

# DIAPHRAGM DESIGN MANUAL

## THIRD EDITION

Appendix VII Addendum May 2013

**HILTI AND SIMPSON STRONG-TIE SCREWS**

Authored By

**Dr. Larry Luttrell, P.E.**

Revised and Adapted For

**The ASD and LRFD methods**

**According to Table D5 of the 2007 Edition of the North American  
Specification for the Design of Cold-Formed Steel Structural Members**

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## **USER INSTRUCTION**

May 2013

Dear Specifier,

The SDI DDM03 is updated with this Addenda with Hilti and Simpson Strong-Tie screw fastener data. The following steps can be followed:

- Replace Tables on pages AIV-9 and AIV-10 of DDM03 with the ones on the corresponding pages AVII-5 and AVII-6 in this Addenda;
- Replace pages AV-3 and AV-4 of DDM03 with pages AVII-8 and AVII-9 in this Addenda;
- Replace diaphragm load tables on pages AV-17 to AV-20, AV-56, AV-68 to AV-70, and AV-103 to AV-106 of DDM03 with the corresponding load tables from this Addenda (pages AVII-10 to AVII-21)

Thank you for updating your DDM03,

Steel Deck Institute

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**Table IV - TYPICAL FASTENER VALUES - NOMINAL SHEAR STRENGTH (Q<sub>f</sub> & Q<sub>s</sub>) & FLEXIBILITY (S<sub>f</sub> & S<sub>s</sub>)**

SUPPORT FASTENER NOMINAL SHEAR STRENGTH							
TYPE OF SUPPORT FASTENER	Q <sub>f</sub> , lbf / Deck Thickness No.						
	28	26	24	22	20	18	16
5/8" puddle weld or equivalent				1739	2088	2710	3346
3/4" puddle weld or equivalent				2104	2531	3297	4086
16 gauge weld washer with 3/8" hole — E70XX	1199	1552	2371				
Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws	652	859	1325	1016	1233	1633	2060
Buildex BX-12	594	769	1147	1484	1734	2134	2473
Buildex BX-14	629	814	1215	1572	1837	2260	2620
Pneutek SDK61-series (0.113" to 0.155" support steel)	642	807	1173	1527	1828	2360	2896
Pneutek SDK63-series (0.155" to 0.25" support steel)	725	912	1325	1711	1973	2403	2812
Pneutek K64-series (0.187" to 0.312" support steel)	729	916	1332	1699	2209	2985	3686
Pneutek K66-series (0.281" & greater support steel)	621	780	1134	1814	2251	3101	4076
Hilti X-ENP-19L15 (0.25" min. support steel)	822	984	1306	1603	1933	2529	3149
Hilti ENP2 or ENPH2 (0.25" minimum support steel)	856	1015	1321	1590	1874	2347	2780
Hilti ENP2K, X-EDN19, or X-EDNK22 (0.125" to 0.375" support steel)	763	914	1213	1489	1795	2348	2924

SUPPORT FASTENER FLEXIBILITY							
TYPE OF SUPPORT FASTENER	S <sub>f</sub> , in./Kip / Deck Thickness No.						
	28	26	24	22	20	18	16
5/8" puddle weld or equivalent				0.0067	0.0061	0.0053	0.0047
3/4" puddle weld or equivalent				0.0067	0.0061	0.0053	0.0047
16 gauge weld washer with 3/8" hole — E70XX	0.0094	0.0086	0.0074				
Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws	0.0107	0.0097	0.0084	0.0076	0.0069	0.0060	0.0053
Buildex BX-12	0.0205	0.0187	0.0162	0.0146	0.0132	0.0115	0.0102
Buildex BX-14	0.0205	0.0187	0.0162	0.0146	0.0132	0.0115	0.0102
Pneutek SDK61-series (0.113" to 0.155" support steel)	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
Pneutek SDK63-series (0.155" to 0.25" support steel)	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
Pneutek K64-series (0.187" to 0.312" support steel)	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
Pneutek K66-series (0.281" & greater support steel)	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
Hilti X-ENP-19L15 (0.25" min. support steel)	0.0061	0.0056	0.0049	0.0044	0.0040	0.0034	0.0031
Hilti ENP2 or ENPH2 (0.25" minimum support steel)	0.0102	0.0093	0.0081	0.0073	0.0066	0.0057	0.0051
Hilti ENP2K, X-EDN19, or X-EDNK22 (0.125" to 0.375" support steel)	0.0102	0.0093	0.0081	0.0073	0.0066	0.0057	0.0051

SIDE-LAP FASTENER NOMINAL SHEAR STRENGTH							
TYPE OF SIDE-LAP FASTENER	Q <sub>s</sub> , lbf / Deck Thickness No.						
	28	26	24	22	20	18	16
5/8" puddle weld or 1.5" long fillet weld				1304	1566	2033	2510
#8 screws	280	337	449	555	673	891	1124
#10 screws	320	384	513	633	769	1018	1284
#12 screws	362	435	580	716	869	1151	1452
#14 screws	424	510	681	840	1020	1350	1703

SIDE-LAP FASTENER FLEXIBILITY							
TYPE OF SIDE-LAP FASTENER	S <sub>s</sub> , in./Kip / Deck Thickness No.						
	28	26	24	22	20	18	16
5/8" puddle weld or 1.5" long fillet weld				0.0073	0.0066	0.0057	0.0051
#8 screws	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
#10 screws	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
#12 screws	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123
#14 screws	0.0246	0.0224	0.0194	0.0175	0.0159	0.0138	0.0123

**Table IV-M - TYPICAL FASTENER VALUES - NOMINAL SHEAR STRENGTH ( $Q_f$  &  $Q_s$ ) & FLEXIBILITY ( $S_f$  &  $S_s$ )**

SUPPORT FASTENER NOMINAL SHEAR STRENGTH							
TYPE OF SUPPORT FASTENER	$Q_f$ , kN / Deck Thickness No.						
	28	26	24	22	20	18	16
16 mm puddle weld or equivalent				7.80	9.27	12.11	14.83
19 mm puddle weld or equivalent				9.33	11.11	14.57	17.90
1.5 mm weld washer with 10 mm hole — E70XX	5.50	6.96	10.55				
Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws	2.92	3.76	5.79	4.56	5.48	7.30	9.13
Buildex BX-12	2.66	3.37	5.02	6.60	7.65	9.47	10.92
Buildex BX-14	2.80	3.56	5.30	6.97	8.07	9.99	11.52
Pneutek SDK61-series (3 mm to 4 mm support steel)	2.87	3.54	5.13	6.81	8.07	10.49	12.77
Pneutek SDK63-series (4 mm to 6 mm support steel)	3.24	4.00	5.80	7.63	8.72	10.68	12.42
Pneutek K64-series (5 mm to 8 mm support steel)	3.26	4.02	5.83	7.59	9.73	13.27	16.26
Pneutek K66-series (7 mm & greater support steel)	2.77	3.42	4.96	8.07	9.89	13.73	17.85
Hilti X-ENP-19L15 (6mm min. support steel)	3.69	4.36	5.78	7.18	8.57	11.29	13.93
Hilti ENP2 or ENPH2 (6 mm minimum support steel)	3.82	4.47	5.81	7.08	8.27	10.41	12.26
Hilti ENP2K, X-EDN19, or X-EDNK22 (3 mm to 10 mm support steel)	3.41	4.03	5.34	6.63	7.91	10.42	12.86

SUPPORT FASTENER FLEXIBILITY							
TYPE OF SUPPORT FASTENER	$S_f$ , mm/kN / Deck Thickness No.						
	28	26	24	22	20	18	16
16 mm puddle weld or equivalent				0.0382	0.0349	0.0302	0.0270
19 mm puddle weld or equivalent				0.0382	0.0349	0.0302	0.0270
1.5 mm weld washer with 10 mm hole — E70XX	0.0537	0.0493	0.0427				
Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws	0.0607	0.0558	0.0483	0.0432	0.0394	0.0341	0.0305
Buildex BX-12	0.1166	0.1072	0.0928	0.0830	0.0758	0.0656	0.0587
Buildex BX-14	0.1166	0.1072	0.0928	0.0830	0.0758	0.0656	0.0587
Pneutek SDK61-series (3 mm to 4 mm support steel)	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
Pneutek SDK63-series (4 mm to 6 mm support steel)	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
Pneutek K64-series (5 mm to 8 mm support steel)	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
Pneutek K66-series (7 mm & greater support steel)	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
Hilti X-ENP-19L15 (6mm min. support steel)	0.0350	0.0322	0.0279	0.0249	0.0227	0.0197	0.0176
Hilti ENP2 or ENPH2 (6 mm minimum support steel)	0.0584	0.0537	0.0465	0.0416	0.0379	0.0329	0.0294
Hilti ENP2K, X-EDN19, or X-EDNK22 (3 mm to 10 mm support steel)	0.0584	0.0537	0.0465	0.0416	0.0379	0.0329	0.0294

SIDE-LAP FASTENER NOMINAL SHEAR STRENGTH							
TYPE OF SIDE-LAP FASTENER	$Q_s$ , kN / Deck Thickness No.						
	28	26	24	22	20	18	16
16 mm puddle weld or 38 mm fillet weld				5.85	6.95	9.08	11.1
#8 screws	1.25	1.48	1.97	2.47	2.96	3.95	4.94
#10 screws	1.43	1.69	2.26	2.82	3.38	4.51	5.64
#12 screws	1.62	1.91	2.55	3.19	3.83	5.10	6.38
#14 screws	1.90	2.24	2.99	3.74	4.49	5.99	7.48

SIDE-LAP FASTENER FLEXIBILITY							
TYPE OF SIDE-LAP FASTENER	$S_s$ , mm/kN / Deck Thickness No.						
	28	26	24	22	20	18	16
16 mm puddle weld or 38 mm fillet weld				0.0416	0.0379	0.0329	0.0294
#8 screws	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
#10 screws	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
#12 screws	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705
#14 screws	0.1400	0.1286	0.1114	0.0997	0.0910	0.0788	0.0705

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# LOAD TABLES

**THE LOAD TABLES ARE SHOWING NOMINAL STRENGTH VALUES. THE VALUES MUST NOT BE USED WITHOUT APPLYING THE PROPER SAFETY OR RESISTANCE FACTOR.**

## LRFD

The values of the load tables must be multiplied by a resistance factor (number smaller than or equal to 0.70) when comparing to forces evaluated using Load and Resistance Factor Design.

## ASD

The values of the load tables must be divided by a safety factor (number larger than or equal to 2.35) when comparing to forces evaluated using Allowable Stress Design.

The following load tables are for typical panel configurations and connector types. Specific design applications may dictate an arrangement, not listed, which would require the designer to make direct use of the strength and stiffness formulas shown in Sections 1 through 5.

The tables are arranged showing the fastener types, safety factor and resistance factor at the top along with the fastener patterns as defined in Appendix IV. For each steel base sheet metal design thickness given, nominal shear strengths are listed under the specific span lengths. The column "SIDE-LAP CONN./SPAN" shows the number of connectors between structural supports at the sheet edge. For example, "5" would represent six even spaces or stitch fasteners at 12 in. on center within a 6 ft deck span.

Nominal diaphragm shears due to panel buckling are tabulated at the bottom of the pages to check whether the panel buckling governs over connector strength for diaphragm design. The asterisk (\*) in the strength table indicates the potential of panel buckling governing over connector strength under a certain type of lateral load. The tables were done in this manner because of the different safety or resistance factors that apply to connector strength and panel buckling.

For roof deck and composite floor deck, the steel yield point is taken at 33 ksi; form deck yield strength is taken at 80 ksi. Structural concrete strength is 3000 psi, and the densities are 145 pcf and 110 pcf for normal weight and light weight concrete respectively. Though design tables show side-lap stitch welds for all thickness listed, they are not recommended for design thickness of 0.0295 in. and less.

The Dxx-values are the warping constants for the particular connector pattern and panel profile. They may be substituted directly into the G' stiffness equation in Appendix IV. Dxx-values, K2-, K3-, and K4-values are listed in Appendix IV. K1-values are found with the appropriate load table.

The tables for structural concrete filled deck are for 1.5 in., 2 in. and 3 in. composite deck attached with a 3/4 pattern. The values would not appreciably change for 24 in. wide deck attached with a 2/3 pattern. The concrete thickness above the deck is 2.5 in. as a minimum.

The load tables for 9/16 in. form decks are shown with structural concrete fill of minimum 2.5 in. cover or with insulating concrete assembled as Type I and Type II attached at a basic 3/4 pattern. Type I decks have 2.5 in. of insulating concrete above the deck. Type II decks have insulating concrete poured to the top of the steel deck; Next, rigid insulating boards of expanded polystyrene, having about 2% of the area containing holes, are embedded into the insulating concrete with the excess concrete moving into the holes (rigid insulating boards should be held 3 ft away from diaphragm shear resisting lines); Finally a topping layer of 2 in. or more of insulating concrete is placed above the rigid insulating board. The strength of the insulating concrete is taken as  $f'_c = 125 \text{ psi}$ .

There may be shaded values or no values on portions of a load table. The shaded values do not comply with the minimum spacing for side-lap connections and shall not be used except with properly spaced side-lap connections. The shaded areas will be the rows for 0 side-lap connection and are shown for reference. A conservative approach to get nominal shear for diaphragms with button punched side-laps is to use the values from the 0 side-lap connection rows.



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## STANDARD ROOF DECK

DECK TYPE	SIDE-LAP CONNECTION	FASTENING PATTERN	FRAME FASTENER										
			WELDS		SCREWS	BUILDEX		PNEUTEK				HILTI	
			3/4" P.W.	5/8" P.W.	#12	BX-12	BX-14	SDK61-SERIES	SDK63-SERIES	K64-SERIES	K66-SERIES	ENP2 ENPH2	ENP2K X-EDN19 X-EDNK22
1 1/2" ROOF DECK	WELDS	36/9 36/7 36/5 36/4 36/3	AV-5 thru AV-8	AV-9 thru AV-12									
		30/6 30/4 30/3											
	#10 SCREWS	36/9 36/7 36/5 36/4 36/3	AV-13 thru AV-16	AVII-10 thru AVII-13	AV-21 thru AV-24	AV-25 thru AV-28	AV-29 thru AV-32	AV-33 thru AV-36	AV-37 thru AV-40	AV-41 thru AV-44	AV-45 thru AV-48	AV-49 thru AV-52	
		30/6 30/4 30/3											
3" ROOF DECK	WELDS	24/4	AV-53	AV-54									
	#10 SCREWS	24/4		AV-55	AVII-14	AV-57	AV-58	AV-59	AV-60	AV-61	AV-62	AV-63	AV-64

## STANDARD FORM DECK (Side-lap Connection #10 Screws)

DECK TYPE	TYPE OF FILL	FASTENING PATTERN	FRAME FASTENER										
			WELDS		SCREWS	BUILDEX		PNEUTEK				HILTI	
			3/4" P.W. with weld washer	5/8" P.W. with weld washer	#12	BX-12	BX-14	SDK61-SERIES	SDK63-SERIES	K64-SERIES	K66-SERIES	ENP2 ENPH2	ENP2K X-EDN19 X-EDNK22
9/16" x 2 1/2" FORM DECK	WITHOUT FILL	35/8 35/7 35/6 35/5 30/7 30/5 30/4	AV-65 AV-66 AV-67	AVII-15 AVII-16 AVII-17	AV-71 AV-72 AV-73	AV-74 AV-75 AV-76	AV-77 AV-78 AV-79	AV-80 AV-81 AV-82	AV-83 AV-84 AV-85	AV-86 AV-87 AV-88	AV-89 AV-90 AV-91	AV-92 AV-93 AV-94	
	N.W. & L.W. CONCRETE	30/4											
	TYPE I & II INSULATING CONCRETE	30/4											

## STANDARD COMPOSITE DECK (Support Fastener Pattern 36/4)

DECK TYPE	SIDE-LAP CONNECT.	TYPE OF CONCRETE	FRAME FASTENER										
			WELDS		SCREWS	BUILDEX		PNEUTEK				HILTI	
			3/4" P.W.	5/8" P.W.	#12	BX-12	BX-14	SDK61-SERIES	SDK63-SERIES	K64-SERIES	K66-SERIES	ENP2 ENPH2	ENP2K X-EDN19 X-EDNK22
1 1/2" x 6"	WELDS	NONE (MULTIPLE FASTENER LAYOUT)		AV-95 thru AV-98									
		NORMAL WEIGHT CONCRETE (2 1/2" COVER)											
2" x 12" 3" x 12"	#10 SCREWS	LIGHT WEIGHT CONCRETE (2 1/2" COVER)		AV-99 thru AV-102	AVII-18 thru AVII-21	AV-107 thru AV-110	AV-111 thru AV-114	AV-115 thru AV-118	AV-119 thru AV-122	AV-123 thru AV-126	AV-127 thru AV-130	AV-131 thru AV-134	AV-135 thru AV-138

1.5 (WR, IR, NR)

t = design thickness = 0.0295"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65       $\Omega$  (EQ): 2.50  
 $\phi$  (WIND): 0.70       $\Omega$  (WIND): 2.35  
 $\phi$  (Other): 0.65       $\Omega$  (Other): 2.50

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF									
		SPAN, FT									
		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	K1
36/9	0	1040	915	815	720	645	580	530	485	445	0.366
	1	1185	1050	940	850	770	695	635			0.301
	2	1315	1175	1060	960	880	810	740	680	625	0.255
	3	1425	1285	1165	1065	975	900	835	775	715	0.222
	4	1530	1390	1265	1160	1070	990	920	860	805	0.196
	5	1615	1480	1360	1250	1155	1075	1000	935	880 *	0.176
	6	1695	1560	1440	1335	1240	1155	1080	1010 *	950 *	0.159
36/7	0	665	575	500	445	395	360	325	300	275	0.549
	1	835	730	650	585	525	475	430			0.414
	2	985	870	780	705	640	585	540	495	455	0.333
	3	1115	1000	900	815	745	685	635	590	550	0.278
	4	1230	1110	1010	920	845	780	725	675	630	0.239
	5	1330	1210	1105	1015	935	865	805	755	705	0.209
	6	1415	1300	1195	1105	1020	950	885	830	780	0.186
36/5	0	590	515	460	410	365	330	300	275	255	0.659
	1	730	650	585	530	485	445	405			0.474
	2	840	760	690	635	580	540	500	465	435	0.370
	3	930	855	785	725	670	625	580	545	510	0.304
	4	1005	930	865	805	750	700	655	615	580	0.257
	5	1060	995	930	870	815	770	720	680	645	0.223
	6	1105	1045	985	930	875	830	785	740	705	0.197
36/4	0	450	395	350	310	275	250	225	205	190	0.824
	1	585	525	475	430	395	365	330			0.554
	2	685	625	575	525	485	450	420	395	370	0.417
	3	755	705	655	605	565	530	495	465	440	0.334
	4	810	765	715	675	630	595	560	530	500	0.279
	5	850	810	765	725	690	650	620	585	560	0.240
	6	880	845	805	770	735	700	665	635	610	0.210
30/6	0	605	515	450	395	355	320	290	265	245	0.732
	1	780	680	605	540	480	435	395			0.538
	2	935	825	735	665	605	550	505	460	425	0.425
	3	1075	955	860	780	710	655	605	560	520	0.351
	4	1195	1075	975	885	810	750	695	645	605	0.299
	5	1300	1180	1075	985	905	840	780	725	680	0.261
	6	1385	1270	1165	1075	995	925	860	805	755	0.231
30/4	0	550	485	430	385	345	310	280	260	240	0.823
	1	685	610	550	500	460	420	390			0.585
	2	790	720	655	600	555	515	475	445	415	0.454
	3	870	805	740	685	640	595	555	520	490	0.371
	4	935	875	815	760	710	665	625	590	555	0.314
	5	985	930	875	820	775	730	690	650	615	0.272
	6	1025	975	920	875	830	785	745	705	670	0.240

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

$\phi$  (Buckling): 0.80       $\Omega$  (Buckling): 2.00

DECK PROFILE	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT								
		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
NR	0.099	4130	3035	2320	1835	1485	1225	1030	880	755
IR	0.108	4410	3240	2480	1960	1585	1310	1100	935	810
WR	0.152	5695	4185	3205	2530	2050	1695	1420	1210	1045

NOTE:

ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]

LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

1.5 (WR, IR, NR)

t = design thickness = 0.0358"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

φ (EQ): 0.65      Ω (EQ): 2.50  
 φ (WIND): 0.70      Ω (WIND): 2.35  
 φ (Other): 0.65      Ω (Other): 2.50

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF									
		SPAN, FT									
		4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	K1
36/9	0	985	880	785	710	645	590	545	505	470	0.403
	1	1140	1030	940	850	775					0.331
	2	1285	1165	1065	980	900	830	765	710	665	0.281
	3	1415	1290	1185	1095	1015	945	875	815	760	0.244
	4	1540	1410	1300	1200	1120	1045	980	915	855	0.216
	5	1650	1520	1405	1305	1215	1135	1065	1005	950 *	0.193
	6	1750	1620	1505	1400	1310	1225	1155	1090 *	1030 *	0.175
36/7	0	610	540	485	440	400	365	340	315	295	0.605
	1	790	710	640	580	525					0.456
	2	945	855	775	715	655	605	560	520	485	0.366
	3	1090	990	905	830	770	715	670	620	580	0.306
	4	1225	1115	1025	945	875	820	765	720	675	0.263
	5	1340	1230	1135	1055	980	915	855	805	760	0.230
	6	1450	1340	1240	1155	1075	1005	945	890	840	0.205
36/5	0	560	500	450	405	370	340	310	290	270	0.725
	1	710	645	585	540	495					0.522
	2	840	770	705	655	605	565	530	495	460	0.408
	3	955	880	815	755	705	660	620	585	550	0.334
	4	1050	975	910	850	795	745	705	665	630	0.283
	5	1130	1060	990	930	875	825	780	740	705	0.246
	6	1195	1130	1065	1005	950	900	855	810	770	0.217
36/4	0	430	380	340	305	280	255	235	215	200	0.907
	1	575	525	480	440	405					0.610
	2	695	640	590	550	510	475	450	420	395	0.459
	3	790	735	685	640	600	565	535	505	475	0.368
	4	870	815	765	720	680	645	610	580	550	0.307
	5	930	880	835	790	750	710	675	645	615	0.264
	6	980	935	890	850	810	770	735	705	675	0.231
30/6	0	550	485	435	390	355	325	300	280	260	0.806
	1	735	655	585	530	485					0.592
	2	895	805	735	670	615	565	520	485	455	0.468
	3	1045	945	865	795	735	680	630	585	550	0.387
	4	1180	1075	985	910	840	785	735	690	645	0.330
	5	1305	1195	1100	1020	945	885	825	780	735	0.287
	6	1415	1305	1205	1120	1045	975	915	865	815	0.255
30/4	0	525	470	420	380	345	315	290	270	250	0.907
	1	670	610	555	510	475					0.645
	2	795	730	670	620	580	540	505	475	445	0.500
	3	900	835	775	720	675	630	595	560	530	0.409
	4	990	925	865	810	760	715	675	640	605	0.346
	5	1060	1000	940	885	835	790	750	710	675	0.299
	6	1120	1060	1005	955	905	860	815	775	740	0.264

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

φ (Buckling): 0.80      Ω (Buckling): 2.00

DECK PROFILE	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT									
		4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	
NR	0.128	3255	2570	2085	1720	1445	1230	1060	925	810	
IR	0.139	3465	2735	2215	1830	1540	1310	1130	985	865	
WR	0.198	4515	3570	2890	2390	2005	1710	1475	1285	1125	

NOTE:

ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength / Ω (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> / Ω (Buckling)]

LRFD Required Strength (Factored Applied Load) <= Minimum [φ (EQ or WIND) x Nominal Shear Strength, φ (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

1.5 (WR, IR, NR)

t = design thickness = 0.0474"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65       $\Omega$  (EQ): 2.50

$\phi$  (WIND): 0.70       $\Omega$  (WIND): 2.35

$\phi$  (Other): 0.65       $\Omega$  (Other): 2.50

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF									
		SPAN, FT									
		5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	K1
36/9	0	1050	950	865	795	730	680	635	590	555	0.464
	1	1245	1135	1035							0.381
	2	1410	1300	1200	1105	1025	950	885	830	780	0.324
	3	1570	1450	1345	1250	1170	1085	1015	950	895	0.281
	4	1720	1590	1480	1380	1295	1215	1140	1070	1010	0.248
	5	1860	1725	1610	1505	1415	1330	1255	1190	1120	0.223
	6	1990	1855	1730	1625	1525	1440	1360	1290	1230 *	0.202
36/7	0	645	585	535	490	455	420	390	365	345	0.696
	1	850	770	705							0.525
	2	1030	945	870	805	745	690	645	605	570	0.422
	3	1200	1100	1020	950	885	825	775	725	685	0.352
	4	1355	1250	1160	1080	1015	950	895	845	795	0.303
	5	1505	1395	1295	1210	1135	1070	1010	955	905	0.265
	6	1640	1525	1425	1335	1250	1180	1115	1055	1005	0.236
36/5	0	595	540	495	450	420	390	360	340	320	0.835
	1	775	715	660							0.601
	2	935	865	800	750	700	660	615	580	545	0.469
	3	1075	1000	935	875	820	770	730	690	655	0.385
	4	1205	1125	1050	990	930	880	835	790	750	0.326
	5	1315	1235	1160	1095	1035	980	930	885	845	0.283
	6	1410	1330	1260	1190	1130	1075	1020	975	930	0.250
36/4	0	455	410	370	340	315	290	270	255	240	1.044
	1	635	585	540							0.702
	2	780	725	675	630	595	560	525	495	465	0.529
	3	910	850	795	750	705	665	630	600	570	0.424
	4	1015	955	900	850	805	765	725	690	660	0.354
	5	1105	1045	995	945	895	855	815	775	745	0.304
	6	1180	1125	1070	1025	975	935	890	855	820	0.266
30/6	0	580	525	475	440	405	375	350	325	305	0.928
	1	780	710	645							0.682
	2	970	890	815	750	695	645	605	565	535	0.539
	3	1145	1050	970	900	840	780	730	685	645	0.445
	4	1305	1205	1115	1040	970	910	860	805	760	0.380
	5	1455	1345	1250	1170	1095	1030	970	920	870	0.331
	6	1595	1485	1380	1295	1215	1145	1080	1025	970	0.293
30/4	0	560	505	460	425	390	365	340	315	300	1.044
	1	735	680	630							0.742
	2	890	825	765	715	670	630	595	555	525	0.576
	3	1025	955	890	835	785	740	700	665	630	0.470
	4	1140	1070	1005	945	895	845	800	760	725	0.398
	5	1245	1170	1105	1045	990	940	895	855	815	0.344
	6	1330	1260	1195	1135	1080	1030	980	935	895	0.304

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

$\phi$  (Buckling): 0.80       $\Omega$  (Buckling): 2.00

DECK PROFILE	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT								
		5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
NR	0.181	3335	2755	2315	1970	1700	1480	1300	1155	1030
IR	0.196	3540	2925	2460	2095	1805	1570	1380	1225	1090
WR	0.284	4675	3865	3245	2765	2385	2075	1825	1615	1440

NOTE:

ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]

LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

1.5 (WR, IR, NR)

t = design thickness = 0.0598"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

φ (EQ): 0.65      Ω (EQ): 2.50  
 φ (WIND): 0.70      Ω (WIND): 2.35  
 φ (Other): 0.65      Ω (Other): 2.50

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF									
		SPAN, FT									
		6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	K1
36/9	0	1100	1010	935	865	805	755	710	670	630	0.521
	1	1315									0.428
	2	1515	1405	1300	1210	1130	1060	995			0.363
	3	1695	1580	1480	1380	1290	1210	1140	1075	1015	0.316
	4	1865	1745	1635	1535	1450	1360	1280	1210	1145	0.279
	5	2030	1900	1785	1680	1585	1500	1425	1345	1275	0.250
	6	2185	2050	1925	1815	1720	1630	1550	1475	1400 *	0.227
36/7	0	675	620	575	535	500	470	440	415	390	0.782
	1	890									0.590
	2	1100	1015	940	875	820	770	725			0.474
	3	1285	1195	1115	1050	980	920	870	820	775	0.396
	4	1465	1365	1280	1200	1130	1070	1010	955	905	0.340
	5	1635	1530	1430	1345	1270	1205	1140	1085	1035	0.298
	6	1795	1680	1580	1490	1405	1335	1265	1205	1150	0.265
36/5	0	625	575	530	495	460	430	405	380	360	0.938
	1	835									0.675
	2	1010	945	885	830	780	735	690			0.527
	3	1175	1100	1035	975	920	870	830	790	745	0.432
	4	1330	1245	1175	1110	1050	1000	950	905	865	0.366
	5	1465	1380	1305	1235	1175	1115	1065	1015	970	0.318
	6	1585	1505	1425	1355	1290	1230	1170	1120	1075	0.281
36/4	0	475	435	400	370	345	325	305	285	270	1.173
	1	680									0.788
	2	855	795	750	705	665	625	590			0.594
	3	1005	945	890	840	795	755	720	685	655	0.476
	4	1140	1075	1015	965	915	875	830	795	760	0.397
	5	1255	1190	1130	1075	1025	980	935	900	860	0.341
	6	1350	1290	1230	1175	1125	1080	1035	990	955	0.299
30/6	0	605	555	515	480	445	415	390	370	350	1.042
	1	820									0.766
	2	1035	950	880	820	765	720	675			0.605
	3	1225	1140	1060	990	925	870	820	775	735	0.500
	4	1405	1310	1225	1150	1085	1020	965	910	865	0.426
	5	1580	1475	1380	1300	1225	1160	1100	1045	990	0.371
	6	1745	1630	1530	1440	1360	1290	1225	1165	1110	0.329
30/4	0	585	540	500	465	430	405	380	360	340	1.172
	1	790									0.834
	2	965	905	845	795	750	705	665			0.647
	3	1125	1055	995	935	885	840	800	760	725	0.528
	4	1270	1195	1130	1065	1010	960	915	875	835	0.447
	5	1395	1320	1250	1185	1130	1075	1025	980	940	0.387
	6	1510	1435	1365	1300	1240	1180	1130	1080	1040	0.341

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

φ (Buckling): 0.80      Ω (Buckling): 2.00

DECK PROFILE	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT								
		6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
NR	0.226	3255	2775	2390	2085	1830	1620	1445	1300	1170
IR	0.245	3460	2950	2540	2215	1945	1725	1535	1380	1245
WR	0.355	4570	3895	3355	2925	2570	2275	2030	1820	1645

NOTE:

ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength / Ω (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> / Ω (Buckling)]

LRFD Required Strength (Factored Applied Load) <= Minimum [φ (EQ or WIND) x Nominal Shear Strength, φ (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

**3.0 DR SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws**  $\phi$  (Buckling): 0.80  $\Omega$  (Buckling): 2.00  $\phi$  (EQ): 0.65  $\Omega$  (EQ): 2.50  
**SIDE-LAP FASTENING: #10 screws**  $\phi$  (Other): 0.65  $\Omega$  (Other): 2.50  $\phi$  (WIND): 0.70  $\Omega$  (WIND): 2.35

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF t = design thickness = 0.0295 in.									
		SPAN, FT									
		8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	K1
24/4	0	165	155	145	135	130	125	120	115	110	1.235
	2	320	300	285							0.625
	3	400	375	355	335	320	305	290	280	265	0.502
	4	480	450	425	405	385	365	350	335	320	0.419
	5	545	515	490	470	445	425	405	390	375	0.359
	6	610	580	550	525	500	480	460	440	425	0.315
	7	670	635	605	580	555	530	510	490	470	0.280
	8	725	690	660	630	605	580	555	535	515	0.252
	9	775	740	710	680	650	625	600	580	560	0.229
	10	825	790	755	725	695	670	645	620	600	0.210
	11	870	835	800	770	740	715	690	665	640	0.194
	I (in <sup>4</sup> / ft)	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF									
	0.551	2035	1800	1605	1440	1300	1180	1075	985	905	

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF t = design thickness = 0.0358 in.										
		SPAN, FT										
		9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	K1	
24/4	0	175	165	160	150	145	140	130	125	120	1.361	
	2	345									0.689	
	3	430	410	390	370	355	340	325			0.553	
	4	515	490	465	445	425	405	390	370	360	0.461	
	5	595	570	540	515	495	470	450	435	415	0.396	
	6	665	635	610	580	560	535	515	495	475	0.347	
	7	735	700	670	645	620	595	570	550	530	0.308	
	8	800	765	735	705	675	650	625	605	580	0.278	
	9	860	825	790	760	730	705	680	655	630	0.253	
	10	920	880	845	815	785	755	730	705	680	0.232	
	12	1025	985	950	915	885	855	825	800	770	0.199	
		I (in <sup>4</sup> / ft)	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF									
		0.714	2260	2025	1830	1660	1510	1380	1270	1170	1080	

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF t = design thickness = 0.0474 in.										
		SPAN, FT										
		10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	K1	
24/4	0	210	200	190	180	175	170	160	155	150	1.566	
	3	515	490	470	450	430					0.636	
	4	615	585	560	535	515	495	475	455	440	0.531	
	5	720	685	655	625	600	575	555	530	515	0.455	
	6	805	770	740	710	680	655	630	605	585	0.399	
	7	890	850	820	785	755	730	705	680	655	0.355	
	8	970	930	895	860	830	800	770	745	720	0.320	
	9	1045	1005	965	930	900	865	835	810	785	0.291	
	10	1120	1075	1035	1000	965	930	900	870	845	0.266	
	11	1190	1145	1105	1065	1030	995	965	935	905	0.246	
	13	1320	1275	1230	1190	1150	1115	1080	1050	1015	0.213	
		I (in <sup>4</sup> / ft)	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF									
		1.036	2985	2710	2465	2255	2075	1910	1765	1635	1520	

FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF t = design thickness = 0.0598 in.										
		SPAN, FT										
		11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	K1	
24/4	0	240	230	220	210	205	195	190	180	175	1.759	
	3	590	565	540							0.714	
	4	705	675	650	620	600	575	555	535	520	0.596	
	5	825	790	755	725	695	670	645	625	605	0.512	
	6	930	895	860	830	795	765	740	715	690	0.448	
	7	1030	990	955	920	885	855	830	800	775	0.399	
	8	1130	1085	1045	1010	975	940	910	880	855	0.359	
	9	1220	1175	1135	1095	1055	1020	990	960	930	0.326	
	10	1310	1260	1215	1175	1135	1100	1065	1035	1000	0.299	
	11	1395	1345	1300	1255	1215	1175	1140	1105	1075	0.276	
	13	1550	1500	1450	1405	1365	1320	1285	1245	1210	0.240	
		I (in <sup>4</sup> / ft)	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF									
		1.295	3475	3175	2920	2690	2485	2305	2145	2000	1865	

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING.  
 THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.  
 NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
 LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]



9/16" x 2 1/2" FORM DECK

t = design thickness = 0.0149"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25

$\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25

$\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF							K1
			SPAN, FT							
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	
NO FILL (BARE DECK)	35/8	0	1080	840	675	555	475	410	360 *	0.351
		1	1185	955	785	655	565	490 *	435 *	0.273
		2	1260	1050	880	750	645 *	565 *	505 *	0.224
		3	1320	1130	965	830 *	725 *	640 *	570 *	0.189
	35/7	4	1365	1195	1035	905 *	795 *	705 *	635 *	0.164
		0	990	790	645	540	460	400	355 *	0.374
		1	1075	890	745	630	545	480 *	425 *	0.287
		2	1130	970	830	715	625 *	550 *	490 *	0.233
	35/5	3	1175	1035	900	790	695 *	615 *	555 *	0.196
		4	1205	1085	960	850 *	755 *	680 *	610 *	0.169
		0	705	585	485	410	355	310	275	0.511
		1	765	660	570	490	430	380	340 *	0.361
	30/7	2	800	715	635	560	495	445 *	400 *	0.280
		3	825	755	680	615	555	500 *	455 *	0.228
		4	840	785	720	660	600 *	550 *	505 *	0.192
		0	1025	780	620	510	435	375	330 *	0.468
	30/5	1	1145	910	740	615	525	455 *	405 *	0.353
		2	1230	1015	840	710	610 *	535 *	475 *	0.284
		3	1295	1100	930	795	690 *	610 *	540 *	0.237
		4	1345	1170	1005	875 *	765 *	680 *	605 *	0.204
	30/4	0	755	595	480	400	340	300	265	0.624
		1	840	700	585	495	430	375	335 *	0.435
		2	895	775	665	575	505	445 *	400 *	0.334
		3	930	830	730	645	570 *	510 *	460 *	0.271
	2 1/2" NW CONC. (ABOVE DECK)	4	955	870	785	700	630 *	565 *	515 *	0.228
		0	610	500	410	345	300	260	230	0.702
		1	670	580	495	430	375	335	300	0.472
		2	705	630	560	495	440	395	355 *	0.356
2 1/2" LW CONC. (ABOVE DECK)	3	725	670	605	550	495	450 *	410 *	0.285	
	4	740	695	640	590	540	495 *	455 *	0.238	
	0	5870	5550	5390	5290	5225	5180	5145	0.702	
	1	6190	5760	5550	5420	5335	5270	5225	0.472	
TYPE I INSUL. FILL	2	6510	5975	5710	5545	5440	5365	5305	0.356	
	3	6830	6190	5870	5675	5545	5455	5385	0.285	
	4	7150	6400	6030	5805	5655	5545	5465	0.238	
	0	4205	3885	3725	3625	3565	3515	3480	0.702	
TYPE II INSUL. FILL	1	4525	4100	3885	3755	3670	3610	3560	0.472	
	2	4845	4310	4045	3885	3775	3700	3640	0.356	
	3	5165	4525	4205	4010	3885	3790	3720	0.285	
	4	5485	4740	4365	4140	3990	3880	3800	0.238	
TYPE I INSUL. FILL	0	1415	1090	930	835	770	725	690	0.702	
	1	1735	1305	1090	960	875	815	770	0.472	
	2	2055	1520	1250	1090	985	905	850	0.356	
	3	2375	1730	1410	1220	1090	1000	930	0.285	
TYPE II INSUL. FILL	4	2695	1945	1570	1345	1195	1090	1010	0.238	
	0	1680	1360	1200	1100	1040	990	955	0.702	
	1	2000	1575	1360	1230	1145	1085	1035	0.472	
	2	2320	1785	1520	1360	1250	1175	1115	0.356	
TYPE II INSUL. FILL	3	2640	2000	1680	1485	1360	1265	1195	0.285	
	4	2960	2215	1840	1615	1465	1355	1275	0.238	

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

$\phi$  (Buckling): 0.80     $\Omega$  (Buckling): 2.00

TYPE OF FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT						
			1.0	1.5	2.0	2.5	3.0	3.5	4.0
NO FILL	ALL	0.011	4465	1985	1115	715	495	365	275

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
 LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

9/16" x 2 1/2" FORM DECK

t = design thickness = 0.0179"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25

$\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25

$\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF							K1
			SPAN, FT							
			1.5	2.0	2.5	3.0	3.5	4.0	4.5	
NO FILL (BARE DECK)	35/8	0	1105	885	735	625	540	475 *	425 *	0.385
		1	1245	1020	855	730	640 *	565 *	505 *	0.300
		2	1365	1140	965	835 *	730 *	650 *	580 *	0.245
		3	1465	1245	1065 *	925 *	815 *	730 *	655 *	0.208
	35/7	4	1545	1335	1160 *	1015 *	900 *	805 *	730 *	0.180
		0	1045	850	710	605	530	470 *	420 *	0.410
		1	1165	970	825	710	620 *	550 *	495 *	0.315
		2	1265	1075	925	805 *	710 *	630 *	570 *	0.255
	35/5	3	1340	1165	1015	890 *	790 *	710 *	640 *	0.215
		4	1405	1240	1095 *	970 *	865 *	780 *	710 *	0.185
		0	770	640	540	465	405	360	325	0.560
		1	865	740	640	560	495	440 *	400 *	0.396
	30/7	2	930	820	720	640	570 *	515 *	465 *	0.306
		3	980	885	790	710	640 *	580 *	530 *	0.250
		4	1020	935	850	770 *	700 *	640 *	590 *	0.211
		0	1030	820	675	570	495	435 *	385 *	0.513
	30/5	1	1185	960	800	680	595 *	525 *	470 *	0.387
		2	1310	1085	915	785 *	685 *	610 *	545 *	0.311
		3	1420	1195	1020	885 *	775 *	690 *	620 *	0.260
		4	1510	1295	1115 *	975 *	860 *	770 *	695 *	0.223
	30/4	0	785	635	530	450	390	345	310	0.684
		1	910	755	640	555	485	430 *	385 *	0.477
		2	1005	860	740	645	570 *	510 *	460 *	0.366
		3	1075	940	825	730	650 *	585 *	530 *	0.297
2 1/2" NW CONC. (ABOVE DECK)	4	1130	1010	900	805 *	720 *	655 *	595 *	0.250	
	0	655	540	455	390	345	305	275	0.770	
	1	755	645	560	485	430	385	345 *	0.517	
	2	820	725	640	570	510	455 *	415 *	0.390	
2 1/2" LW CONC. (ABOVE DECK)	3	870	785	705	635	575 *	525 *	480 *	0.313	
	4	905	830	760	695	635 *	580 *	535 *	0.261	
	0	5755	5540	5415	5330	5270	5225	5185	0.770	
	1	6010	5735	5565	5455	5380	5320	5275	0.517	
TYPE I INSUL. FILL	2	6265	5925	5720	5585	5490	5415	5360	0.390	
	3	6520	6115	5875	5715	5600	5510	5445	0.313	
	4	6780	6310	6030	5840	5705	5605	5530	0.261	
	0	4090	3875	3750	3665	3605	3560	3525	0.770	
TYPE II INSUL. FILL	1	4345	4070	3905	3795	3715	3655	3610	0.517	
	2	4600	4260	4055	3920	3825	3750	3695	0.390	
	3	4860	4455	4210	4050	3935	3845	3780	0.313	
	4	5115	4645	4365	4175	4045	3945	3865	0.261	
TYPE I INSUL. FILL	0	1295	1085	955	870	810	765	730	0.770	
	1	1550	1275	1110	1000	920	860	815	0.517	
	2	1810	1470	1265	1130	1030	960	900	0.390	
	3	2065	1660	1420	1255	1140	1055	985	0.313	
TYPE II INSUL. FILL	4	2320	1850	1570	1385	1250	1150	1070	0.261	
	0	1565	1350	1225	1140	1080	1035	1000	0.770	
	1	1820	1545	1380	1270	1190	1130	1085	0.517	
	2	2075	1735	1530	1395	1300	1225	1170	0.390	
TYPE II INSUL. FILL	3	2335	1930	1685	1525	1410	1320	1255	0.313	
	4	2590	2120	1840	1650	1520	1420	1340	0.261	

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.  
WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

$\phi$  (Buckling): 0.80     $\Omega$  (Buckling): 2.00

TYPE OF FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT						
			1.5	2.0	2.5	3.0	3.5	4.0	4.5
NO FILL	ALL	0.013	2580	1450	930	645	470	360	285

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]



9/16" x 2 1/2" FORM DECK  
t = design thickness = 0.0239"  
SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws  
SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25  
 $\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25  
 $\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF							K1
			SPAN, FT							
			2.0	2.5	3.0	3.5	4.0	4.5	5.0	
NO FILL (BARE DECK)	35/8	0	1365	1130	960	835 *	735 *	660 *	590 *	0.445
		1	1545	1295	1105	965 *	855 *	765 *	690 *	0.346
		2	1710	1445	1245 *	1090 *	965 *	865 *	785 *	0.283
		3	1855	1585	1375 *	1205 *	1075 *	965 *	880 *	0.240
	35/7	4	1985	1710 *	1495 *	1320 *	1180 *	1065 *	970 *	0.208
		0	1310	1095	935	815	720 *	645 *	585 *	0.474
		1	1475	1245	1075	940 *	835 *	750 *	680 *	0.364
		2	1615	1385	1200 *	1060 *	945 *	850 *	770 *	0.295
	35/5	3	1740	1510	1320 *	1170 *	1045 *	945 *	860 *	0.248
		4	1850	1620 *	1430 *	1275 *	1145 *	1035 *	945 *	0.214
		0	985	835	715	630	555	500 *	455 *	0.647
		1	1120	965	845	745	665 *	600 *	545 *	0.458
	30/7	2	1235	1080	955	850 *	765 *	690 *	630 *	0.354
		3	1325	1180	1055	945 *	855 *	780 *	715 *	0.289
		4	1400	1265	1140 *	1035 *	940 *	860 *	790 *	0.244
		0	1260	1040	880	760	670 *	595 *	535 *	0.593
	30/5	1	1450	1205	1030	895 *	790 *	705 *	640 *	0.447
		2	1625	1365	1170 *	1020 *	905 *	810 *	735 *	0.359
		3	1780	1510	1305 *	1145 *	1015 *	915 *	830 *	0.300
		4	1915	1645 *	1430 *	1260 *	1125 *	1010 *	920 *	0.258
	30/4	0	980	815	695	605	535	475	430 *	0.791
		1	1145	970	835	730	650 *	580 *	525 *	0.552
		2	1285	1105	960	845 *	755 *	680 *	620 *	0.423
		3	1405	1225	1075	955 *	855 *	775 *	705 *	0.344
2 1/2" NW CONC. (ABOVE DECK)	4	1505	1330	1180 *	1055 *	950 *	865 *	790 *	0.289	
	0	835	705	605	530	470	420	380	0.890	
	1	975	840	735	645	575	520 *	475 *	0.598	
	2	1090	955	845	755	675 *	615 *	560 *	0.450	
2 1/2" LW CONC. (ABOVE DECK)	3	1175	1050	940	845 *	765 *	700 *	640 *	0.361	
	4	1245	1130	1025	930 *	850 *	780 *	715 *	0.301	
	0	5885	5690	5560	5465	5395	5340	5295	0.890	
	1	6145	5895	5730	5610	5525	5455	5400	0.598	
TYPE I INSUL. FILL	2	6400	6100	5900	5760	5650	5570	5500	0.450	
	3	6655	6305	6070	5905	5780	5685	5605	0.361	
	4	6915	6510	6245	6050	5910	5795	5710	0.301	
	0	4225	4025	3895	3800	3730	3675	3635	0.890	
TYPE II INSUL. FILL	1	4480	4230	4065	3950	3860	3790	3735	0.598	
	2	4735	4435	4235	4095	3990	3905	3840	0.450	
	3	4990	4640	4410	4240	4115	4020	3940	0.361	
	4	5250	4845	4580	4390	4245	4135	4045	0.301	
TYPE I INSUL. FILL	0	1430	1235	1100	1010	940	885	840	0.890	
	1	1685	1440	1275	1155	1065	1000	945	0.598	
	2	1945	1645	1445	1300	1195	1110	1045	0.450	
	3	2200	1850	1615	1450	1325	1225	1150	0.361	
TYPE II INSUL. FILL	4	2455	2055	1785	1595	1450	1340	1250	0.301	
	0	1700	1500	1370	1275	1205	1150	1110	0.890	
	1	1955	1705	1540	1425	1335	1265	1210	0.598	
	2	2210	1910	1710	1570	1465	1380	1315	0.450	
TYPE II INSUL. FILL	3	2465	2115	1885	1715	1590	1495	1415	0.361	
	4	2725	2320	2055	1865	1720	1610	1520	0.301	

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.  
WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

$\phi$  (Buckling): 0.80     $\Omega$  (Buckling): 2.00

TYPE OF FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT						
			2.0	2.5	3.0	3.5	4.0	4.5	5.0
NO FILL	ALL	0.017	2205	1410	980	720	550	435	350

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

**COMPOSITE DECK**

t = design thickness = 0.0295"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25  
 $\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25  
 $\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF										K1
			SPAN, FT										
			4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	
1 1/2" x 6" NO FILL (BARE DECK)	36/4	0	350	275	225	190	165	145	130	120	110	100	0.824
		1	475	395	330								0.554
		2	575	485	420	370	320	285					0.417
		3	655	565	495	440	395	355	320	290	265		0.334
		4	715	630	560	500	450	410	375	345	320	295	0.279
		5	765	690	620	560	505	460	425	390	365	340	0.240
		6	805	735	665	610	555	510	470	435	405	380 *	0.210
		8	865	805	745	690	640	595	550	515	480 *	455 *	0.168
2" x 12" NO FILL (BARE DECK)	36/4	0	345	270	220	185	165	145	130	120	110	100	0.824
		1	475	395	325								0.554
		2	575	485	420	365	320	285					0.417
		3	655	565	495	440	395	355	320	290	265		0.334
		4	715	630	560	500	450	410	375	345	320	295	0.279
		5	765	690	620	560	505	460	425	390	365	340	0.240
		6	805	735	665	610	555	510	470	435	405	380 *	0.210
		8	865	805	745	690	640	595	550	515	480 *	455 *	0.168
3" x 12" NO FILL (BARE DECK)	36/4	0	325	260	215	185	165	145	130	120	110	100	0.824
		1	475	385	325								0.554
		2	575	485	420	365	320	285					0.417
		3	655	565	495	440	395	355	320	290	265		0.334
		4	715	630	560	500	450	410	375	345	320	295	0.279
		5	765	690	620	560	505	460	425	390	365	340	0.240
		6	805	735	665	610	555	510	470	435	405	380 *	0.210
		8	865	805	745	690	640	595	550	515	480 *	455 *	0.168
2 1/2" NW CONC. (ABOVE DECK)	36/4	0	5280	5205	5155	5120	5095	5070	5055	5040	5030	5020	0.824
		1	5440	5330	5260								0.554
		2	5600	5460	5365	5300	5250	5210					0.417
		3	5755	5585	5470	5390	5330	5285	5245	5215	5190		0.334
		4	5915	5710	5580	5480	5410	5355	5310	5270	5240	5215	0.279
		5	6075	5840	5685	5570	5490	5425	5370	5330	5295	5265	0.240
		6	6230	5965	5790	5660	5570	5495	5435	5385	5345	5315	0.210
		8	6550	6220	6000	5845	5725	5635	5560	5500	5450	5410	0.168
2 1/2" LW CONC. (ABOVE DECK)	36/4	0	3615	3540	3490	3455	3430	3410	3390	3375	3365	3355	0.824
		1	3775	3670	3595								0.554
		2	3935	3795	3705	3635	3585	3550					0.417
		3	4090	3920	3810	3725	3665	3620	3580	3550	3525		0.334
		4	4250	4050	3915	3820	3745	3690	3645	3610	3575	3550	0.279
		5	4410	4175	4020	3910	3825	3760	3710	3665	3630	3600	0.240
		6	4565	4300	4125	4000	3905	3830	3770	3725	3685	3650	0.210
		8	4885	4555	4335	4180	4060	3970	3900	3840	3790	3745	0.168

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

REFER TO THE 0 SIDE-LAP CONNECTION ROWS FOR DESIGN SHEAR OF DIAPHRAGMS WITH BUTTON PUNCHED SIDE-LAPS.

$\phi$  (Buckling): 0.80     $\Omega$  (Buckling): 2.00

TYPE OF DECK NO FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT									
			4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
1 1/2" x 6"	36/4	0.165	3405	2180	1515	1110	850	670	545	450	375	320
2" x 12"	24/3 & 36/4	0.338	6115	3910	2715	1995	1525	1205	975	805	675	575
3" x 12"	24/3 & 36/4	0.797	11290	7225	5015	3685	2820	2230	1805	1490	1255	1065

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
 LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

**COMPOSITE DECK**

t = design thickness = 0.0358"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25  
 $\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25  
 $\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF										K1
			SPAN, FT										
			4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	
1 1/2" x 6" NO FILL (BARE DECK)	36/4	0	430	340	280	235	200	175	160	145	130	120	0.907
		1	575	480	405								0.610
		2	695	590	510	450	395	345					0.459
		3	790	685	600	535	475	430	390	355	325		0.368
		4	870	765	680	610	550	500	455	420	390	360	0.307
		5	930	835	750	675	615	560	515	475	440	410	0.264
		6	980	890	810	735	675	620	570	530	490	460	0.231
		8	1050	975	905	835	775	720	670	625	585	550*	0.185
2" x 12" NO FILL (BARE DECK)	36/4	0	420	330	270	225	200	175	160	145	130	120	0.907
		1	575	480	395								0.610
		2	695	590	510	445	390	345					0.459
		3	790	685	600	535	475	430	390	355	325		0.368
		4	870	765	680	610	550	500	455	420	390	360	0.307
		5	930	835	750	675	615	560	515	475	440	410	0.264
		6	980	890	810	735	675	620	570	530	490	460	0.231
		8	1050	975	905	835	775	720	670	625	585	550*	0.185
3" x 12" NO FILL (BARE DECK)	36/4	0	405	315	265	225	200	175	160	145	130	120	0.907
		1	575	470	390								0.610
		2	695	590	510	445	390	345					0.459
		3	790	685	600	535	475	430	390	355	325		0.368
		4	870	765	680	610	550	500	455	420	390	360	0.307
		5	930	835	750	675	615	560	515	475	440	410	0.264
		6	980	890	810	735	675	620	570	530	490	460	0.231
		8	1050	975	905	835	775	720	670	625	585	550*	0.185
2 1/2" NW CONC. (ABOVE DECK)	36/4	0	5360	5270	5210	5165	5135	5105	5085	5070	5055	5045	0.907
		1	5555	5425	5335								0.610
		2	5745	5575	5465	5385	5325	5280					0.459
		3	5940	5730	5595	5495	5420	5365	5320	5280	5250		0.368
		4	6130	5885	5720	5605	5515	5450	5395	5350	5315	5280	0.307
		5	6320	6040	5850	5715	5615	5535	5470	5420	5375	5340	0.264
		6	6515	6190	5980	5825	5710	5620	5550	5490	5440	5400	0.231
		8	6900	6500	6235	6045	5900	5790	5700	5630	5570	5520	0.185
2 1/2" LW CONC. (ABOVE DECK)	36/4	0	3700	3605	3545	3500	3470	3445	3425	3405	3395	3380	0.907
		1	3890	3760	3675								0.610
		2	4080	3915	3800	3720	3660	3615					0.459
		3	4275	4065	3930	3830	3755	3700	3655	3615	3585		0.368
		4	4465	4220	4060	3940	3855	3785	3730	3685	3650	3620	0.307
		5	4660	4375	4185	4050	3950	3870	3810	3755	3715	3675	0.264
		6	4850	4530	4315	4160	4045	3955	3885	3825	3775	3735	0.231
		8	5235	4835	4570	4380	4240	4125	4040	3965	3905	3855	0.185

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

REFER TO THE 0 SIDE-LAP CONNECTION ROWS FOR DESIGN SHEAR OF DIAPHRAGMS WITH BUTTON PUNCHED SIDE-LAPS.

$\phi$  (Buckling): 0.80

$\Omega$  (Buckling): 2.00

TYPE OF DECK NO FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT									
			4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
1 1/2" x 6"	36/4	0.212	4755	3040	2110	1550	1185	935	760	625	525	450
2" x 12"	24/3 & 36/4	0.420	8320	5325	3695	2715	2080	1640	1330	1100	925	785
3" x 12"	24/3 & 36/4	0.993	15395	9855	6840	5025	3850	3040	2460	2035	1710	1455

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
 LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

**COMPOSITE DECK**

t = design thickness = 0.0474"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25

$\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25

$\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF										K1
			SPAN, FT										
			5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
1 1/2" x 6" NO FILL (BARE DECK)	36/4	0	455	370	315	270	240	210	190	175	160	150	1.044
		1	635	540									0.702
		2	780	675	595	525	465						0.529
		3	910	795	705	630	570	515	470	430			0.424
		4	1015	900	805	725	660	605	555	515	475	440	0.354
		5	1105	995	895	815	745	680	630	585	545	510	0.304
		6	1180	1070	975	890	820	755	700	650	610	570	0.266
		8	1290	1195	1110	1025	955	885	830	775	725	685	0.213
2" x 12" NO FILL (BARE DECK)	36/4	0	440	360	305	260	235	210	190	175	160	150	1.044
		1	635	530									0.702
		2	780	675	595	515	460						0.529
		3	910	795	705	630	570	515	470	430			0.424
		4	1015	900	805	725	660	605	555	515	475	440	0.354
		5	1105	995	895	815	745	680	630	585	545	510	0.304
		6	1180	1070	975	890	820	755	700	650	610	570	0.266
		8	1290	1195	1110	1025	955	885	830	775	725	685	0.213
3" x 12" NO FILL (BARE DECK)	36/4	0	420	350	300	260	235	210	190	175	160	150	1.044
		1	625	520									0.702
		2	780	675	590	515	460						0.529
		3	910	795	705	630	570	515	470	430			0.424
		4	1015	900	805	725	660	605	555	515	475	440	0.354
		5	1105	995	895	815	745	680	630	585	545	510	0.304
		6	1180	1070	975	890	820	755	700	650	610	570	0.266
		8	1290	1195	1110	1025	955	885	830	775	725	685	0.213
2 1/2" NW CONC. (ABOVE DECK)	36/4	0	5390	5310	5250	5205	5175	5145	5125	5105	5090	5075	1.044
		1	5590	5475									0.702
		2	5795	5645	5540	5460	5400						0.529
		3	6000	5815	5685	5590	5515	5450	5400	5360			0.424
		4	6205	5985	5830	5715	5625	5555	5495	5445	5405	5370	0.354
		5	6405	6155	5975	5845	5740	5655	5585	5530	5480	5440	0.304
		6	6610	6325	6120	5970	5850	5755	5680	5615	5560	5515	0.266
		8	7015	6665	6415	6225	6080	5960	5865	5785	5715	5660	0.213
2 1/2" LW CONC. (ABOVE DECK)	36/4	0	3725	3645	3585	3545	3510	3485	3460	3440	3425	3415	1.044
		1	3930	3815									0.702
		2	4130	3985	3875	3800	3735						0.529
		3	4335	4155	4020	3925	3850	3790	3740	3695			0.424
		4	4540	4320	4170	4050	3960	3890	3830	3780	3740	3705	0.354
		5	4740	4490	4315	4180	4075	3990	3925	3865	3820	3775	0.304
		6	4945	4660	4460	4305	4190	4095	4015	3950	3895	3850	0.266
		8	5355	5000	4750	4560	4415	4295	4200	4120	4055	3995	0.213

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

REFER TO THE 0 SIDE-LAP CONNECTION ROWS FOR DESIGN SHEAR OF DIAPHRAGMS WITH BUTTON PUNCHED SIDE-LAPS.

$\phi$  (Buckling): 0.80

$\Omega$  (Buckling): 2.00

TYPE OF DECK NO FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT									
			5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
1 1/2" x 6"	36/4	0.308	4970	3450	2535	1940	1530	1240	1025	860	735	630
2" x 12"	24/3 & 36/4	0.560	8155	5665	4160	3185	2515	2035	1685	1415	1205	1040
3" x 12"	24/3 & 36/4	1.324	15090	10480	7700	5895	4655	3770	3115	2620	2230	1925

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]

**COMPOSITE DECK**

t = design thickness = 0.0598"

SUPPORT FASTENING: Buildex, ElcoTextron, Hilti or Simpson Strong-Tie #12 or #14 Screws

SIDE-LAP FASTENING: #10 screws

$\phi$  (EQ): 0.65     $\Omega$  (EQ): 2.50     $\phi$  (FILLED, EQ): 0.50     $\Omega$  (FILLED, EQ): 3.25  
 $\phi$  (WIND): 0.70     $\Omega$  (WIND): 2.35     $\phi$  (FILLED, WIND): 0.50     $\Omega$  (FILLED, WIND): 3.25  
 $\phi$  (Other): 0.65     $\Omega$  (Other): 2.50     $\phi$  (FILLED, Other): 0.50     $\Omega$  (FILLED, Other): 3.25

TYPE OF FILL	FASTENER LAYOUT	SIDE-LAP CONN./SPAN	NOMINAL SHEAR STRENGTH, PLF										K1
			SPAN, FT										
			6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
1 1/2" x 6" NO FILL (BARE DECK)	36/4	0	475	400	345	305	270	245	220	205	190	175	1.173
		1	680										0.788
		2	855	750	665	590							0.594
		3	1005	890	795	720	655	595	540				0.476
		4	1140	1015	915	830	760	700	650	600	555	520	0.397
		5	1255	1130	1025	935	860	795	735	685	645	605	0.341
		6	1350	1230	1125	1035	955	885	820	770	720	675	0.299
		8	1510	1400	1295	1200	1120	1045	975	920	865	815	0.239
2" x 12" NO FILL (BARE DECK)	36/4	0	460	390	335	295	265	240	220	205	190	175	1.173
		1	675										0.788
		2	855	750	655	580							0.594
		3	1005	890	795	720	650	590	540				0.476
		4	1140	1015	915	830	760	700	650	600	555	520	0.397
		5	1255	1130	1025	935	860	795	735	685	645	605	0.341
		6	1350	1230	1125	1035	955	885	820	770	720	675	0.299
		8	1510	1400	1295	1200	1120	1045	975	920	865	815	0.239
3" x 12" NO FILL (BARE DECK)	36/4	0	440	375	330	295	265	240	220	205	190	175	1.173
		1	655										0.788
		2	855	745	650	580							0.594
		3	1005	890	795	720	650	590	540				0.476
		4	1140	1015	915	830	760	700	650	600	555	520	0.397
		5	1255	1130	1025	935	860	795	735	685	645	605	0.341
		6	1350	1230	1125	1035	955	885	820	770	720	675	0.299
		8	1510	1400	1295	1200	1120	1045	975	920	865	815	0.239
2 1/2" NW CONC. (ABOVE DECK)	36/4	0	5415	5340	5285	5245	5210	5180	5160	5140	5120	5110	1.173
		1	5625										0.788
		2	5840	5705	5605	5530							0.594
		3	6055	5890	5770	5670	5595	5530	5480				0.476
		4	6270	6075	5930	5815	5725	5650	5585	5535	5490	5450	0.397
		5	6485	6260	6090	5955	5850	5765	5695	5635	5580	5535	0.341
		6	6695	6440	6250	6100	5980	5880	5800	5730	5675	5620	0.299
		8	7125	6810	6570	6385	6235	6115	6015	5930	5855	5795	0.239
2 1/2" LW CONC. (ABOVE DECK)	36/4	0	3750	3675	3620	3580	3545	3520	3495	3475	3460	3445	1.173
		1	3965										0.788
		2	4175	4045	3945	3865							0.594
		3	4390	4225	4105	4010	3930	3870	3815				0.476
		4	4605	4410	4265	4150	4060	3985	3925	3870	3825	3785	0.397
		5	4820	4595	4425	4295	4190	4100	4030	3970	3915	3870	0.341
		6	5035	4775	4585	4435	4315	4220	4135	4070	4010	3960	0.299
		8	5460	5145	4905	4720	4575	4450	4350	4265	4190	4130	0.239

\* NOMINAL SHEAR SHOWN ABOVE MAY BE LIMITED BY SHEAR BUCKLING. SEE TABLE BELOW.

THE SHADED VALUES DO NOT COMPLY WITH THE MINIMUM SPACING REQUIREMENTS FOR SIDE-LAP CONNECTIONS AND SHALL NOT BE USED EXCEPT WITH PROPERLY SPACED SIDE-LAP CONNECTIONS.

WHEN FILLED DIAPHRAGMS ARE USED, IT MAY BE NECESSARY TO INCREASE THE NUMBER, OR STRENGTH, OF THE PERIMETER CONNECTIONS TO DEVELOP THE VALUES SHOWN IN THE TABLE. CHECK SECTION 5.4.

REFER TO THE 0 SIDE-LAP CONNECTION ROWS FOR DESIGN SHEAR OF DIAPHRAGMS WITH BUTTON PUNCHED SIDE-LAPS.

$\phi$  (Buckling): 0.80

$\Omega$  (Buckling): 2.00

TYPE OF DECK NO FILL	FASTENER LAYOUT	I in <sup>4</sup> / ft	NOMINAL SHEAR DUE TO PANEL BUCKLING (S <sub>n</sub> ), PLF / SPAN, FT									
			6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
1 1/2" x 6"	36/4	0.400	5000	3670	2810	2220	1800	1485	1250	1065	915	800
2" x 12"	24/3 & 36/4	0.700	7970	5855	4480	3540	2870	2370	1990	1695	1460	1275
3" x 12"	24/3 & 36/4	1.666	14820	10890	8335	6585	5335	4410	3705	3155	2720	2370

NOTE: ASD Required Strength (Service Applied Load) <= Minimum [Nominal Shear Strength /  $\Omega$  (EQ or WIND), Nominal Buckling Strength S<sub>n</sub> /  $\Omega$  (Buckling)]  
 LRFD Required Strength (Factored Applied Load) <= Minimum [ $\phi$  (EQ or WIND) x Nominal Shear Strength,  $\phi$  (Buckling) x Nominal Buckling Strength S<sub>n</sub>]