

SECTION PROPERTIES fy = 40 ksi

GAGE	Ip (in4)	In (in4)	Sp (in3)	Sn (in3)	Rbe (lb/ft)	Rbi (lb/ft)	Va (lb/ft)
20	1.802	1.746	0.721	0.771	1043	2138	5501
18	2.489	2.375	1.042	1.118	1761	3554	9644
16	3.190	2.375	1.414	1.448	2710	5412	13477

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
Vc	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
Wc _{wet}	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
Wc _{dry}	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

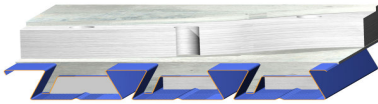
L	Load Comb.	SINGLE SPAN - MAXIMUM ALLOWABLE UNIFORM LIVE LOADS, (psf) - LRFD																	
7'-0"	D+L (Strength)	177	304	446	174	302	444	172	300	441	170	298	439	168	295	437	166	293	435
	D+L (Deflection)	348	476	609	345	473	606	342	470	603	339	467	600	336	464	597	333	461	594
7'-6"	D+L (Strength)	164	283	387	162	281	385	160	279	382	158	277	380	155	274	378	153	272	376
	D+L (Deflection)	280	384	492	277	381	489	274	379	486	271	376	483	269	373	481	266	370	478
8'-0"	D+L (Strength)	153	248	339	151	245	336	149	243	334	147	241	332	145	239	330	142	237	328
	D+L (Deflection)	229	314	403	226	311	400	223	308	397	220	306	394	217	303	391	214	300	388
8'-6"	D+L (Strength)	144	218	299	142	216	296	139	214	294	137	212	292	135	209	290	133	207	288
	D+L (Deflection)	188	260	333	186	257	331	183	254	328	180	251	325	177	248	322	174	245	319
9'-0"	D+L (Strength)	131	193	265	129	191	263	127	189	261	125	187	259	123	185	256	120	182	254
	D+L (Deflection)	157	217	279	154	214	276	151	211	273	148	208	270	145	205	267	142	202	264
9'-6"	D+L (Strength)	117	173	237	115	170	235	113	168	232	110	166	230	108	164	228	106	162	226
	D+L (Deflection)	131	182	235	128	179	232	126	176	229	123	173	226	120	170	223	117	168	220
10'-0"	D+L (Strength)	105	155	213	102	153	210	100	150	208	98	148	206	96	146	204	94	144	202
	D+L (Deflection)	111	154	199	108	151	196	105	148	193	102	145	190	99	143	187	96	140	184
10'-6"	D+L (Strength)	94	139	192	92	137	190	90	135	187	87	133	185	85	131	183	83	128	181
	D+L (Deflection)	94	131	170	91	128	167	88	125	164	85	123	161	82	120	158	79	117	155
11'-0"	D+L (Strength)	85	126	174	83	124	172	80	122	169	78	119	167	76	117	165	74	115	163
	D+L (Deflection)	80	112	146	77	109	143	74	107	140	71	104	137	68	101	134	66	98	131
11'-6"	D+L (Strength)	77	114	158	75	112	156	72	110	154	70	108	152	68	106	149	66	104	147
	D+L (Deflection)	69	97	126	66	94	123	63	91	120	60	88	117	57	85	114	54	82	111
12'-0"	D+L (Strength)	70	104	144	68	102	142	65	100	140	63	98	138	61	96	136	59	93	133
	D+L (Deflection)	59	83	109	56	80	106	53	78	103	50	75	100	47	72	97	44	69	94
12'-6"	D+L (Strength)	63	95	132	61	93	130	59	91	128	57	89	126	55	87	123	53	84	121
	D+L (Deflection)	51	72	95	48	69	92	45	66	89	42	63	86	39	61	83	36	58	80
13'-0"	D+L (Strength)	58	87	121	56	85	119	54	83	117	51	81	115	49	79	113	47	76	110
	D+L (Deflection)	44	63	82	41	60	80	38	57	77	35	54	74	32	51	71	29	48	68
13'-6"	D+L (Strength)	53	80	112	51	78	109	49	76	107	47	74	105	44	71	103	42	69	101
	D+L (Deflection)	37	54	72	35	52	69	32	49	66	29	46	63	26	43	60	23	40	57
14'-0"	D+L (Strength)	49	74	103	46	72	101	44	69	99	42	67	96	40	65	94	38	63	92
	D+L (Deflection)	32	47	63	29	44	60	26	42	57	24	39	54	21	36	51	18	33	48
14'-6"	D+L (Strength)	45	68	95	43	66	93	40	64	91	38	62	89	36	59	87	34	57	84
	D+L (Deflection)	28	41	55	25	38	52	22	35	49	19	33	46	16	30	44	14	27	41
15'-0"	D+L (Strength)	41	63	88	39	61	86	37	59	84	35	56	82	33	54	80	31	52	77
	D+L (Deflection)	24	36	48	21	33	46	18	30	43	15	27	40	14	24	37	12	21	34
15'-6"	D+L (Strength)	38	58	82	36	56	80	34	54	78	32	52	75	30	50	73	28	47	71
	D+L (Deflection)	19	30	41	16	27	38	14	24	35	12	21	32	10	18	29	8	15	26
16'-0"	D+L (Strength)	35	54	76	33	52	74	31	50	72	29	48	70	27	46	67	25	44	65
	D+L (Deflection)	16	25	34	14	22	31	12	19	28	10	16	25	8	14	22	6	12	19
16'-6"	D+L (Strength)	31	50	71	29	48	69	27	46	67	25	44	64	23	42	62	21	40	60
	D+L (Deflection)	20	28	38	17	25	35	15	23	33	12	20	30	10	17	27	8	14	21
17'-0"	D+L (Strength)	27	47	66	25	45	64	23	44	62	21	42	60	19	39	58	17	37	56
	D+L (Deflection)	16	23	32	14	21	30	12	19	28	10	16	25	8	14	22	6	12	19
17'-6"	D+L (Strength)	24	44	62	22	42	60	20	40	58	18	38	56	16	36	54	14	34	52
	D+L (Deflection)	14	20	29	12	18	27	10	16	25	8	14	22	6	12	20	4	10	18
18'-0"	D+L (Strength)	21	41	58	19	39	56	17	37	54	15	35	52	14	33	50	12	31	48
	D+L (Deflection)	13	19	27	11	17	25	9	15	23	7	13	21	5	11	19	4	9	17

MAXIMUM UNSHORED CONSTRUCTION CLEAR SPANS																		
GAGE	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16
1 Span	17'-3"	19'-9"	20'-7"	16'-1"	18'-9"	19'-8"	15'-2"	18'-0"	18'-10"	14'-3"	17'-2"	18'-3"	13'-6"	16'-4"	17'-8"	12'-10"	15'-8"	17'-2"
Cantilever	8'-8"	10'-11"	10'-8"	8'-0"	10'-2"	10'-0"	7'-7"	9'-7"	9'-6"	7'-2"	9'-1"	9'-0"	6'-10"	8'-8"	8'-8"	6'-7"	8'-4"	8'-4"

7'-0" D+L (Strength) 177 ← Maximum allowable live load (psf) based on strength
 D+L (Deflection) 348 ← Maximum allowable live load (psf) based on deflection
 The deflection limit (service phase) is the smaller of L/240 or 0.75"

- Ip** Moment of inertia of deck for positive bending
- In** Moment of inertia of deck for negative bending
- Sp** Section modulus of deck for positive bending
- Sn** 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)
- Wc** Dry weight of concrete (neglecting deflection) (pcf)
- Ac** Gross area of concrete (in²)
- Vc** Volume of concrete (cu.yd per 100 sq.ft of deck)
- fy** 40 ksi (for determining maximum loads)
- Rbe** Allowable web crippling for exterior reaction with 2" bearing
- Rbi** 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® for further information.



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

GAGE	Ip (in4)	In (in4)	Sp (in3)	Sn (in3)	Rbe	Rbi	Va
					(lb/ft)	(lb/ft)	(lb/ft)
20	1.802	1.746	0.721	0.771	1043	2138	5501
18	2.489	2.375	1.042	1.118	1761	3554	9644
16	3.190	2.375	1.414	1.448	2710	5412	13477

45 PCF LIGHTWEIGHT INSULATING CONCRETE

h	11.5"			12.5"			13.5"			14.5"			15.5"			16.5"		
	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16
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 _{wet}	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 _{dry}	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.	SINGLE SPAN - MAXIMUM ALLOWABLE UNIFORM LIVE LOADS, (psf) - LRFD																	
		5'-0"	D+L (Strength)	238	417	653	236	415	651	234	412	649	231	410	647	229	408	644	227
	D+L (Deflection)	958	1312	1679	955	1310	1676	953	1307	1673	950	1304	1671	947	1301	1668	944	1298	1665
5'-6"	D+L (Strength)	214	377	592	212	375	589	210	372	587	208	370	585	206	368	583	203	366	581
	D+L (Deflection)	713	978	1254	710	975	1251	707	972	1248	704	970	1245	701	967	1242	698	964	1239
6'-0"	D+L (Strength)	195	343	540	192	341	538	190	339	536	188	337	534	186	335	532	184	332	529
	D+L (Deflection)	542	746	958	539	743	955	536	741	952	533	738	949	530	735	946	527	732	944
6'-6"	D+L (Strength)	178	315	497	176	313	495	173	311	492	171	309	490	169	306	488	167	304	486
	D+L (Deflection)	420	580	747	417	577	744	414	575	741	411	572	738	408	569	735	405	566	732
7'-0"	D+L (Strength)	163	291	433	161	289	430	159	287	428	157	284	426	155	282	424	153	280	422
	D+L (Deflection)	330	458	591	327	455	588	324	453	586	321	450	583	318	447	580	315	444	577
7'-6"	D+L (Strength)	151	270	374	149	268	371	147	266	369	145	263	367	142	261	365	140	259	363
	D+L (Deflection)	263	367	475	260	364	472	257	361	469	254	358	466	251	355	463	248	352	460
8'-0"	D+L (Strength)	140	234	325	138	232	323	136	230	321	134	228	319	131	226	317	129	223	315
	D+L (Deflection)	211	297	385	208	294	383	205	291	380	202	288	377	199	285	374	197	282	371
8'-6"	D+L (Strength)	131	205	286	128	203	283	126	201	281	124	198	279	122	196	277	120	194	275
	D+L (Deflection)	171	242	316	168	239	313	165	236	310	162	233	307	159	231	304	156	228	301
9'-0"	D+L (Strength)	118	180	252	116	178	250	114	176	248	112	174	245	109	172	243	107	169	241
	D+L (Deflection)	139	199	261	136	196	258	133	193	255	131	190	252	128	187	249	125	185	246
9'-6"	D+L (Strength)	104	159	224	102	157	222	99	155	219	97	153	217	95	151	215	93	148	213
	D+L (Deflection)	114	165	217	111	162	214	108	159	211	105	156	208	102	153	205	99	150	203
10'-0"	D+L (Strength)	91	142	200	89	139	197	87	137	195	85	135	193	83	133	191	81	131	189
	D+L (Deflection)	93	137	182	90	134	179	88	131	176	85	128	173	82	125	170	79	122	167
10'-6"	D+L (Strength)	81	126	179	79	124	177	76	122	174	74	120	172	72	117	170	70	115	168
	D+L (Deflection)	77	114	152	74	111	149	71	108	147	68	105	144	65	102	141	62	99	138
11'-0"	D+L (Strength)	72	113	161	69	111	159	67	109	156	65	106	154	63	104	152	61	102	150
	D+L (Deflection)	63	95	128	60	92	125	57	89	122	54	86	120	51	83	117	48	80	114
11'-6"	D+L (Strength)	64	101	145	61	99	143	59	97	141	57	95	138	55	93	136	53	90	134
	D+L (Deflection)	51	79	108	48	76	105	45	73	102	42	70	99	39	67	97	36	65	94
12'-0"	D+L (Strength)	57	91	131	54	89	129	52	87	127	50	85	125	48	82	122	46	80	120
	D+L (Deflection)	41	66	91	38	63	88	35	60	86	33	57	83	30	54	80	27	51	77
12'-6"	D+L (Strength)	50	82	119	48	80	117	46	78	115	44	76	112	42	73	110	39	71	108
	D+L (Deflection)	33	55	77	30	52	74	27	49	71	24	46	68	21	43	65	18	40	63
13'-0"	D+L (Strength)	45	74	108	43	72	106	40	70	104	38	68	102	36	66	99	34	63	97
	D+L (Deflection)	26	45	65	23	42	62	20	39	59	17	36	56	14	33	53	11	30	50
13'-6"	D+L (Strength)	40	67	99	38	65	96	36	63	94	34	61	92	32	59	89	29	56	88
	D+L (Deflection)	20	37	55	17	34	52	14	31	49	11	28	46	8	25	43	5	22	40
14'-0"	D+L (Strength)	36	61	90	34	59	88	32	56	86	30	54	83	28	51	80	26	48	79
	D+L (Deflection)	15	30	46	12	27	43	9	24	40	6	21	37	3	18	34	1	15	31
14'-6"	D+L (Strength)		55	82		53	80		51	78		48	76		46	73		43	71
	D+L (Deflection)		24	38		21	35		18	32		15	29		12	26		9	23
15'-0"	D+L (Strength)		50	75		48	73		46	71		44	69		42	66		40	64
	D+L (Deflection)		18	31		16	28		14	25		12	22		10	19		8	16
15'-6"	D+L (Strength)			69		67		64		62		60		58		56		54	52
	D+L (Deflection)			23		20		17		14		11		8		5		2	
16'-0"	D+L (Strength)			63		61		58		56		54		52		50		48	46
	D+L (Deflection)			17		14		11		8		5		2					

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	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16	20	18	16
1 Span	12'-3"	15'-0"	16'-9"	11'-9"	14'-5"	16'-5"	11'-4"	13'-10"	16'-1"	10'-11"	13'-5"	15'-9"	10'-7"	12'-11"	15'-6"	10'-3"	12'-7"	15'-3"
Cantilever	6'-4"	8'-0"	8'-1"	6'-1"	7'-9"	7'-10"	5'-11"	7'-6"	7'-8"	5'-9"	7'-3"	7'-5"	5'-7"	7'-1"	7'-3"	5'-5"	6'-10"	7'-1"

5'-0"	D+L (Strength)	238
	D+L (Deflection)	958

← Maximum allowable live load (psf) based on strength
 ← Maximum allowable live load (psf) based on deflection
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- Ip** Moment of inertia of deck for positive bending
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- Sp** Section modulus of deck for positive bending
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- L** Span length; clear distance of deck between supports
- h** Total height of concrete slab (bottom of deck to top of slab)
- Wc** Dry weight of concrete (neglecting deflection) (psf)
- Vc** Gross area of concrete (in²)
- Ac** Volume of concrete (cu.yd per 100 sq.ft of deck)
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