

# DIAPHRAGM 1" FORM

## SCREW ATTACHMENT



### 1" x 4" x 26 Ga.

Design thickness	0.0179 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws
Minimum support thickness	0.045 in.

F <sub>u</sub>	62 ksi
F <sub>y</sub>	60 ksi

Bare Deck Diaphragm			Filled Diaphragm		
Loading	$\phi_{df}$	$\Omega_{df}$	Loading	$\phi_{df}$	$\Omega_{df}$
Seismic	0.70	2.30	Seismic	0.50	3.25
Wind	0.80	2.00	Wind	0.50	3.25
Other	0.70	3.30	Other	0.50	3.25

Type of Fill	Fastener Layout	Side-lap Conn/ Span	Nominal Shear Strength, $S_{nr}$ , plf <sup>1,2</sup>									K <sub>1</sub> 1/ft
			Span, ft.									
			1.5	2	2.5	3	3.5	4	4.5	5	5.5	
No Fill (Bare Deck)	36/10	0	980	780	645	545	475	415	365	330		0.308
		1	1085	880	730	625	540	480	425	385	345	0.249
		2	1175	965	815	695	610	540	480	435	395	0.210
		3	1255	1050	890	765	670	595	535	485	445	0.181
	36/6	0	710	595	505	435	380	340	305	275		0.405
		1	775	665	575	500	440	395	355	325	295	0.310
		2	820	720	630	560	495	445	405	370	340	0.251
		3	860	770	685	610	545	495	450	410	380	0.211
	36/4	0	440	375	320	280	245	215	195	175		0.641
		1	495	435	380	335	300	270	245	225	205	0.431
		2	530	480	430	385	350	315	290	265	245	0.325
		3	555	510	465	425	390	355	330	305	280	0.260
	4	570	535	495	460	425	390	365	335	315	0.217	
	2 1/2" NW Conc. (Above Deck)	0	5525	5370	5275	5215	5170	5135	5110	5090		0.641
		1	5705	5505	5385	5305	5245	5205	5170	5145	5120	0.431
		2	5885	5640	5495	5395	5325	5270	5230	5195	5170	0.325
3		6065	5775	5600	5485	5400	5340	5290	5250	5220	0.260	
	4	6245	5910	5710	5575	5480	5405	5350	5305	5270	0.217	
	2 1/2" LW Conc. (Above Deck)	0	4085	3930	3835	3775	3730	3695	3670	3650		0.641
		1	4265	4065	3945	3865	3805	3765	3730	3705	3680	0.431
		2	4445	4200	4050	3955	3885	3830	3790	3755	3730	0.325
3		4615	4335	4160	4045	3960	3900	3850	3810	3780	0.260	
	4	4615	4470	4270	4135	4035	3965	3910	3865	3830	0.217	
	Type I Insul. Fill	0	1070	915	820	755	715	680	655	630		0.641
		1	1250	1050	930	845	790	745	715	685	665	0.431
		2	1430	1185	1035	935	865	815	775	740	715	0.325
3		1610	1320	1145	1025	945	880	835	795	760	0.260	
	4	1790	1455	1250	1115	1020	950	895	850	810	0.217	

<sup>1</sup> Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	$\phi_{df}$	$\Omega_{df}$
Buckling	0.80	2.00

Deck Profile	l in <sup>4</sup> /ft	Nominal Shear Due to Panel Buckling, $S_{nb}$ , plf <sup>2</sup>								
		Span, ft.								
		1.5	2	2.5	3	3.5	4	4.5	5	5.5
1x4	0.040	14530	8170	5230	3630	2665	2040	1610	1305	1080

<sup>2</sup> Design Strengths: ASD Required strength (Service Applied Load)  $\leq \text{Min} \{S_{nf} / \Omega_{df}, S_{nb} / \Omega_{db}\}$  • LRFD Required strength (Factored Applied Load)  $\leq \text{Min} \{\phi_{df} S_{nf}, \phi_{db} S_{nb}\}$

1" x 4" x 24 Ga.

Design thickness	0.0239 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws
Minimum support thickness	0.06 in.

Fu	62 ksi
Fy	60 ksi

Bare Deck Diaphragm			Filled Diaphragm		
Loading	$\phi_{df}$	$\Omega_{df}$	Loading	$\phi_{df}$	$\Omega_{df}$
Seismic	0.70	2.30	Seismic	0.50	3.25
Wind	0.80	2.00	Wind	0.50	3.25
Other	0.70	3.30	Other	0.50	3.25

Type of Fill	Fastener Layout	Side-lap Conn/ Span	Nominal Shear Strength, $S_{nr}$ , plf <sup>1,2</sup>									$K_1$ 1/ft	
			Span, ft.										
			2	2.5	3	3.5	4	4.5	5	5.5	6		
No Fill (Bare Deck)	36/10	0	1040	860	730	630	555	495	440			0.356	
		1	1190	995	850	740	650	585	525	475	435	0.288	
		2	1330	1120	960	840	745	665	605	550	505	0.242	
		3	1450	1235	1065	935	835	750	680	620	570	0.209	
	36/6	0	1555	1340	1165	1030	920	830	755	690	635	0.184	
		1	795	675	585	510	455	410	370			0.468	
		2	900	780	680	605	540	485	445	405	375	0.358	
		3	985	865	770	685	620	560	510	470	435	0.290	
	36/4	0	1050	940	845	760	690	630	575	530	495	0.243	
		1	1105	1005	910	825	755	690	640	590	550	0.210	
		2	500	430	370	325	290	260	235			0.741	
		3	590	520	460	410	370	335	310	285	260	0.498	
	2 1/2" NW Conc. (Above Deck)	36/4	0	655	590	535	485	440	405	370	345	320	0.375
			1	695	645	590	545	500	460	430	400	370	0.301
			2	730	680	635	590	550	510	475	445	420	0.251
			3	5530	5405	5320	5260	5215	5180	5150			0.741
4			5735	5570	5460	5380	5320	5270	5235	5205	5180	0.498	
2 1/2" LW Conc. (Above Deck)	36/4	0	5945	5735	5595	5495	5425	5365	5320	5280	5250	0.375	
		1	6150	5900	5735	5615	5525	5455	5400	5355	5320	0.301	
		2	6360	6070	5875	5735	5630	5550	5485	5430	5390	0.251	
		3	4090	3960	3880	3820	3775	3740	3710			0.741	
		4	4295	4130	4015	3940	3880	3830	3795	3765	3740	0.498	
Type I Insul. Fill	36/4	0	4505	4295	4155	4055	3980	3925	3880	3840	3810	0.375	
		1	4615	4460	4295	4175	4085	4015	3960	3915	3880	0.301	
		2	4615	4615	4435	4295	4190	4110	4045	3990	3945	0.251	
		3	1070	945	860	800	760	725	695			0.741	
		4	1280	1110	1000	920	860	815	780	750	725	0.498	
		1485	1280	1140	1040	965	910	860	825	790	0.375		
		1695	1445	1280	1160	1070	1000	945	900	860	0.301		
		1900	1610	1415	1280	1175	1095	1030	975	930	0.251		

<sup>1</sup> Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	$\phi_{df}$	$\Omega_{df}$
Buckling	0.80	2.00

Deck Profile	l in <sup>4</sup> /ft	Nominal Shear Due to Panel Buckling, $S_{nb}$ , plf <sup>2</sup>								
		Span, ft.								
		2	2.5	3	3.5	4	4.5	5	5.5	6
1x4	0.053	12660	8105	5625	4135	3165	2500	2025	1670	1405

<sup>2</sup> Design Strengths: ASD Required strength (Service Applied Load)  $\leq$  Min  $\{S_{nf} / \Omega_{df}, S_{nb} / \Omega_{db}\}$  • LRFD Required strength (Factored Applied Load)  $\leq$  Min  $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$

1" x 4" x 22 Ga.

Design thickness	0.0295 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws
Minimum support thickness	0.074 in.

F <sub>u</sub>	62 ksi
F <sub>y</sub>	60 ksi

Bare Deck Diaphragm			Filled Diaphragm		
Loading	φ <sub>df</sub>	Ω <sub>df</sub>	Loading	φ <sub>df</sub>	Ω <sub>df</sub>
Seismic	0.70	2.30	Seismic	0.50	3.25
Wind	0.80	2.00	Wind	0.50	3.25
Other	0.70	3.30	Other	0.50	3.25

Type of Fill	Fastener Layout	Side-lap Conn/ Span	Nominal Shear Strength, S <sub>nr</sub> , plf <sup>1,2</sup>									K <sub>1</sub> 1/ft	
			Span, ft.										
			2	2.5	3	3.5	4	4.5	5	5.5	6		
No Fill (Bare Deck)	36/10	0	1285	1060	900	780	690	610	550			0.395	
		1	1490	1245	1065	925	820	730	660	600	550	0.320	
		2	1675	1415	1215	1065	945	845	765	700	645	0.269	
		3	1835	1570	1360	1195	1065	960	870	795	735	0.232	
	36/6	0	980	835	720	630	560	505	460			0.520	
		1	1125	975	855	755	675	610	555	510	470	0.398	
		2	1235	1090	970	870	785	710	650	600	555	0.322	
		3	1320	1190	1070	970	880	805	740	680	635	0.270	
	36/4	0	620	530	460	405	360	325	290			0.823	
		1	740	655	580	520	470	425	390	360	330	0.554	
		2	820	745	675	615	560	515	475	440	410	0.417	
		3	875	810	750	690	640	590	550	510	480	0.334	
		4	915	860	805	750	700	655	615	575	540	0.279	
		2 1/2" NW Conc. (Above Deck)	0	5675	5520	5415	5345	5290	5245	5210			0.823
			1	5960	5750	5605	5505	5430	5370	5325	5285	5255	0.554
			2	6245	5975	5795	5670	5575	5500	5440	5390	5350	0.417
3	6530		6205	5985	5830	5715	5625	5555	5495	5445	0.334		
	4	6535	6430	6175	5995	5860	5750	5665	5595	5540	0.279		
	2 1/2" LW Conc. (Above Deck)	0	4235	4080	3975	3905	3850	3805	3770			0.823	
		1	4520	4310	4165	4065	3990	3930	3885	3845	3815	0.554	
		2	4615	4535	4355	4230	4135	4060	4000	3950	3910	0.417	
3		4615	4615	4545	4390	4275	4185	4115	4055	4005	0.334		
	4	4615	4615	4615	4555	4420	4310	4225	4155	4100	0.279		
	Type I Insul. Fill	0	1220	1065	960	885	830	790	755			0.823	
		1	1505	1290	1150	1050	975	915	870	830	795	0.554	
		2	1790	1520	1340	1210	1115	1040	980	935	890	0.417	
3		2075	1745	1530	1375	1260	1170	1095	1035	985	0.334		
	4	2360	1975	1720	1540	1400	1295	1210	1140	1080	0.279		

<sup>1</sup>Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	φ <sub>df</sub>	Ω <sub>df</sub>
Buckling	0.80	2.00

Deck Profile	l in <sup>4</sup> /ft	Nominal Shear Due to Panel Buckling, S <sub>nb</sub> , plf <sup>2</sup>								
		Span, ft.								
		2	2.5	3	3.5	4	4.5	5	5.5	6
1x4	0.067	34610	22150	15380	11300	8650	6835	5535	4575	3845

<sup>2</sup>Design Strengths: ASD Required strength (Service Applied Load) ≤ Min {S<sub>nf</sub> / Ω<sub>df</sub>, S<sub>nb</sub> / Ω<sub>db</sub>} • LRFD Required strength (Factored Applied Load) ≤ Min {φ<sub>df</sub>S<sub>nf</sub>, φ<sub>db</sub>S<sub>nb</sub>}

1" x 4" x 20 Ga.

Design thickness	0.0358 in.
Support fastening	#12 screws
Side-lap fastening	#10 screws
Minimum support thickness	0.09 in.

Fu	62 ksi
Fy	60 ksi

Bare Deck Diaphragm			Filled Diaphragm		
Loading	$\phi_{df}$	$\Omega_{df}$	Loading	$\phi_{df}$	$\Omega_{df}$
Seismic	0.70	2.30	Seismic	0.50	3.25
Wind	0.80	2.00	Wind	0.50	3.25
Other	0.70	3.30	Other	0.50	3.25

Type of Fill	Fastener Layout	Side-lap Conn/ Span	Nominal Shear Strength, $S_{nr}$ plf <sup>1,2</sup>									K <sub>1</sub> 1/ft
			Span, ft.									
			2	2.5	3	3.5	4	4.5	5	5.5	6	
No Fill (Bare Deck)	36/10	0	1565	1290	1095	950	835	745	665			0.435
		1	1835	1535	1310	1140	1010	905	815	745	680	0.353
		2	2075	1755	1515	1325	1175	1055	955	875	805	0.297
		3	2280	1960	1700	1500	1335	1205	1095	1000	920	0.256
		4	2465	2140	1875	1660	1490	1345	1225	1125	1035	0.225
	36/6	0	1190	1010	875	765	680	615	555			0.573
		1	1380	1200	1055	935	835	755	690	630	585	0.438
		2	1525	1350	1205	1080	975	890	815	750	695	0.355
		3	1635	1475	1335	1210	1100	1010	925	860	795	0.298
		4	1715	1575	1440	1320	1210	1115	1035	960	895	0.257
	36/4	0	750	640	560	490	435	395	355			0.907
		1	910	810	720	645	580	530	485	445	415	0.610
		2	1010	925	840	770	705	645	595	555	515	0.459
		3	1080	1005	930	865	800	745	695	645	605	0.368
		4	1125	1060	1000	940	880	825	775	730	685	0.307
	2 1/2" NW Conc. (Above Deck)	36/4	0	5840	5650	5525	5440	5370	5320	5275		
1			6220	5955	5780	5655	5560	5490	5430	5380	5340	0.610
2			6535	6260	6035	5875	5750	5655	5580	5520	5470	0.459
3			6535	6535	6290	6090	5940	5825	5735	5660	5595	0.368
4			6535	6535	6535	6310	6135	5995	5885	5795	5725	0.307
2 1/2" LW Conc. (Above Deck)	36/4	0	4400	4210	4085	3995	3930	3880	3835			0.907
		1	4615	4515	4340	4215	4120	4050	3990	3940	3900	0.610
		2	4615	4615	4595	4435	4310	4215	4140	4080	4030	0.459
		3	4615	4615	4615	4615	4500	4385	4295	4220	4155	0.368
		4	4615	4615	4615	4615	4615	4555	4445	4355	4280	0.307
Type I Insul. Fill	36/4	0	1385	1195	1070	980	915	860	820			0.907
		1	1765	1500	1325	1200	1105	1030	970	925	885	0.610
		2	2145	1805	1580	1415	1295	1200	1125	1065	1010	0.459
		3	2525	2110	1830	1635	1485	1370	1275	1200	1140	0.368
		4	2905	2415	2085	1850	1675	1540	1430	1340	1265	0.307

<sup>1</sup>Nominal shear strength of bare deck shown above may be limited by shear buckling. See Table below.

	$\phi_{df}$	$\Omega_{df}$
Buckling	0.80	2.00

Deck Profile	l in <sup>4</sup> /ft	Nominal Shear Due to Panel Buckling, $S_{nb}$ plf <sup>2</sup>								
		Span, ft.								
		2	2.5	3	3.5	4	4.5	5	5.5	6
1x4	0.080	23250	14880	10330	7590	5810	4590	3720	3070	2580

<sup>2</sup>Design Strengths: ASD Required strength (Service Applied Load)  $\leq$  Min  $\{S_{nf} / \Omega_{df}, S_{nb} / \Omega_{db}\}$  • LRFD Required strength (Factored Applied Load)  $\leq$  Min  $\{\phi_{df}S_{nf}, \phi_{db}S_{nb}\}$

