

SECTION PROPERTIES  $f_y = 40 \text{ ksi}$

GAGE	I <sub>p</sub> (in <sup>4</sup> )	I <sub>n</sub> (in <sup>4</sup> )	S <sub>p</sub> (in <sup>3</sup> )	S <sub>n</sub> (in <sup>3</sup> )	R <sub>be</sub> (lb/ft)	R <sub>bi</sub> (lb/ft)	V <sub>a</sub> (lb/ft)
20	1.802	1.746	0.721	0.771	681	1437	3619
18	2.489	2.375	1.042	1.118	1151	2390	6345
16	3.190	2.375	1.414	1.448	1771	3638	8867

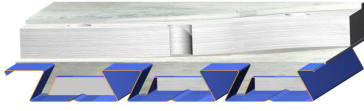
45 PCF LIGHTWEIGHT INSULATING CONCRETE

h	5.5"			6.5"			7.5"			8.5"			9.5"			10.5"				
	GAGE	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	
V <sub>c</sub>	1.0	1.0	1.0	1.3	1.3	1.3	1.6	1.6	1.6	1.9	1.9	1.9	2.2	2.2	2.2	2.5	2.5	2.5		
Ac	24.0	24.0	24.0	36.0	36.0	36.0	48.0	48.0	48.0	60.0	60.0	60.0	72.0	72.0	72.0	84.0	84.0	84.0		
W <sub>c wet</sub>	12.1	12.1	12.1	15.8	15.8	15.8	19.6	19.6	19.6	23.3	23.3	23.3	27.1	27.1	27.1	30.8	30.8	30.8		
W <sub>c dry</sub>	9.4	9.4	9.4	12.3	12.3	12.3	15.2	15.2	15.2	18.2	18.2	18.2	21.1	21.1	21.1	24.0	24.0	24.0		
L	Load Comb.	TRIPLE SPAN - MAXIMUM ALLOWABLE UNIFORM LIVE LOADS, (psf) - ASD																		
8' -0"	D+L (Strength)	174	297	458	171	294	455	168	291	452	165	288	449	162	285	446	159	282	443	
	D+L (Deflection)	666	909	1160	663	906	1157	660	903	1154	657	900	1152	654	897	1149	651	894	1146	
8' -6"	D+L (Strength)	161	276	425	159	273	422	156	270	419	153	267	416	150	264	413	147	261	410	
	D+L (Deflection)	539	736	941	536	733	938	533	731	935	530	728	932	527	725	929	525	722	926	
9' -0"	D+L (Strength)	151	258	372	148	255	369	145	252	366	142	249	363	139	246	360	136	243	357	
	D+L (Deflection)	442	604	772	439	601	769	436	598	767	433	596	764	430	593	761	427	590	758	
9' -6"	D+L (Strength)	141	242	328	138	239	325	135	236	322	132	233	319	129	230	316	126	227	313	
	D+L (Deflection)	366	502	641	363	499	639	361	496	636	358	493	633	355	490	630	352	487	627	
10' -0"	D+L (Strength)	132	222	291	130	219	288	127	216	285	124	213	282	121	211	279	118	208	276	
	D+L (Deflection)	307	420	538	304	417	535	301	414	532	298	412	529	295	409	526	292	406	523	
10' -6"	D+L (Strength)	125	198	259	122	195	256	119	192	253	116	189	250	113	186	248	110	183	245	
	D+L (Deflection)	259	355	455	256	352	452	253	349	449	250	347	446	247	344	444	244	341	441	
11' -0"	D+L (Strength)	118	177	232	115	174	230	112	172	227	109	169	224	106	166	221	103	163	218	
	D+L (Deflection)	220	303	388	217	300	385	214	297	382	211	294	379	208	291	377	206	288	374	
11' -6"	D+L (Strength)	107	160	209	104	157	207	101	154	204	98	151	201	95	148	198	92	145	195	
	D+L (Deflection)	188	260	333	185	257	330	183	254	327	180	251	325	177	248	322	174	245	319	
12' -0"	D+L (Strength)	96	144	190	93	141	187	90	138	184	87	135	181	84	133	178	82	130	175	
	D+L (Deflection)	162	224	288	159	221	285	156	218	282	153	215	279	151	212	276	148	209	273	
12' -6"	D+L (Strength)	87	131	172	84	128	169	81	125	166	78	122	163	75	119	160	72	116	158	
	D+L (Deflection)	140	194	250	137	191	247	135	188	244	132	186	241	129	183	238	126	180	236	
13' -0"	D+L (Strength)	79	119	157	76	116	154	73	113	151	70	110	148	67	107	145	64	104	142	
	D+L (Deflection)	122	169	218	119	166	215	116	164	213	113	161	210	110	158	207	107	155	204	
13' -6"	D+L (Strength)	72	109	143	69	106	140	66	103	138	63	100	135	60	97	132	57	94	129	
	D+L (Deflection)	106	148	191	104	145	189	101	142	186	98	139	183	95	137	180	92	134	177	
14' -0"	D+L (Strength)	65	99	131	62	96	129	59	93	126	56	91	123	54	88	120	51	85	117	
	D+L (Deflection)	93	130	169	90	127	166	87	124	163	84	121	160	82	119	157	79	116	154	
14' -6"	D+L (Strength)	60	91	121	57	88	118	54	85	115	51	82	112	48	79	109	45	77	106	
	D+L (Deflection)	82	115	149	79	112	146	76	109	143	73	106	140	70	103	137	67	100	134	
15' -0"	D+L (Strength)	54	84	111	52	81	108	49	78	105	46	75	103	43	72	100	40	69	97	
	D+L (Deflection)	72	102	132	69	99	129	66	96	126	63	93	123	60	90	120	58	87	117	
MAXIMUM UNSHORED CONSTRUCTION CLEAR SPANS																				
GAGE	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16		
3 Span	18'-10"	22'-10"	24'-2"	17'-9"	21'-9"	23'-0"	16'-10"	20'-9"	22'-1"	16'-0"	20'-0"	21'-4"	15'-3"	19'-2"	20'-8"	14'-7"	18'-6"	20'-2"		
Cantilever	7'-5"	9'-8"	10'-8"	7'-0"	9'-2"	10'-0"	6'-9"	8'-9"	9'-6"	6'-6"	8'-4"	9'-0"	6'-3"	8'-0"	8'-8"	6'-0"	7'-9"	8'-4"		

8' -0" D+L (Strength) 174 ← Maximum allowable live load (psf) based on strength  
 D+L (Deflection) 666 ← Maximum allowable live load (psf) based on deflection  
 The deflection limit (service phase) is the smaller of L/240 or 0.75"

- I<sub>p</sub>** Moment of inertia of deck for positive bending
- I<sub>n</sub>** Moment of inertia of deck for negative bending
- S<sub>p</sub>** Section modulus of deck for positive bending
- S<sub>n</sub>** Section modulus of deck for negative bending
- L** Span length; clear distance of deck between supports
- h** Total height of concrete slab (bottom of deck to top of slab)
- W<sub>c</sub>** Dry weight of concrete (neglecting deflection) (psf)
- Ac** Gross area of concrete (in<sup>2</sup>)
- V<sub>c</sub>** Volume of concrete (cu.yd per 100 sq.ft of deck)
- f<sub>y</sub>** 40 ksi (for determining maximum loads)
- R<sub>be</sub>** Allowable web crippling for exterior reaction with 2" bearing
- R<sub>bi</sub>** Allowable web crippling for interior reaction with 4" bearing

The section property table is based on 2001 AISI's Cold-Formed Steel Design Manual, 2004 Supplement.  
 The live loads and unshored clear spans are based on SDI's Insulating Concrete Metal Deck Design Handbook  
 The deflection limit for the maximum unshored construction spans is the smaller of L/180 or 0.75".  
 Deck length over 45' -0" require inquiry and special accommodations. Please contact the Metal-Dek Group<sup>(R)</sup> for further information.



SECTION PROPERTIES  $f_y = 40 \text{ ksi}$

GAGE	$I_p$	$I_n$	$S_p$	$S_n$	$R_{be}$	$R_{bi}$	$V_a$
	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>3</sup> )	(lb/ft)	(lb/ft)	(lb/ft)
20	1.802	1.746	0.721	0.771	681	1437	3619
18	2.489	2.375	1.042	1.118	1151	2390	6345
16	3.190	2.375	1.414	1.448	1771	3638	8867

45 PCF LIGHTWEIGHT INSULATING CONCRETE

h		11.5"			12.5"			13.5"			14.5"			15.5"			16.5"		
GAGE		20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16
Vc		2.8	2.8	2.8	3.2	3.2	3.2	3.5	3.5	3.5	3.8	3.8	3.8	4.1	4.1	4.1	4.4	4.4	4.4
Ac		96.0	96.0	96.0	108.0	108.0	108.0	120.0	120.0	120.0	132.0	132.0	132.0	144.0	144.0	144.0	156.0	156.0	156.0
Wc <sub>wet</sub>		34.6	34.6	34.6	38.3	38.3	38.3	42.1	42.1	42.1	45.8	45.8	45.8	49.6	49.6	49.6	53.3	53.3	53.3
Wc <sub>dry</sub>		26.9	26.9	26.9	29.8	29.8	29.8	32.7	32.7	32.7	35.7	35.7	35.7	38.6	38.6	38.6	41.5	41.5	41.5
L	Load Comb.	TRIPLE SPAN - MAXIMUM ALLOWABLE UNIFORM LIVE LOADS, (psf) - ASD																	
8' -0"	D+L (Strength)	231	403	629	228	400	626	225	397	623	222	394	620	219	391	617	216	389	615
	D+L (Deflection)	1832	2500	3193	1829	2498	3190	1826	2495	3187	1824	2492	3184	1821	2489	3181	1818	2486	3178
8' -6"	D+L (Strength)	207	364	569	204	361	566	201	358	563	199	355	560	196	352	557	193	349	554
	D+L (Deflection)	1369	1871	2391	1366	1868	2388	1363	1865	2385	1360	1862	2382	1357	1859	2379	1355	1856	2376
9' -0"	D+L (Strength)	188	331	519	185	328	516	182	325	513	179	322	510	176	319	507	173	316	504
	D+L (Deflection)	1048	1434	1834	1045	1431	1831	1042	1428	1828	1039	1425	1825	1036	1422	1822	1033	1419	1819
9' -6"	D+L (Strength)	171	303	476	168	300	474	165	297	471	162	294	468	159	291	465	156	288	462
	D+L (Deflection)	818	1121	1435	815	1118	1433	812	1115	1430	809	1112	1427	806	1109	1424	803	1106	1421
10' -0"	D+L (Strength)	156	279	440	153	276	437	151	273	434	148	270	431	145	267	428	142	264	425
	D+L (Deflection)	649	891	1143	646	888	1140	643	886	1137	640	883	1134	637	880	1131	634	877	1128
10' -6"	D+L (Strength)	144	258	407	141	255	405	138	252	402	135	250	399	132	247	396	129	244	393
	D+L (Deflection)	522	719	923	519	716	920	516	713	917	513	710	914	510	707	911	507	704	909
11' -0"	D+L (Strength)	133	240	354	130	237	351	127	234	348	124	231	345	121	229	343	118	226	340
	D+L (Deflection)	424	587	755	422	584	752	419	581	749	416	578	746	413	575	743	410	572	740
11' -6"	D+L (Strength)	123	224	310	121	221	307	118	218	304	115	216	301	112	213	298	109	210	295
	D+L (Deflection)	349	484	624	346	481	621	343	478	618	340	475	615	337	472	612	334	469	609
12' -0"	D+L (Strength)	115	205	273	112	202	270	109	199	267	106	196	264	103	193	261	100	190	258
	D+L (Deflection)	289	403	521	286	400	518	283	397	515	280	394	512	277	391	509	275	388	506
12' -6"	D+L (Strength)	107	181	242	104	178	239	101	175	236	99	172	233	96	169	230	93	166	227
	D+L (Deflection)	241	338	438	238	335	435	235	332	432	233	329	429	230	326	426	227	323	423
13' -0"	D+L (Strength)	100	160	215	97	157	212	95	154	209	92	151	206	89	148	203	86	145	200
	D+L (Deflection)	203	285	371	200	282	368	197	279	365	194	276	362	191	274	359	188	271	356
13' -6"	D+L (Strength)	89	142	192	86	139	189	83	136	186	81	133	183	78	130	180	75	128	177
	D+L (Deflection)	171	242	316	168	239	313	165	236	310	162	233	307	159	230	304	156	227	301
14' -0"	D+L (Strength)	79	127	172	76	124	169	73	121	166	70	118	163	67	115	160	64	112	157
	D+L (Deflection)	145	206	270	142	204	268	139	201	265	136	198	262	133	195	259	130	192	256
14' -6"	D+L (Strength)	69	113	155	66	110	152	64	107	149	61	104	146	58	102	143	55	99	140
	D+L (Deflection)	123	177	233	120	174	230	117	171	227	114	168	224	111	165	221	108	162	218
15' -0"	D+L (Strength)	61	101	139	58	99	136	55	96	134	53	93	131	50	90	128	47	87	125
	D+L (Deflection)	104	152	201	102	149	198	99	146	195	96	143	192	93	140	189	90	137	186
MAXIMUM UNSHORED CONSTRUCTION CLEAR SPANS																			
GAGE	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	
3 Span	14'-0"	17'-10"	19'-8"	13'-5"	17'-2"	19'-3"	12'-11"	16'-8"	18'-10"	12'-6"	16'-1"	18'-6"	12'-1"	15'-7"	18'-2"	11'-8"	15'-2"	17'-10"	
Cantilever	5'-10"	7'-6"	8'-1"	5'-8"	7'-3"	7'-10"	5'-6"	7'-1"	7'-8"	5'-5"	6'-10"	7'-5"	5'-3"	6'-8"	7'-3"	5'-2"	6'-6"	7'-1"	

8' -0"	D+L (Strength)	231
	D+L (Deflection)	1832

← Maximum allowable live load (psf) based on strength  
 ← Maximum allowable live load (psf) based on deflection  
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