Metal Dek Group®
a unit of CSi®

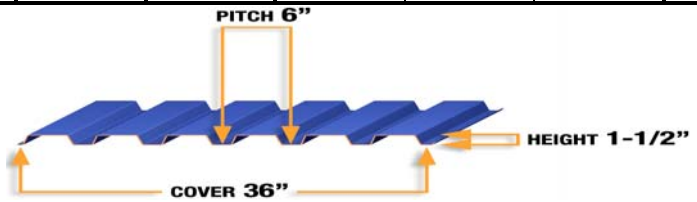
B-DEK ROOF (ASD)

1-1/2" high x 6" pitch x 36" wide

SECTION PROPERTIES

fy = 40 ksi

GAGE	Wd	I_D (DEFLECTION)	Sp	Sn	Rbe			Rbi		Va
					2"	3"	4"	3"	4"	
22	1.63	0.176	0.182	0.193	704	811	901	1120	1230	2056
20	1.97	0.214	0.225	0.236	1002	1149	1272	1618	1770	2486
18	2.61	0.285	0.307	0.316	1668	1900	2096	2745	2989	3268
16	3.29	0.359	0.395	0.398	2543	2881	3166	4241	4599	4091



ASD DESIGN		MAXIMUM SUPERIMPOSED UNIFORM ASD LOADS, psf											
Span	Load Combinations	SINGLE SPAN				DOUBLE SPAN				TRIPLE SPAN			
		GAGE											
		22	20	18	16	22	20	18	16	22	20	18	16
4'-0"	D+L (Strength)	180	223	304	392	129*	162*	223*	286*	152*	191*	263*	339*
	D+L (Deflection)	169	212	288	365	129	162	223	286	152	191	263	339
	L (Deflection)	114	142	194	246	129	162	223	286	152	191	263	339
4'-6"	D+L (Strength)	142	176	240	309	110*	137*	187*	239*	129*	162*	222*	284*
	D+L (Deflection)	118	148	202	255	110	137	187	239	129	162	222	284
	L (Deflection)	80	100	136	172	110	137	187	239	129	162	222	284
5'-0"	D+L (Strength)	115	142	194	249	94*	117*	160*	203*	111*	139*	190*	242*
	D+L (Deflection)	86	107	146	185	94	117	160	203	111	139	190	242
	L (Deflection)	58	73	99	126	94	117	160	203	111	139	188	237
5'-6"	D+L (Strength)	95	117	160	206	82*	102*	138*	175*	97*	121*	164*	209*
	D+L (Deflection)	64	80	109	138	82	102	138	175	97	121	164	209
	L (Deflection)	44	55	75	94	82	102	138	175	87	106	141	178
6'-0"	D+L (Strength)	79	98	134	172	72*	89*	121*	153*	85*	106*	144*	182*
	D+L (Deflection)	49	61	84	106	72	89	121	153	85	106	144	182
	L (Deflection)	34	42	57	73	72	89	121	153	67	82	109	137
6'-6"	D+L (Strength)	67	83	114	146	64*	79*	106*	134*	76*	94*	127*	161*
	D+L (Deflection)	38	48	65	83	64	79	106	134	76	94	126	158
	L (Deflection)	27	33	45	57	64	79	106	134	53	64	85	108
7'-0"	D+L (Strength)	58	72	98	126	57*	70*	95*	119*	68*	84*	113*	143*
	D+L (Deflection)	30	38	52	65	57	70	95	119	62	75	100	126
	L (Deflection)	21	27	36	46	54	66	87	110	42	51	68	86
7'-6"	D+L (Strength)	50	62	85	109	51*	63*	85*	107*	61*	76*	102*	128*
	D+L (Deflection)	24	30	42	53	51	63	85	107	50	61	81	102
	L (Deflection)	17	22	29	37	44	53	71	90	34	42	56	70
8'-0"	D+L (Strength)	44	54	74	95	46*	57*	76*	96*	55*	68*	92*	115*
	D+L (Deflection)	20	25	34	43	46	57	76	96	41	50	66	83
	L (Deflection)	14	18	24	31	36	44	59	74	28	34	46	58
8'-6"	D+L (Strength)	39	48	65	84	41*	50*	67*	84*	51*	62*	83*	105*
	D+L (Deflection)	16	20	28	35	41	50	67	84	34	41	55	69
	L (Deflection)	12	15	20	26	30	37	49	62	24	29	38	48
9'-0"	D+L (Strength)	34	43	58	75	36*	44*	59*	75*	46*	56*	75*	94*
	D+L (Deflection)	13	17	23	29	36	44	59	75	28	34	46	58
	L (Deflection)	10	13	17	22	25	31	41	52	20	24	32	41
9'-6"	D+L (Strength)	31	38	52	67	32*	40*	53*	67*	41*	50*	67*	84*
	D+L (Deflection)	11	14	19	24	31	37	50	63	24	29	38	48
	L (Deflection)	8	11	14	18	22	26	35	44	17	21	27	35
10'-0"	D+L (Strength)	27	34	47	60	29*	36*	48*	60*	37*	45*	60*	76*
	D+L (Deflection)	9	12	16	20	26	32	42	53	20	24	33	41
	L (Deflection)	7	9	12	16	19	23	30	38	14	18	23	30
10'-6"	D+L (Strength)	25	31	42	54	26*	32*	43*	54*	33*	41*	54*	69*
	D+L (Deflection)	8	10	13	17	22	27	36	46	17	21	28	35
	L (Deflection)	6	8	11	14	16	19	26	33	13	15	20	26

	D+L (Strength)	180
4'-0"	D+L (Deflection)	169
	L (Deflection)	114

Max. superimposed ASD dead + live load (psf) (governed by strength limitation)
Max. superimposed ASD dead + live load (psf) (governed by deflection limitation)
Max. superimposed ASD live load (psf) (governed by deflection limitation)
Vertical load span (center to center spacing)

Wd Weight of deck (uncoated), psf
I_D Moment of inertia for deflection per foot of deck width (in^4)/ft
Sp Section modulus for positive bending per foot of deck width, (in^3)/ft
Sn Section modulus for negative bending per foot of deck width, (in^3)/ft
Va Allowable shear value per foot of deck width, plf

Rbe Allowable exterior web crippling value per foot of deck, plf
Rbi Allowable interior web crippling value per foot of deck, plf
D Uniform dead load, psf
L Uniform live load, psf

Notes:
1. Bending strength based on allowable flexural stress of 24 ksi.
2. Loads marked with asterisk (*) are governed by moment & shear, interior reactions (web crippling) or applied moment & reactions assuming 4" of interior bearing.
3. Deflection based on maximum dead + live load deflection of L/240 and on maximum live load deflection of L/360.
4. An upper limit of 400 psf has been applied to the loads.
5. Deck length over 45'-0" require inquiry and special accommodations. Please contact the Metal-Dek Group® for further information.

The section properties table is based on 2001 AISI's North American Specification for the Design of Cold-Formed Steel Structural Members (2004 Supplement).
Acoustical profile is also available.

B-Dek
Allowable Diaphragm Shear Values, S (plf) and Stiffness Factors, G' (kpi)

Metal Dek Group® a unit of CSi®

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
SIDELAP CONNECTION: 1-1/2" Seam Welds
ATTACHMENT PATTERN: 36 / 4

S = Allowable Diaphragm Shear (lbs/ft)
G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			5' - 0"	6' - 0"	7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"
22 0.0295"	6"	S	778	773	769	766	763	626*	517*	435*
		G'	5.1	6.1	7.1	8.0	9.0	9.9	10.8	11.7
	12"	S	643	628	617	608	601	595	517*	435*
		G'	5.1	6.0	7.0	7.9	8.9	9.8	10.7	11.6
	18"	S	554	532	516	503	493	484	477	435*
		G'	5.1	6.0	7.0	7.9	8.8	9.7	10.6	11.4
	24"	S	496	470	450	435	423	412	404	397
		G'	5.0	6.0	6.9	7.8	8.7	9.6	10.5	11.3
	30"	S	455	427	405	388	375	364	355	347
		G'	5.0	5.9	6.9	7.8	8.6	9.5	10.3	11.2
	36"	S	426	396	373	355	341	329	319	311
		G'	5.0	5.9	6.8	7.7	8.6	9.4	10.2	11.1
20 0.0358"	6"	S	953	947	942	938	935	836*	691*	581*
		G'	8.2	9.7	11.3	12.8	14.3	15.7	17.2	18.6
	12"	S	788	770	756	745	736	729	691*	581*
		G'	8.1	9.6	11.1	12.6	14.1	15.5	16.9	18.3
	18"	S	679	652	632	616	603	593	584	577
		G'	8.1	9.6	11.0	12.5	13.9	15.3	16.6	17.9
	24"	S	607	575	551	533	518	505	495	486
		G'	8.0	9.5	10.9	12.3	13.7	15.0	16.3	17.6
	30"	S	558	523	496	476	459	446	434	425
		G'	8.0	9.4	10.8	12.2	13.5	14.8	16.1	17.3
	36"	S	522	485	456	435	417	403	391	381
		G'	7.9	9.3	10.7	12.1	13.4	14.6	15.9	17.1
18 0.0474"	6"	S	1284	1275	1269	1264	1260	1256	1052*	884*
		G'	16.1	19.1	22.0	24.9	27.7	30.5	33.2	35.8
	12"	S	1062	1037	1018	1003	991	982	973	884*
		G'	15.9	18.8	21.6	24.4	27.1	29.7	32.2	34.7
	18"	S	914	878	851	830	813	799	787	777
		G'	15.7	18.5	21.3	23.9	26.5	28.9	31.3	33.7
	24"	S	818	775	743	717	697	681	667	655
		G'	15.5	18.3	20.9	23.5	25.9	28.3	30.5	32.7
	30"	S	751	704	668	641	618	600	585	572
		G'	15.4	18.0	20.6	23.0	25.4	27.6	29.8	31.9
	36"	S	703	653	615	585	562	543	527	514
		G'	15.2	17.8	20.3	22.7	24.9	27.1	29.1	31.1
16 0.0598"	6"	S	1649	1638	1630	1624	1618	1614	1489*	1251*
		G'	28.0	33.1	38.0	42.8	47.4	51.9	56.3	60.5
	12"	S	1364	1332	1308	1289	1274	1261	1251	1242
		G'	27.5	32.3	36.9	41.4	45.7	49.8	53.8	57.7
	18"	S	1175	1129	1094	1066	1044	1026	1011	998
		G'	27.0	31.6	36.0	40.2	44.2	48.0	51.7	55.2
	24"	S	1051	996	954	922	896	874	857	842
		G'	26.5	30.9	35.1	39.1	42.8	46.4	49.8	53.0
	30"	S	965	904	859	823	794	771	752	735
		G'	26.1	30.3	34.3	38.1	41.6	44.9	48.1	51.1
	36"	S	903	838	790	752	722	697	677	660
		G'	25.7	29.8	33.6	37.2	40.5	43.6	46.5	49.3

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
SIDELAP CONNECTION: 1-1/2" Seam Welds
ATTACHMENT PATTERN: 36 / 7

S = Allowable Diaphragm Shear (lbs/ft)
G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			5' - 0"	6' - 0"	7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"
22 0.0295"	6"	S	1250	1224	1205	978*	773*	626*	517*	435*
		G'	36.3	41.9	47.2	52.1	56.7	60.9	64.9	68.7
	12"	S	929	884	851	825	773*	626*	517*	435*
		G'	35.2	40.4	45.2	49.5	53.6	57.3	60.8	64.1
	18"	S	779	727	688	658	634	615	517*	435*
		G'	34.3	39.2	43.5	47.5	51.1	54.5	57.5	60.3
	24"	S	695	639	598	566	541	521	504	435*
		G'	33.6	38.1	42.2	45.8	49.1	52.1	54.8	57.3
	30"	S	642	584	541	508	482	461	444	430
		G'	33.0	37.3	41.1	44.4	47.4	50.1	52.5	54.7
	36"	S	605	546	502	469	442	421	403	389
		G'	32.5	36.6	40.2	43.3	46.0	48.4	50.6	52.6
20 0.0358"	6"	S	1532	1500	1476	1306*	1032*	836*	691*	581*
		G'	55.1	63.1	70.3	76.9	83.0	88.5	93.7	98.5
	12"	S	1138	1083	1042	1011	985	836*	691*	581*
		G'	52.8	59.9	66.2	71.9	77.1	81.8	86.1	90.0
	18"	S	954	890	843	806	777	754	691*	581*
		G'	51.0	57.4	63.1	68.1	72.6	76.6	80.2	83.5
	24"	S	851	783	732	693	663	638	617	581*
		G'	49.6	55.5	60.6	65.0	68.9	72.4	75.5	78.2
	30"	S	786	715	663	623	591	565	544	526
		G'	48.5	53.9	58.5	62.5	65.9	68.9	71.6	74.0
	36"	S	741	669	615	574	542	516	494	476
		G'	47.6	52.6	56.8	60.4	63.4	66.1	68.4	70.4
18 0.0474"	6"	S	2064	2021	1988	1963	1571*	1273*	1052*	884*
		G'	97.8	109.8	120.5	129.9	138.3	145.9	152.7	159.0
	12"	S	1533	1459	1404	1361	1327	1273*	1052*	884*
		G'	91.6	101.7	110.4	118.0	124.6	130.5	135.7	140.4
	18"	S	1285	1199	1135	1086	1047	1015	989	884*
		G'	87.0	95.7	103.0	109.2	114.5	119.2	123.3	126.9
	24"	S	1147	1054	986	934	893	859	831	808
		G'	83.5	91.1	97.3	102.4	106.8	110.5	113.8	116.6
	30"	S	1059	963	893	839	796	761	733	709
		G'	80.7	87.4	92.7	97.1	100.6	103.7	106.2	108.4
	36"	S	998	900	828	773	730	694	665	641
		G'	78.5	84.4	89.0	92.7	95.7	98.1	100.2	101.9
16 0.0598"	6"	S	2651	2596	2555	2522	2224*	1802*	1489*	1251*
		G'	151.7	167.6	181.1	192.8	202.9	211.9	219.8	226.8
	12"	S	1969	1874	1804	1749	1705	1670	1489*	1251*
		G'	138.7	151.1	161.4	170.1	177.5	183.8	189.4	194.3
	18"	S	1651	1540	1458	1395	1345	1304	1271	1243
		G'	129.5	139.5	147.6	154.1	159.6	164.3	168.2	171.7
	24"	S	1473	1355	1267	1200	1147	1104	1068	1038
		G'	122.7	130.9	137.2	142.3	146.4	149.8	152.7	155.2
	30"	S	1360	1237	1147	1077	1022	978	941	911
		G'	117.5	124.2	129.3	133.2	136.3	138.8	140.8	142.5
	36"	S	1283	1157	1064	993	937	892	855	824
		G'	113.3	118.9	122.9	125.9	128.2	130.0	131.4	132.5

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
S values have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: Phi = .55 for LRFD and SF = 3.00 for ASD for welds.
Wind: Phi = .70 for LRFD and SF = 2.35 for ASD for welds.
Other: Phi = .60 for LRFD and SF = 2.65 for ASD for welds.
Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Dek Group for additional information.
Fy = 40 ksi and Fu = 55 ksi
* Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in the SDI DDM03

B-Dek
Allowable Diaphragm Shear Values, S (plf) and Stiffness Factors, G' (kpi)

Metal Dek Group® a unit of CSI®

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
SIDELAP CONNECTION: S/L Screws #10
ATTACHMENT PATTERN: 36 / 4

S = Allowable Diaphragm Shear (lbs/ft)
G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			5' - 0"	6' - 0"	7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"
22 0.0295"	6"	S	585	559	538	522	508	497	488	435*
		G'	5.1	6.0	7.0	7.9	8.9	9.8	10.7	11.6
	12"	S	477	440	412	389	371	356	344	333
		G'	5.0	6.0	6.9	7.8	8.7	9.6	10.4	11.3
	18"	S	432	391	360	335	316	299	286	274
		G'	5.0	5.9	6.8	7.7	8.6	9.4	10.2	11.0
	24"	S	408	365	333	307	286	270	256	244
		G'	5.0	5.9	6.8	7.6	8.5	9.3	10.1	10.9
	30"	S	393	349	316	289	268	251	237	225
		G'	5.0	5.9	6.7	7.6	8.4	9.2	10.0	10.7
	36"	S	383	338	304	277	256	239	224	212
		G'	5.0	5.9	6.7	7.5	8.3	9.1	9.9	10.6
20 0.0358"	6"	S	715	682	657	637	620	607	595	581*
		G'	8.1	9.6	11.1	12.6	14.0	15.4	16.8	18.2
	12"	S	583	538	503	475	453	434	419	406
		G'	8.0	9.5	10.9	12.3	13.7	15.0	16.3	17.5
	18"	S	529	479	440	410	386	366	349	335
		G'	8.0	9.4	10.8	12.1	13.4	14.7	15.9	17.0
	24"	S	500	447	407	375	350	329	312	298
		G'	7.9	9.3	10.7	11.9	13.2	14.4	15.5	16.6
	30"	S	481	427	386	354	328	307	289	274
		G'	7.9	9.2	10.6	11.8	13.0	14.2	15.3	16.3
	36"	S	469	414	372	339	313	292	274	259
		G'	7.8	9.2	10.5	11.7	12.9	14.0	15.0	16.0
18 0.0474"	6"	S	958	914	879	852	829	811	795	782
		G'	15.9	18.8	21.6	24.3	26.9	29.5	32.0	34.4
	12"	S	783	721	674	636	606	581	560	542
		G'	15.6	18.3	20.9	23.4	25.8	28.1	30.3	32.5
	18"	S	711	642	590	549	517	490	467	448
		G'	15.4	18.0	20.4	22.8	25.0	27.1	29.1	31.0
	24"	S	672	600	546	503	469	441	418	398
		G'	15.2	17.7	20.1	22.3	24.4	26.3	28.1	29.9
	30"	S	648	574	519	475	440	412	388	368
		G'	15.1	17.5	19.8	21.9	23.9	25.7	27.4	28.9
	36"	S	631	556	500	456	420	391	368	347
		G'	15.0	17.4	19.6	21.6	23.4	25.1	26.7	28.2
16 0.0598"	6"	S	1225	1167	1122	1086	1057	1033	1012	995
		G'	27.4	32.2	36.8	41.1	45.3	49.4	53.3	57.0
	12"	S	1002	922	861	812	773	741	714	691
		G'	26.6	31.0	35.1	39.0	42.6	46.1	49.3	52.4
	18"	S	911	822	755	702	660	625	596	572
		G'	26.1	30.2	33.9	37.4	40.7	43.7	46.5	49.1
	24"	S	861	769	699	644	600	564	534	509
		G'	25.7	29.6	33.1	36.3	39.2	41.9	44.3	46.6
	30"	S	831	736	664	608	563	527	496	470
		G'	25.4	29.1	32.4	35.4	38.0	40.4	42.6	44.6
	36"	S	810	714	641	584	538	501	470	444
		G'	25.2	28.7	31.8	34.6	37.1	39.3	41.2	43.0

SUPPORT CONNECTION: 1/2" Effective Weld Diameter
SIDELAP CONNECTION: S/L Screws #10
ATTACHMENT PATTERN: 36 / 7

S = Allowable Diaphragm Shear (lbs/ft)
G' = Stiffness Factor (kips/in.)

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT							
			5' - 0"	6' - 0"	7' - 0"	8' - 0"	9' - 0"	10' - 0"	11' - 0"	12' - 0"
22 0.0295"	6"	S	827	766	721	685	657	626*	517*	435*
		G'	35.1	40.2	44.8	49.1	53.0	56.6	59.9	63.0
	12"	S	670	601	549	509	478	452	431	413
		G'	33.8	38.2	42.2	45.7	48.8	51.7	54.2	56.5
	18"	S	613	541	487	446	414	388	366	348
		G'	33.0	37.1	40.6	43.6	46.2	48.5	50.5	52.3
	24"	S	584	510	456	414	381	355	333	314
		G'	32.5	36.3	39.5	42.1	44.4	46.3	48.0	49.4
	30"	S	566	491	437	395	361	335	313	294
		G'	32.1	35.7	38.7	41.1	43.1	44.8	46.1	47.3
	36"	S	554	479	424	382	348	321	299	280
		G'	31.8	35.3	38.1	40.3	42.1	43.5	44.7	45.7
20 0.0358"	6"	S	1011	936	880	836	801	773	691*	581*
		G'	52.6	59.5	65.6	71.1	76.0	80.4	84.4	88.1
	12"	S	819	734	671	622	583	552	526	504
		G'	49.9	55.7	60.6	64.8	68.4	71.6	74.4	76.9
	18"	S	750	661	596	545	506	473	447	424
		G'	48.4	53.4	57.6	61.0	63.8	66.2	68.2	70.0
	24"	S	714	624	558	506	466	433	407	384
		G'	47.4	52.0	55.6	58.4	60.7	62.6	64.1	65.3
	30"	S	693	601	534	483	442	409	382	359
		G'	46.7	50.9	54.1	56.6	58.5	60.0	61.1	62.0
	36"	S	678	586	519	467	426	393	366	343
		G'	46.2	50.1	53.0	55.2	56.8	58.0	58.9	59.5
18 0.0474"	6"	S	1354	1252	1176	1117	1070	1032	1000	884*
		G'	91.0	100.7	108.9	116.0	122.1	127.5	132.2	136.4
	12"	S	1100	985	899	833	781	738	703	674
		G'	84.3	91.5	97.3	101.9	105.8	109.0	111.6	113.9
	18"	S	1008	888	800	732	678	635	599	568
		G'	80.6	86.3	90.6	93.9	96.4	98.4	99.9	101.1
	24"	S	961	839	749	680	626	582	545	515
		G'	78.2	83.0	86.4	88.7	90.3	91.5	92.3	92.9
	30"	S	932	809	718	649	594	549	513	482
		G'	76.5	80.7	83.4	85.1	86.1	86.7	87.0	87.1
	36"	S	912	789	698	628	573	528	491	460
		G'	75.3	79.0	81.2	82.4	83.0	83.1	83.0	82.8
16 0.0598"	6"	S	1729	1598	1500	1424	1363	1314	1272	1238
		G'	137.6	149.2	158.6	166.3	172.9	178.5	183.3	187.5
	12"	S	1408	1259	1149	1064	997	942	897	859
		G'	124.3	131.7	137.2	141.4	144.7	147.3	149.3	151.0
	18"	S	1292	1138	1024	936	867	811	765	726
		G'	117.1	122.3	125.7	127.9	129.4	130.4	131.0	131.4
	24"	S	1232	1076	960	871	801	744	697	658
		G'	112.7	116.4	118.4	119.4	119.8	119.8	119.5	119.1
	30"	S	1196	1038	921	831	761	704	657	617
		G'	109.7	112.4	113.5	113.6	113.2	112.5	111.6	110.7
	36"	S	1171	1012	895	805	734	677	629	590
		G'	107.5	109.5	109.9	109.4	108.4	107.2	105.9	104.6

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
S values have been divided by a Safety Factor of 3.00 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: Phi = .55 for LRFD and SF = 3.00 for ASD for welds.
Wind: Phi = .70 for LRFD and SF = 2.35 for ASD for welds.
Other: Phi = .60 for LRFD and SF = 2.65 for ASD for welds.
Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Dek Group for additional information.
Fy = 40 ksi and Fu = 55 ksi
* Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in the SDI DDM03