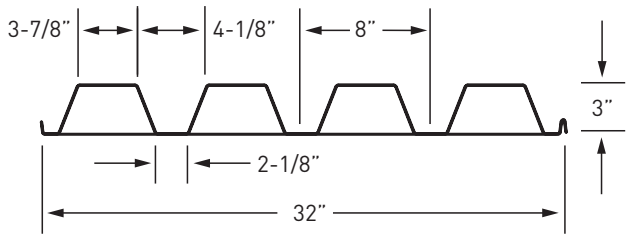
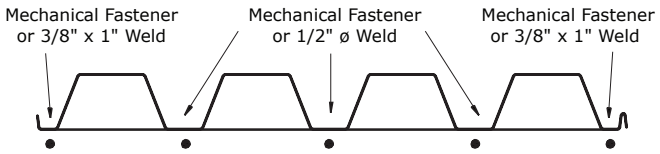
3.3 **DGNF-32 & NF-32**



Attachment Patterns



Note: Weld sizes are effective not visible. Refer to AISI S100-2007 or AWS D1.3 for additional welding requirements.

Panel Properties

Gage	Weight	Base Metal Thickness	Yield Strength	Tensile Strength	Gross Section Properties				
					Area	Moment of Inertia	Distance to N.A. from Bottom	Section Modulus	Radius of Gyration
	w psf	t in	F_y ksi	F_u ksi	A_g in^2/ft	I_g in^4/ft	y_b in	S_g in^3/ft	r in
20/20	3.96	0.0359 / 0.036	50	65	1.114	1.740	1.07	0.867	1.250
20/18	4.44	0.0359 / 0.047	50	65	1.254	1.877	0.96	0.884	1.223
20/16	4.96	0.0359 / 0.059	50	65	1.406	1.999	0.87	0.899	1.192
18/20	4.71	0.0478 / 0.036	50	65	1.330	2.143	1.19	1.129	1.269
18/18	5.19	0.0478 / 0.047	50	65	1.470	2.316	1.09	1.153	1.255
18/16	5.71	0.0478 / 0.059	50	65	1.622	2.474	1.00	1.173	1.235
16/20	5.47	0.0598 / 0.036	50	65	1.547	2.522	1.27	1.385	1.277
16/18	5.95	0.0598 / 0.047	50	65	1.687	2.725	1.18	1.415	1.271
16/16	6.47	0.0598 / 0.059	50	65	1.839	2.914	1.10	1.442	1.259

Gage	Effective Section Modulus for Bending at F_y					Effective Moment of Inertia for Deflection at Service Load			
	Area	Section Modulus	Distance to N.A. from Bottom	Section Modulus	Distance to N.A. from Bottom	Moment of Inertia	Moment of Inertia	Uniform Load Only	
								$I_d = (2I_e+I_g)/3$	
	A_e+ in^2/ft	S_e+ in^3/ft	y_b in	S_e- in^3/ft	y_b in	I_e+ in^4/ft	I_e- in^4/ft	I+ in^4/ft	I- in^4/ft
20/20	0.547	0.488	0.76	0.808	1.39	1.381	1.454	1.501	1.549
20/18	0.622	0.490	0.66	0.838	1.24	1.480	1.623	1.612	1.708
20/16	0.729	0.522	0.62	0.863	1.11	1.515	1.816	1.676	1.877
18/20	0.784	0.798	0.99	1.057	1.45	1.835	1.839	1.938	1.940
18/18	0.859	0.816	0.90	1.093	1.33	1.972	2.019	2.087	2.118
18/16	0.966	0.810	0.81	1.123	1.22	2.107	2.234	2.230	2.314
16/20	1.057	1.073	1.13	1.306	1.49	2.316	2.218	2.385	2.319
16/18	1.132	1.098	1.04	1.346	1.39	2.495	2.405	2.572	2.512
16/16	1.238	1.119	0.96	1.380	1.30	2.661	2.636	2.746	2.729

Reactions at Supports (plf) Based on Web Crippling

Gage	Condition	Bearing Length of Webs							
		ASD, R/Ω				LRFD, ϕR			
		1"	1.5"	2"	3"	1"	1.5"	2"	3"
22	End	500	566	622	716	764	866	952	1095
	Interior	876	973	1056	1194	1303	1448	1570	1776
20	End	709	799	876	1004	1084	1223	1340	1536
	Interior	1240	1371	1482	1669	1844	2040	2205	2482
18	End	1221	1367	1490	1697	1868	2092	2280	2597
	Interior	2133	2343	2519	2816	3173	3485	3748	4189
16	End	1864	2076	2254	2554	2852	3176	3449	3907
	Interior	3260	3560	3814	4239	4849	5296	5673	6305
	Constants		h = 3.06"		r = 0.125"		θ = 70.7°		

Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

Gauge	Span	Limit Condition	Panel Span (Support Spacing)								
			4' - 0"	6' - 0"	8' - 0"	10' - 0"	12' - 0"	14' - 0"	16' - 0"	18' - 0"	20' - 0"
20/20	Single Span	f_b/Ω	609	271	152	97	68	50	38	30	24
		Φf_b	915	407	229	146	102	75	57	45	37
		L/360	1025	304	128	66	38	24	16	11	8
		L/240	1537	455	192	98	57	36	24	17	12
		L/180	2049	607	256	131	76	48	32	22	16
		L/120	3074	911	384	197	114	72	48	34	25
	Double Span	f_b/Ω	1008	448	252	161	112	82	63	50	40
		Φf_b	1516	674	379	242	168	124	95	75	61
		L/360	2468	731	309	158	91	58	39	27	20
		L/240	3703	1097	463	237	137	86	58	41	30
		L/180	4937	1463	617	316	183	115	77	54	39
		L/120	7405	2194	926	474	274	173	116	81	59
	Triple Span	f_b/Ω	951	423	238	152	106	78	59	47	38
		Φf_b	1430	636	357	229	159	117	89	71	57
		L/360	1934	573	242	124	72	45	30	21	15
		L/240	2901	859	363	186	107	68	45	32	23
		L/180	3867	1146	483	248	143	90	60	42	31
		L/120	5801	1719	725	371	215	135	91	64	46
20/18	Single Span	f_b/Ω	611	272	153	98	68	50	38	30	24
		Φf_b	919	408	230	147	102	75	57	45	37
		L/360	1101	326	138	70	41	26	17	12	9
		L/240	1651	489	206	106	61	39	26	18	13
		L/180	2202	652	275	141	82	51	34	24	18
		L/120	3303	979	413	211	122	77	52	36	26
	Double Span	f_b/Ω	1045	464	261	167	116	85	65	52	42
		Φf_b	1571	698	393	251	175	128	98	78	63
		L/360	2652	786	331	170	98	62	41	29	21
		L/240	3978	1179	497	255	147	93	62	44	32
		L/180	5304	1571	663	339	196	124	83	58	42
		L/120	7956	2357	994	509	295	186	124	87	64
	Triple Span	f_b/Ω	955	424	239	153	106	78	60	47	38
		Φf_b	1435	638	359	230	159	117	90	71	57
		L/360	2077	616	260	133	77	48	32	23	17
		L/240	3116	923	390	199	115	73	49	34	25
		L/180	4155	1231	519	266	154	97	65	46	33
		L/120	6232	1847	779	399	231	145	97	68	50
20/16	Single Span	f_b/Ω	652	290	163	104	72	53	41	32	26
		Φf_b	979	435	245	157	109	80	61	48	39
		L/360	1144	339	143	73	42	27	18	13	9
		L/240	1717	509	215	110	64	40	27	19	14
		L/180	2289	678	286	146	85	53	36	25	18
		L/120	3433	1017	429	220	127	80	54	38	27
	Double Span	f_b/Ω	1076	478	269	172	120	88	67	53	43
		Φf_b	1617	719	404	259	180	132	101	80	65
		L/360	2757	817	345	176	102	64	43	30	22
		L/240	4135	1225	517	265	153	96	65	45	33
		L/180	5514	1634	689	353	204	129	86	61	44
		L/120	8270	2451	1034	529	306	193	129	91	66
	Triple Span	f_b/Ω	1018	453	255	163	113	83	64	50	41
		Φf_b	1530	680	383	245	170	125	96	76	61
		L/360	2160	640	270	138	80	50	34	24	17
		L/240	3240	960	405	207	120	76	51	36	26
		L/180	4319	1280	540	276	160	101	67	47	35
		L/120	6479	1920	810	415	240	151	101	71	52

Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

18/20	Single Span	f_b/Ω	995	442	249	159	111	81	62	49	40
		Φf_b	1495	665	374	239	166	122	93	74	60
		L/360	1323	392	165	85	49	31	21	15	11
		L/240	1985	588	248	127	74	46	31	22	16
		L/180	2646	784	331	169	98	62	41	29	21
		L/120	3969	1176	496	254	147	93	62	44	32
	Double Span	f_b/Ω	1319	586	330	211	147	108	82	65	53
		Φf_b	1983	881	496	317	220	162	124	98	79
		L/360	3187	944	398	204	118	74	50	35	25
		L/240	4781	1417	598	306	177	112	75	52	38
		L/180	6374	1889	797	408	236	149	100	70	51
		L/120	9562	2833	1195	612	354	223	149	105	76
	Triple Span	f_b/Ω	1555	691	389	249	173	127	97	77	62
		Φf_b	2336	1038	584	374	260	191	146	115	93
		L/360	2497	740	312	160	92	58	39	27	20
		L/240	3745	1110	468	240	139	87	59	41	30
		L/180	4994	1480	624	320	185	116	78	55	40
		L/120	7490	2219	936	479	277	175	117	82	60
18/18	Single Span	f_b/Ω	1018	452	254	163	113	83	64	50	41
		Φf_b	1529	680	382	245	170	125	96	76	61
		L/360	1425	422	178	91	53	33	22	16	11
		L/240	2137	633	267	137	79	50	33	23	17
		L/180	2850	844	356	182	106	66	45	31	23
		L/120	4275	1267	534	274	158	100	67	47	34
	Double Span	f_b/Ω	1363	606	341	218	151	111	85	67	55
		Φf_b	2049	911	512	328	228	167	128	101	82
		L/360	3433	1017	429	220	127	80	54	38	27
		L/240	5149	1526	644	330	191	120	80	57	41
		L/180	6865	2034	858	439	254	160	107	75	55
		L/120	10298	3051	1287	659	381	240	161	113	82
	Triple Span	f_b/Ω	1590	707	397	254	177	130	99	79	64
		Φf_b	2390	1062	597	382	266	195	149	118	96
		L/360	2689	797	336	172	100	63	42	30	22
		L/240	4034	1195	504	258	149	94	63	44	32
		L/180	5378	1593	672	344	199	125	84	59	43
		L/120	8067	2390	1008	516	299	188	126	89	65
18/16	Single Span	f_b/Ω	1011	449	253	162	112	82	63	50	40
		Φf_b	1519	675	380	243	169	124	95	75	61
		L/360	1522	451	190	97	56	36	24	17	12
		L/240	2284	677	285	146	85	53	36	25	18
		L/180	3045	902	381	195	113	71	48	33	24
		L/120	4567	1353	571	292	169	107	71	50	37
	Double Span	f_b/Ω	1401	623	350	224	156	114	88	69	56
		Φf_b	2105	936	526	337	234	172	132	104	84
		L/360	3667	1087	458	235	136	86	57	40	29
		L/240	5501	1630	688	352	204	128	86	60	44
		L/180	7335	2173	917	469	272	171	115	80	59
		L/120	11002	3260	1375	704	407	257	172	121	88
	Triple Span	f_b/Ω	1579	702	395	253	175	129	99	78	63
		Φf_b	2373	1055	593	380	264	194	148	117	95
		L/360	2873	851	359	184	106	67	45	32	23
		L/240	4310	1277	539	276	160	101	67	47	34
		L/180	5746	1703	718	368	213	134	90	63	46
		L/120	8619	2554	1077	552	319	201	135	95	69

Inward Allowable (f_b/Ω) and Factored (Φf_b) Distributed Load (lbs/ft²)

16/20	Single Span	f_b/Ω	1338	595	335	214	149	109	84	66	54
		Φf_b	2011	894	503	322	223	164	126	99	80
		L/360	1629	483	204	104	60	38	25	18	13
		L/240	2443	724	305	156	90	57	38	27	20
		L/180	3257	965	407	208	121	76	51	36	26
		L/120	4886	1448	611	313	181	114	76	54	39
	Double Span	f_b/Ω	1630	724	407	261	181	133	102	80	65
		Φf_b	2449	1089	612	392	272	200	153	121	98
		L/360	3923	1162	490	251	145	92	61	43	31
		L/240	5885	1744	736	377	218	137	92	65	47
		L/180	7847	2325	981	502	291	183	123	86	63
		L/120	11770	3487	1471	753	436	275	184	129	94
	Triple Span	f_b/Ω	2037	905	509	326	226	166	127	101	81
		Φf_b	3062	1361	765	490	340	250	191	151	122
		L/360	3073	911	384	197	114	72	48	34	25
		L/240	4610	1366	576	295	171	108	72	51	37
		L/180	6147	1821	768	393	228	143	96	67	49
		L/120	9220	2732	1153	590	341	215	144	101	74
16/18	Single Span	f_b/Ω	1369	609	342	219	152	112	86	68	55
		Φf_b	2058	915	515	329	229	168	129	102	82
		L/360	1756	520	220	112	65	41	27	19	14
		L/240	2634	781	329	169	98	61	41	29	21
		L/180	3512	1041	439	225	130	82	55	39	28
		L/120	5268	1561	659	337	195	123	82	58	42
	Double Span	f_b/Ω	1679	746	420	269	187	137	105	83	67
		Φf_b	2523	1121	631	404	280	206	158	125	101
		L/360	4230	1253	529	271	157	99	66	46	34
		L/240	6345	1880	793	406	235	148	99	70	51
		L/180	8461	2507	1058	541	313	197	132	93	68
		L/120	12691	3760	1586	812	470	296	198	139	102
	Triple Span	f_b/Ω	2098	933	525	336	233	171	131	104	84
		Φf_b	3154	1402	788	505	350	257	197	156	126
		L/360	3314	982	414	212	123	77	52	36	27
		L/240	4971	1473	621	318	184	116	78	55	40
		L/180	6628	1964	828	424	245	155	104	73	53
		L/120	9942	2946	1243	636	368	232	155	109	80
16/16	Single Span	f_b/Ω	1396	621	349	223	155	114	87	69	56
		Φf_b	2099	933	525	336	233	171	131	104	84
		L/360	1875	556	234	120	69	44	29	21	15
		L/240	2813	833	352	180	104	66	44	31	23
		L/180	3750	1111	469	240	139	87	59	41	30
		L/120	5625	1667	703	360	208	131	88	62	45
	Double Span	f_b/Ω	1721	765	430	275	191	141	108	85	69
		Φf_b	2587	1150	647	414	287	211	162	128	103
		L/360	4517	1338	565	289	167	105	71	50	36
		L/240	6775	2007	847	434	251	158	106	74	54
		L/180	9033	2677	1129	578	335	211	141	99	72
		L/120	13550	4015	1694	867	502	316	212	149	108
	Triple Span	f_b/Ω	2152	956	538	344	239	176	134	106	86
		Φf_b	3234	1437	809	517	359	264	202	160	129
		L/360	3538	1048	442	226	131	83	55	39	28
		L/240	5307	1573	663	340	197	124	83	58	42
		L/180	7077	2097	885	453	262	165	111	78	57
		L/120	10615	3145	1327	679	393	248	166	116	85