-	-	-	-	-	13 - 9	14 - 6	15 - 0	5 - 0
6	19 - 6	15 - 10	15 - 4	-	-	-	-	-	-	13 - 5	14 - 2	14 - 8	4 - 11
6 1/2	20 - 7	16 - 11	16 - 4	-	-	-	-	-	-	12 - 10	13 - 7	14 - 0	4 - 8
7	21 - 8	18 - 0	17 - 5	-	-	-	-	-	-	12 - 3	13 - 1	13 - 6	4 - 6
7 1/4	22 - 3	18 - 6	17 - 11	-	-	-	-	-	-	12 - 1	12 - 10	13 - 3	4 - 5
8	23 - 10	20 - 1	19 - 5	-	-	-	-	-	-	11 - 5	12 - 3	12 - 7	4 - 2
18 GA Deck													
5 1/2	18 - 8	15 - 1	14 - 6	-	-	-	-	-	-	14 - 9	16 - 0	16 - 6	5 - 6
5 3/4	19 - 3	15 - 7	15 - 1	-	-	-	-	-	-	14 - 7	15 - 7	16 - 2	5 - 5
6	19 - 10	16 - 2	15 - 7	-	-	-	-	-	-	14 - 4	15 - 3	15 - 9	5 - 3
6 1/2	20 - 11	17 - 3	16 - 8	-	-	-	-	-	-	14 - 0	14 - 8	15 - 2	5 - 1
7	22 - 1	18 - 4	17 - 8	-	-	-	-	-	-	13 - 5	14 - 1	14 - 7	4 - 10
7 1/4	22 - 7	18 - 10	18 - 3	-	-	-	-	-	-	13 - 2	13 - 10	14 - 4	4 - 9
8	24 - 2	20 - 5	19 - 9	-	-	-	-	-	-	12 - 5	13 - 2	13 - 8	4 - 6
16 GA Deck													
5 1/2	19 - 4	15 - 7	15 - 1	-	-	-	-	-	-	15 - 7	18 - 4	18 - 4	6 - 1
5 3/4	19 - 11	16 - 2	15 - 7	-	-	-	-	-	-	15 - 5	17 - 11	18 - 0	6 - 0
6	20 - 6	16 - 9	16 - 2	-	-	-	-	-	-	15 - 2	17 - 7	17 - 9	5 - 11
6 1/2	21 - 7	17 - 10	17 - 3	-	-	-	-	-	-	14 - 9	16 - 10	17 - 4	5 - 9
7	22 - 9	18 - 11	18 - 3	-	-	-	-	-	-	14 - 5	16 - 3	16 - 9	5 - 7
7 1/4	23 - 4	19 - 5	18 - 10	-	-	-	-	-	-	14 - 3	16 - 0	16 - 6	5 - 6
8	24 - 11	21 - 0	20 - 4	-	-	-	-	-	-	13 - 10	15 - 2	15 - 8	5 - 3

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
9. Negative moment (top) reinforcement is required over supports of continuous spans.
10. Continuous spans should be approximately equal with the span length difference not exceeding 20%.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in.^{2}/ft)	I_D (in^4/ft)		S_p (in.^{3}/ft)	S_n (in.^{3}/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.20	40	0.886	1.736	1.739	0.716	0.793	25761	28538	5136	950	1951
19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
18	24	4.23	40	1.170	2.357	2.357	1.023	1.117	36811	40219	9009	1614	3262
16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

LIGHTWEIGHT CONCRETE (110 PCF), f'c=4000 PSI

STAGGERED ENDS

CONSTRUCTION CLEAR SPANS AND UNIFORM SUPERIMPOSED SERVICE LOAD CAPACITY

LRFD

Concrete	Slab Depth (in), Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in)				Uniform Service Load Capacity, PSF / Spans (ft)														
			Single	Double	Triple	Canti-lever	Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required						
							9	10	11	12	13	14	15	16	14	15	16	17	18	19	20
4000 PSI Lightweight Concrete (110 PCF)	5 1/2	20	14 - 0	14 - 9	15 - 3	5 - 1	446	371	270	199	149	112	84	63							
	34 PSF	19	15 - 3	16 - 3	16 - 9	5 - 7	500	403	294	218	163	123	93	70							
	1.14 cu.yd/(100sq.ft)	18	15 - 9	17 - 6	18 - 1	6 - 0	500	432	315	234	176	133	101	77							
	6x6 - W1.4 x W1.4	16	16 - 7	20 - 1	19 - 5	6 - 8	500	495	362	270	204	155	119	91							
	5 3/4	20	13 - 8	14 - 6	15 - 0	5 - 0	474	422	308	228	171	129	98	73							
	36 PSF	19	15 - 0	15 - 11	16 - 5	5 - 6	500	458	334	248	187	142	108	82							
	1.22 cu.yd/(100sq.ft)	18	15 - 6	17 - 2	17 - 9	5 - 11	500	489	358	266	201	153	117	89							
	6x6 - W1.4 x W1.4	16	16 - 4	19 - 8	19 - 2	6 - 7	500	500	406	304	230	176	135	104							
	6	20	13 - 4	14 - 2	14 - 8	4 - 11	500	449	349	259	195	148	112	85							
	38 PSF	19	14 - 10	15 - 7	16 - 1	5 - 4	500	500	378	282	213	162	124	95							
	1.29 cu.yd/(100sq.ft)	18	15 - 3	16 - 9	17 - 4	5 - 9	500	500	404	302	228	174	134	103							
	6x6 - W1.4 x W1.4	16	16 - 2	19 - 3	18 - 11	6 - 5	500	500	458	343	260	200	154	119							
	6 1/2	20	12 - 9	13 - 8	14 - 1	4 - 8	500	500	407	331	250	191	147	113							
	43 PSF	19	14 - 3	15 - 0	15 - 6	5 - 2	500	500	459	358	272	208	161	124							
	1.45 cu.yd/(100sq.ft)	18	14 - 11	16 - 2	16 - 9	5 - 7	500	500	500	383	291	223	173	134							
	6x6 - W1.4 x W1.4	16	15 - 9	18 - 7	18 - 5	6 - 2	500	500	500	432	330	254	198	154							
	7	20	12 - 3	13 - 2	13 - 7	4 - 6	500	500	448	370	309	242	188	146							
	48 PSF	19	13 - 9	14 - 6	15 - 0	5 - 0	500	500	500	419	341	263	204	159							
	1.6 cu.yd/(100sq.ft)	18	14 - 7	15 - 7	16 - 2	5 - 5	500	500	500	464	364	281	219	171							
	6x6 - W2.0 x W2.0	16	15 - 5	17 - 11	18 - 0	6 - 0	500	500	500	500	411	319	249	196							
	7 1/4	20	12 - 0	12 - 11	13 - 5	4 - 6	500	500	469	387	323	271	210	164							
	50 PSF	19	13 - 6	14 - 3	14 - 9	4 - 11	500	500	500	438	367	294	229	179							
	1.68 cu.yd/(100sq.ft)	18	14 - 5	15 - 4	15 - 10	5 - 3	500	500	500	486	406	314	245	192							
	6x6 - W2.0 x W2.0	16	15 - 3	17 - 8	17 - 10	5 - 11	500	500	500	500	457	355	278	220							
	8	20	11 - 5	12 - 4	12 - 9	4 - 3	500	500	500	438	366	309	262	225							
	57 PSF	19	12 - 10	13 - 7	14 - 0	4 - 8	500	500	500	496	416	352	300	248							
	1.91 cu.yd/(100sq.ft)	18	14 - 0	14 - 8	15 - 2	5 - 1	500	500	500	500	462	392	335	265							
	4x4 - W1.4 x W1.4	16	14 - 9	16 - 10	17 - 4	5 - 9	500	500	500	500	500	479	378	301							

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022. The slab weight has been subtracted from the service loads listed above.
6. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
7. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
8. Long-term deflection has not been taken into consideration.
9. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
10. Negative moment (top) reinforcement is required over supports of continuous spans.
11. Continuous spans should be approximately equal with the span length difference not exceeding 20%.

For construction or service stage designs utilizing different criteria, go to: **tools.newmill.com/deck-tools/**

3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

DECK PROPERTIES

LRFD

Gage	Cover (in)	Weight (psf)	F_y (ksi)	A_s (in^2/ft)	I_D (in^4/ft)		S_p ($in.^3$/ft)	S_n ($in.^3$/ft)	$\phi M_{n,p}$ (in-lb/ft)	$\phi M_{n,n}$ (in-lb/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
					single	multi							
20	24	3.20	40	0.886	1.736	1.739	0.716	0.793	25761	28538	5136	950	1951
19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
18	24	4.23	40	1.170	2.357	2.357	1.023	1.117	36811	40219	9009	1614	3262
16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending; $\phi M_{n,p}$ and $\phi M_{n,n}$ are design moment capacities of deck in positive and negative bending; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing.

LIGHTWEIGHT CONCRETE (110 PCF), f'c=4000 PSI

STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

LRFD

Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=40 psf	LL=55 psf	LL=100 psf	LL=40 psf; SDL=20 psf		LL=55 psf; SDL=10 psf		LL=100 psf; SDL=15 psf					
	SDL=20 psf	SDL=10 psf	SDL=15 psf	Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	16 - 2	15 - 11	13 - 11	-	-	-	-	-	-	14 - 0	14 - 9	15 - 3	5 - 1
5 3/4	16 - 8	16 - 5	14 - 5	-	-	-	-	-	-	13 - 8	14 - 6	15 - 0	5 - 0
6	17 - 3	17 - 0	14 - 11	-	-	-	-	-	-	13 - 4	14 - 2	14 - 8	4 - 11
6 1/2	18 - 4	18 - 0	15 - 11	-	-	-	-	-	-	12 - 9	13 - 8	14 - 1	4 - 8
7	19 - 4	19 - 1	16 - 11	-	-	-	-	-	-	12 - 3	13 - 2	13 - 7	4 - 6
7 1/4	19 - 11	19 - 7	17 - 5	-	-	-	-	-	-	12 - 0	12 - 11	13 - 5	4 - 6
8	21 - 5	21 - 2	18 - 11	-	-	-	-	-	-	11 - 5	12 - 4	12 - 9	4 - 3
19 GA Deck													
5 1/2	16 - 6	16 - 3	14 - 3	-	-	-	-	-	-	15 - 3	16 - 3	16 - 9	5 - 7
5 3/4	17 - 1	16 - 10	14 - 9	-	-	-	-	-	-	15 - 0	15 - 11	16 - 5	5 - 6
6	17 - 8	17 - 4	15 - 3	-	-	-	-	-	-	14 - 10	15 - 7	16 - 1	5 - 4
6 1/2	18 - 9	18 - 5	16 - 4	-	-	-	-	-	-	14 - 3	15 - 0	15 - 6	5 - 2
7	19 - 10	19 - 6	17 - 4	-	-	-	-	-	-	13 - 9	14 - 6	15 - 0	5 - 0
7 1/4	20 - 4	20 - 0	17 - 10	-	-	-	-	-	-	13 - 6	14 - 3	14 - 9	4 - 11
8	21 - 11	21 - 7	19 - 4	-	-	-	-	-	-	12 - 10	13 - 7	14 - 0	4 - 8
18 GA Deck													
5 1/2	16 - 10	16 - 7	14 - 6	-	-	-	-	-	-	15 - 9	17 - 6	18 - 1	6 - 0
5 3/4	17 - 5	17 - 2	15 - 1	-	-	-	-	-	-	15 - 6	17 - 2	17 - 9	5 - 11
6	18 - 0	17 - 8	15 - 7	-	-	-	-	-	-	15 - 3	16 - 9	17 - 4	5 - 9
6 1/2	19 - 1	18 - 9	16 - 7	-	-	-	-	-	-	14 - 11	16 - 2	16 - 9	5 - 7
7	20 - 2	19 - 10	17 - 8	-	-	-	-	-	-	14 - 7	15 - 7	16 - 2	5 - 5
7 1/4	20 - 8	20 - 5	18 - 2	-	-	-	-	-	-	14 - 5	15 - 4	15 - 10	5 - 3
8	22 - 3	22 - 0	19 - 8	-	-	-	-	-	-	14 - 0	14 - 8	15 - 2	5 - 1
16 GA Deck													
5 1/2	17 - 6	17 - 3	15 - 2	-	-	-	-	-	-	16 - 7	20 - 1	19 - 5	6 - 8
5 3/4	18 - 1	17 - 9	15 - 7	-	-	-	-	-	-	16 - 4	19 - 8	19 - 2	6 - 7
6	18 - 7	18 - 4	16 - 2	-	-	-	-	-	-	16 - 2	19 - 3	18 - 11	6 - 5
6 1/2	19 - 9	19 - 5	17 - 2	-	-	-	-	-	-	15 - 9	18 - 7	18 - 5	6 - 2
7	20 - 10	20 - 6	18 - 3	-	-	-	-	-	-	15 - 5	17 - 11	18 - 0	6 - 0
7 1/4	21 - 5	21 - 1	18 - 9	-	-	-	-	-	-	15 - 3	17 - 8	17 - 10	5 - 11
8	23 - 0	22 - 8	20 - 4	-	-	-	-	-	-	14 - 9	16 - 10	17 - 4	5 - 9

Notes:

1. Deck section properties are calculated in accordance with AISI S100-16 (2020) w/S2-20.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI SD-2022 Standard for Steel Deck and the following construction loading and deflection limits:
   - Deck and concrete weights plus worst-case influence of either a 150 lb/ft concentrated live load or a 20 psf uniform live load; or deck weight plus a 50 psf uniform live load, whichever controls.
   - Deck deflection under deck and concrete weights is limited to the lesser of L/180 and 0.75".
4. Maximum cantilever clear spans assume that the adjacent span is at least 3 times longer than the cantilever and no greater than the maximum construction span for single, double, and triple spans. Deck bearing at the perimeter support is assumed to be equal to the deck bearing at interior supports shown above.
5. Composite slab service stage calculations are based on ANSI/SDI SD-2022.
6. The service stage spans are based on the instanteneous deflection limits of L/360 and L/360 under live load and total load, respectively.
7. Long-term deflection has not been taken into consideration.
8. Temperature and shrinkage reinforcement in accordance with ANSI/SDI SD-2022 shall be provided in the slab.
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3.5" Versa-Dek® LS Composite Acoustical (3.5VLSCA)

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LRFD

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					single	multi							
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19	24	3.74	40	1.033	2.057	2.057	0.874	0.957	31448	34470	7004	1273	2591
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16	24	5.32	40	1.471	3.007	3.013	1.375	1.489	49485	53605	12599	2496	4991

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STAGGERED ENDS

MAXIMUM ALLOWABLE SPANS

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Total Slab Depth (in)	Service Stage									Construction Stage			
	Simple Spans (ft-in)			Continuous Spans (ft-in)						Maximum Unshored Clear Spans (ft-in)			
	LL=20 psf SDL=20 psf	LL=100 psf SDL=20 psf	LL=100 psf SDL=40 psf	LL=20 psf; SDL=20 psf		LL=100 psf; SDL=20 psf		LL=100 psf; SDL=40 psf					
				Interior	End	Interior	End	Interior	End	Single	Double	Triple	Cantilever
20 GA Deck													
5 1/2	17 - 5	13 - 9	13 - 3	-	-	-	-	-	-	14 - 0	14 - 9	15 - 3	5 - 1
5 3/4	18 - 0	14 - 3	13 - 8	-	-	-	-	-	-	13 - 8	14 - 6	15 - 0	5 - 0
6	18 - 6	14 - 9	14 - 2	-	-	-	-	-	-	13 - 4	14 - 2	14 - 8	4 - 11
6 1/2	19 - 8	15 - 9	15 - 2	-	-	-	-	-	-	12 - 9	13 - 8	14 - 1	4 - 8
7	20 - 8	16 - 9	16 - 2	-	-	-	-	-	-	12 - 3	13 - 2	13 - 7	4 - 6
7 1/4	21 - 3	17 - 3	16 - 8	-	-	-	-	-	-	12 - 0	12 - 11	13 - 5	4 - 6
8	22 - 9	18 - 9	18 - 1	-	-	-	-	-	-	11 - 5	12 - 4	12 - 9	4 - 3
19 GA Deck													
5 1/2	17 - 10	14 - 1	13 - 7	-	-	-	-	-	-	15 - 3	16 - 3	16 - 9	5 - 7
5 3/4	18 - 5	14 - 7	14 - 0	-	-	-	-	-	-	15 - 0	15 - 11	16 - 5	5 - 6
6	19 - 0	15 - 1	14 - 6	-	-	-	-	-	-	14 - 10	15 - 7	16 - 1	5 - 4
6 1/2	20 - 1	16 - 2	15 - 6	-	-	-	-	-	-	14 - 3	15 - 0	15 - 6	5 - 2
7	21 - 2	17 - 2	16 - 6	-	-	-	-	-	-	13 - 9	14 - 6	15 - 0	5 - 0
7 1/4	21 - 8	17 - 8	17 - 0	-	-	-	-	-	-	13 - 6	14 - 3	14 - 9	4 - 11
8	23 - 3	19 - 2	18 - 6	-	-	-	-	-	-	12 - 10	13 - 7	14 - 0	4 - 8
18 GA Deck													
5 1/2	18 - 2	14 - 5	13 - 10	-	-	-	-	-	-	15 - 9	17 - 6	18 - 1	6 - 0
5 3/4	18 - 9	14 - 11	14 - 4	-	-	-	-	-	-	15 - 6	17 - 2	17 - 9	5 - 11
6	19 - 4	15 - 5	14 - 10	-	-	-	-	-	-	15 - 3	16 - 9	17 - 4	5 - 9
6 1/2	20 - 5	16 - 5	15 - 10	-	-	-	-	-	-	14 - 11	16 - 2	16 - 9	5 - 7
7	21 - 6	17 - 6	16 - 10	-	-	-	-	-	-	14 - 7	15 - 7	16 - 2	5 - 5
7 1/4	22 - 1	18 - 0	17 - 4	-	-	-	-	-	-	14 - 5	15 - 4	15 - 10	5 - 3
8	23 - 8	19 - 6	18 - 10	-	-	-	-	-	-	14 - 0	14 - 8	15 - 2	5 - 1
16 GA Deck													
5 1/2	18 - 11	15 - 0	14 - 5	-	-	-	-	-	-	16 - 7	20 - 1	19 - 5	6 - 8
5 3/4	19 - 5	15 - 5	14 - 10	-	-	-	-	-	-	16 - 4	19 - 8	19 - 2	6 - 7
6	20 - 0	16 - 0	15 - 4	-	-	-	-	-	-	16 - 2	19 - 3	18 - 11	6 - 5
6 1/2	21 - 1	17 - 0	16 - 5	-	-	-	-	-	-	15 - 9	18 - 7	18 - 5	6 - 2
7	22 - 3	18 - 1	17 - 5	-	-	-	-	-	-	15 - 5	17 - 11	18 - 0	6 - 0
7 1/4	22 - 9	18 - 7	17 - 11	-	-	-	-	-	-	15 - 3	17 - 8	17 - 10	5 - 11
8	24 - 5	20 - 2	19 - 5	-	-	-	-	-	-	14 - 9	16 - 10	17 - 4	5 - 9

Notes:

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