

# DIAPHRAGM 1.5" FORM

## WELDED ATTACHMENT



### 1.5" x 6" x 22 Ga.

Design thickness	0.0295 in.
Support fastening	5/8" weld
Side-lap fastening	#10 screws

F <sub>u</sub>	50 ksi
F <sub>y</sub>	40 ksi
F <sub>xx</sub>	60 ksi

Bare Deck Diaphragm			Filled Diaphragm		
Loading	$\phi_{df}$	$\Omega_{df}$	Loading	$\phi_{df}$	$\Omega_{df}$
Seismic	0.55	3.00	Seismic	0.50	3.25
Wind	0.75	2.15	Wind	0.50	3.25
Other	0.55	3.00	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.										
			4	4.5	5	5.5	6	6.5	7	7.5	8		
No Fill (Bare Deck)	36/7	0	1965	1735	1550								0.486
		1	2080	1835	1645	1485	1355						0.377
		2	2195	1940	1735	1570	1430	1310	1210	1125	1045	1045	0.308
		3	2300	2040	1825	1650	1505	1385	1275	1185	1105	1105	0.261
		4	2400	2145	1920	1735	1585	1455	1345	1245	1160	1160	0.226
	36/5	0	1800	1605	1435								0.583
		1	1895	1705	1525	1380	1255						0.433
		2	1985	1790	1615	1460	1330	1220	1125	1045	975	975	0.345
		3	2075	1875	1710	1545	1410	1290	1195	1105	1030	1030	0.286
		4	2165	1960	1785	1630	1485	1365	1260	1170	1090	1090	0.245
	36/4	0	1375	1210	1080								0.728
		1	1475	1315	1170	1055	960						0.509
		2	1565	1415	1265	1140	1035	950	875	810	755	755	0.391
		3	1650	1495	1355	1225	1115	1020	940	870	810	810	0.318
		4	1735	1575	1440	1305	1190	1090	1005	930	870	870	0.267
	2 1/2" NW Conc. (Above Deck)	36/4	0	6375	6215	6080							0.728
1			6490	6315	6175	6060	5960					0.509	
2			6535	6415	6265	6140	6040	5950	5875	5810	5755	5755	0.391
3			6535	6520	6355	6225	6115	6020	5940	5870	5810	5810	0.318
4			6535	6535	6450	6310	6190	6090	6005	5935	5870	5870	0.267
2 1/2" LW Conc. (Above Deck)	36/4	0	4615	4615	4615							0.728	
		1	4615	4615	4615	4615	4520					0.509	
		2	4615	4615	4615	4615	4600	4510	4435	4370	4315	4315	0.391
		3	4615	4615	4615	4615	4615	4580	4500	4430	4370	4370	0.318
		4	4615	4615	4615	4615	4615	4615	4565	4495	4430	4430	0.267
Type I Insul. Fill	36/4	0	1920	1755	1625							0.728	
		1	2035	1860	1715	1600	1505					0.509	
		2	2150	1960	1810	1685	1580	1495	1420	1355	1295	1295	0.391
		3	2265	2060	1900	1770	1660	1565	1485	1415	1355	1355	0.318
		4	2380	2165	1990	1850	1735	1635	1550	1475	1410	1410	0.267

<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.								
		4	4.5	5	5.5	6	6.5	7	7.5	8
1.5x6	0.173	8575	6775	5490	4535	3810	3245	2800	2440	2140

<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)  $\leq \text{Min} \{\phi_{df} S_{nf}, \phi_{db} S_{nb}\}$

1.5" x 6" x 20 Ga.

Design thickness	0.0358 in.
Support fastening	5/8" weld
Side-lap fastening	#10 screws

F <sub>u</sub>	50 ksi
F <sub>y</sub>	40 ksi
F <sub>xx</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	0.55	3.00	Seismic	0.50	3.25
Wind	0.75	2.15	Wind	0.50	3.25
Other	0.55	3.00	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.									
			4	4.5	5	5.5	6	6.5	7	7.5	8	
No Fill (Bare Deck)	36/7	0	2070	1830	1640							0.535
		1	2225	1965	1760	1590	1450					0.415
		2	2370	2105	1885	1705	1555	1425	1320	1225	1140	0.340
		3	2505	2240	2005	1815	1655	1520	1405	1305	1220	0.287
	36/5	4	2635	2365	2130	1925	1760	1615	1495	1390	1295	0.249
		0	1890	1695	1515							0.642
		1	2015	1815	1635	1480	1350					0.477
		2	2140	1930	1755	1590	1450	1330	1230	1140	1065	0.380
	36/4	3	2255	2040	1860	1705	1555	1425	1320	1225	1140	0.315
		4	2370	2150	1965	1805	1655	1520	1405	1305	1220	0.270
		0	1450	1280	1145							0.802
		1	1570	1415	1265	1140	1040					0.561
2 1/2" NW Conc. (Above Deck)	36/4	2	1690	1530	1390	1255	1140	1045	965	895	835	0.431
		3	1805	1640	1495	1365	1245	1140	1055	975	910	0.350
		4	1915	1745	1595	1470	1345	1235	1140	1060	985	0.294
		0	6450	6280	6140							0.802
2 1/2" LW Conc. (Above Deck)	36/4	1	6535	6415	6265	6140	6035					0.561
		2	6535	6535	6385	6250	6140	6045	5960	5890	5830	0.431
		3	6535	6535	6510	6365	6240	6140	6050	5975	5905	0.350
		4	6535	6535	6535	6475	6345	6235	6140	6055	5985	0.294
Type I Insul. Fill	36/4	0	4615	4615	4615							0.802
		1	4615	4615	4615	4615	4595					0.561
		2	4615	4615	4615	4615	4615	4605	4520	4450	4390	0.431
		3	4615	4615	4615	4615	4615	4615	4610	4535	4465	0.350
Type I Insul. Fill	36/4	4	4615	4615	4615	4615	4615	4615	4615	4615	4545	0.294
		0	1995	1820	1685							0.802
		1	2145	1955	1805	1680	1580					0.561
		2	2300	2095	1930	1795	1680	1585	1505	1435	1370	0.431
Type I Insul. Fill	36/4	3	2455	2230	2050	1905	1785	1680	1595	1515	1450	0.350
		4	2605	2365	2175	2020	1885	1775	1680	1600	1525	0.294

<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.								
		4	4.5	5	5.5	6	6.5	7	7.5	8
1.5x6	0.210	11480	9070	7345	6070	5100	4345	3745	3265	2870

<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>}

1.5" x 6" x 18 Ga.

Design thickness	0.0474 in.
Support fastening	5/8" weld
Side-lap fastening	#10 screws

F <sub>u</sub>	50 ksi
F <sub>y</sub>	40 ksi
F <sub>xx</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	0.55	3.00	Seismic	0.50	3.25
Wind	0.75	2.15	Wind	0.50	3.25
Other	0.55	3.00	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.										
			5	5.5	6	6.5	7	7.5	8	8.5	9		
No Fill (Bare Deck)	36/7	0	1190									0.615	
		1	1375	1245	1135							0.478	
		2	1565	1415	1295	1190	1100	1020	955	895	840	0.391	
		3	1730	1585	1450	1335	1235	1145	1070	1005	945	0.330	
	36/5	0	1895	1735	1605	1475	1365	1270	1190	1115	1050	0.286	
		1	1100									0.739	
		1	1275	1165	1065							0.549	
		2	1430	1315	1215	1120	1035	965	900	845	790	0.437	
	36/4	3	1580	1455	1350	1255	1170	1090	1015	955	895	0.363	
		4	1720	1590	1475	1375	1290	1210	1135	1065	1000	0.310	
		0	830									0.923	
		1	1015	920	840							0.645	
	2 1/2" NW Conc. (Above Deck)	36/4	2	1165	1075	995	915	845	785	730	685	645	0.496
			3	1305	1210	1120	1045	980	910	850	795	750	0.403
			4	1440	1335	1245	1160	1090	1025	965	905	850	0.339
			0	5795									0.923
2 1/2" LW Conc. (Above Deck)	36/4	1	5980	5885	5800							0.645	
		2	6170	6055	5960	5875	5805	5745	5695	5645	5605	0.496	
		3	6355	6225	6115	6020	5940	5870	5810	5760	5710	0.403	
		4	6535	6395	6270	6165	6075	5995	5930	5870	5815	0.339	
Type I Insul. Fill	36/4	0	4355									0.923	
		1	4540	4445	4360							0.645	
		2	4615	4615	4520	4435	4365	4305	4255	4205	4165	0.496	
		3	4615	4615	4615	4580	4500	4430	4370	4315	4270	0.403	
		4	4615	4615	4615	4615	4615	4615	4555	4490	4425	4375	0.339
Type I Insul. Fill	36/4	0	1340									0.923	
		1	1525	1425	1345							0.645	
		2	1710	1595	1500	1420	1350	1290	1235	1190	1150	0.496	
		3	1900	1765	1655	1565	1485	1415	1355	1300	1255	0.403	
		4	2085	1940	1815	1710	1620	1540	1470	1410	1355	0.339	

<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.								
		5	5.5	6	6.5	7	7.5	8	8.5	9
1.5x6	0.279	11210	9265	7785	6630	5715	4980	4375	3875	3460

<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>}

1.5" x 6" x 16 Ga.

Design thickness	0.0598 in.
Support fastening	5/8" weld
Side-lap fastening	#10 screws

F <sub>U</sub>	50 ksi
F <sub>y</sub>	50 ksi
F <sub>xx</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	0.55	3.00	Seismic	0.50	3.25
Wind	0.75	2.15	Wind	0.50	3.25
Other	0.55	3.00	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.											
			6	6.5	7	7.5	8	8.5	9	9.5	10			
No Fill (Bare Deck)	36/7	0	1440										0.537	
		1	1660	1530	1415	1315	1230	1155	1085				0.439	
		2	1885	1735	1605	1495	1395	1310	1235	1165	1105	1105	0.371	
		3	2080	1930	1795	1670	1560	1465	1380	1305	1235	1235	0.322	
		4	2275	2115	1975	1845	1725	1620	1530	1445	1370	1370	0.284	
	36/5	0	1350											0.617
		1	1550	1440	1335	1245	1160	1090	1025					0.491
		2	1735	1615	1515	1420	1325	1245	1170	1105	1050	1050	0.408	
		3	1915	1785	1675	1575	1485	1400	1320	1245	1180	1180	0.349	
		4	2085	1950	1830	1720	1625	1540	1460	1385	1315	1315	0.304	
	36/4	0	1075											0.725
		1	1275	1185	1100	1020	955	895	840					0.557
		2	1455	1355	1270	1195	1120	1050	990	935	885	885	0.452	
		3	1620	1515	1425	1340	1270	1200	1135	1075	1015	1015	0.381	
		4	1775	1665	1570	1480	1405	1330	1265	1205	1150	1150	0.329	
	2 1/2" NW Conc. (Above Deck)	36/4	0	6040										0.725
1			6265	6160	6070	5990	5925	5865	5810				0.557	
2			6485	6360	6260	6170	6090	6020	5955	5900	5850	5850	0.452	
3			6535	6535	6450	6345	6255	6175	6105	6040	5985	5985	0.381	
4			6535	6535	6535	6520	6420	6330	6250	6180	6115	6115	0.329	
2 1/2" LW Conc. (Above Deck)	36/4	0	4600										0.725	
		1	4615	4615	4615	4550	4480	4420	4370				0.557	
		2	4615	4615	4615	4615	4615	4580	4515	4460	4410	4410	0.452	
		3	4615	4615	4615	4615	4615	4615	4615	4600	4545	4545	0.381	
		4	4615	4615	4615	4615	4615	4615	4615	4615	4615	4615	0.329	
Type I Insul. Fill	36/4	0	1585										0.725	
		1	1805	1700	1610	1535	1465	1405	1350				0.557	
		2	2025	1905	1800	1710	1630	1560	1500	1445	1395	1395	0.452	
		3	2250	2110	1990	1885	1795	1720	1645	1585	1525	1525	0.381	
		4	2470	2315	2180	2065	1965	1875	1795	1725	1660	1660	0.329	

<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.								
		6	6.5	7	7.5	8	8.5	9	9.5	10
1.5x6	0.383	11745	10005	8625	7515	6605	5850	5220	4685	4225

<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>}

