

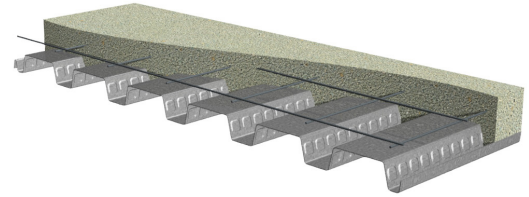
1.5VL-36/1.5VLI-36/1.5PLVLI-36 COMPOSITE DECKS

GRADE 50 STEEL

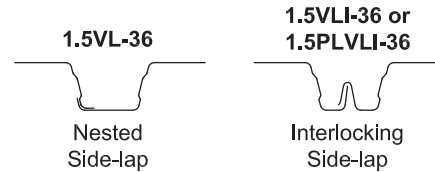
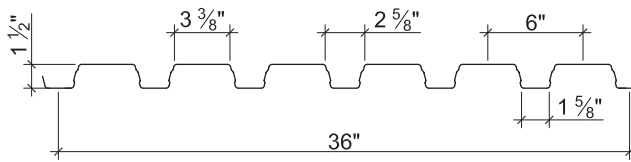
LRFD

1.5VL COMPOSITE DECKS

- 1.5VL-36 Deck used with Side-lap Screws
- 1.5VLI-36 Deck used with TSWs or BPs
- 1.5PLVLI-36 Deck used with PunchLok® II System



Nominal Dimensions



Section Properties

Deck Gage	Deck Weight w_{dd} (psf)	Base Metal Thickness t (in.)	Yield Strength F_y (ksi)	Effective Moment of Inertia at Service Load $I_d = (2I_e + I_g)/3$		Effective Section Modulus at $F_y = 50$ ksi		Design Moment		Vertical Web Shear ϕV_n (lb/ft)
				I_{d+} (in ⁴ /ft)	I_{d-} (in ⁴ /ft)	S_{e+} (in ³ /ft)	S_{e-} (in ³ /ft)	ϕM_n+ (lb-ft/ft)	ϕM_n- (lb-ft/ft)	
22	1.6	0.0295	50	0.155	0.178	0.169	0.179	634	671	4035
20	2.0	0.0358	50	0.197	0.217	0.224	0.229	840	859	4874
19	2.3	0.0418	50	0.239	0.257	0.266	0.278	997	1042	5666
18	2.6	0.0474	50	0.277	0.290	0.306	0.318	1148	1193	6398
16	3.3	0.0598	50	0.364	0.367	0.393	0.402	1474	1508	7996

Design Reactions at Supports Based on Web Crippling, ϕR_n (lb/ft)

Deck Gage	Bearing Length of Webs											
	One-Flange Loading						Two-Flange Loading					
	End Bearing				Interior Bearing		End Bearing				Interior Bearing	
	1 1/2"	2"	3"	4"	3"	4"	1 1/2"	2"	3"	4"	3"	4"
22	1235	1357	1563	1706	2204	2383	1289	1389	1556	1672	2728	2966
20	1763	1932	2215	2408	3164	3406	1949	2093	2333	2497	3960	4286
19	2344	2562	2927	3169	4222	4527	2702	2893	3213	3426	5324	5740
18	2954	3221	3669	3959	5334	5699	3515	3754	4156	4417	6762	7265
16	4525	4915	5568	5967	8206	8709	5681	6043	6651	7023	10487	11191

Standard Features

- ASTM A653 SS GR50 Min., with G60 or G90, white or gray primer bottom optional
- ASTM A1008 SS GR50 Min. with gray primer bottom
- Standard lengths – 6'-0" to 42'-0"
- IAPMO UES ER-0652 and UL Listed
- Tables conform to ANSI/SDI C-2017

Optional Features

- Inquire regarding cost and lead times for:
 - Short cuts < 6'-0"
 - Sheet Lengths > 42'-0"
 - Alternative metallic and painted finishes
- Factory Hanger Tabs

1.5VL-36/1.5VLI-36/1.5PLVLI-36 COMPOSITE DECK-SLABS

NORMAL WEIGHT CONCRETE (145 pcf)

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			Maximum Unshored Spans			Composite Deck-Slab Properties			
Slab Depth		Deck Gage	Maximum Unshored Construction Clear Span			Concrete + Deck (psf)	Deflection $I_d = (I_{cr} + I_u)/2$ (in ⁴ /ft)	Moment ϕM_{no} (kip-ft/ft)	Shear ϕV_{no} (kip/ft)
Total	Topping		1	2	3				
3½"	2"	22	6'-6"	7'-7"	7'-8"	32.2	2.64	2.73	3.02
		20	7'-10"	9'-0"	9'-3"	32.6	2.85	3.22	3.02
		19	8'-4"	9'-11"	10'-3"	32.9	3.03	3.67	3.02
		18	8'-9"	10'-7"	10'-11"	33.2	3.19	4.07	3.02
		16	9'-6"	11'-10"	11'-8"	33.9	3.52	4.91	3.02
5"	3½"	22	5'-8"	6'-7"	6'-8"	50.3	7.62	4.79	4.93
		20	6'-9"	7'-9"	7'-11"	50.7	8.18	5.69	4.93
		19	7'-3"	8'-7"	8'-10"	51.0	8.68	6.54	4.93
		18	7'-8"	9'-2"	9'-5"	51.3	9.12	7.30	4.93
		16	8'-4"	10'-3"	10'-4"	52.0	10.02	8.92	4.93
6"	4½"	22	5'-3"	6'-1"	6'-2"	62.4	13.11	6.30	6.41
		20	6'-3"	7'-2"	7'-4"	62.8	14.02	7.51	6.41
		19	6'-10"	7'-11"	8'-2"	63.1	14.85	8.64	6.41
		18	7'-2"	8'-5"	8'-9"	63.4	15.57	9.67	6.41
		16	7'-10"	9'-6"	9'-8"	64.1	17.06	11.87	6.41

Note:

- Maximum unshored spans do not consider web-crippling. Required bearing should be determined based on specific span conditions.

Superimposed Design Load, ϕW_n , / Deflection at L/360 (psf)

NWC (145 pcf), $f'_c = 3000$ psi

Total Slab Depth	Deck Gage	Span (ft-in.)							
		4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"
3½"	22	1327/1804	835/923	568/534	407/336	302/225	231/158	179/115	113/66
	20	1471/1944	990/995	676/576	486/362	363/243	278/170	218/124	139/72
	19	1471/2071	1135/1060	776/613	560/386	419/258	323/181	254/132	164/76
	18	1471/2179	1168/1115	864/645	624/406	469/272	362/191	285/139	186/80
	16	1470/2401	1168/1229	966/711	761/448	573/300	444/210	352/153	232/88
5"	22	2336/5206	1473/2665	1004/1542	722/971	538/650	412/457	323/333	205/192
	20	2405/5585	1761/2859	1204/1654	868/1042	650/698	501/490	394/357	255/206
	19	2404/5929	1911/3035	1391/1756	1006/1106	756/741	584/520	461/379	302/219
	18	2404/6228	1911/3188	1559/1845	1129/1162	850/778	659/546	522/398	343/230
	16	2403/6842	1910/3503	1581/2027	1346/1276	1052/855	818/600	651/437	433/253
6"	22	3075/8955	1941/4585	1325/2653	953/1670	712/1119	547/786	429/573	275/331
	20	3130/9574	2327/4902	1593/2836	1150/1786	863/1196	666/840	525/612	341/354
	19	3129/10137	2488/5190	1845/3003	1335/1891	1004/1267	777/889	615/648	404/375
	18	3129/10630	2488/5443	2060/3149	1502/1983	1132/1328	878/933	697/680	461/393
	16	3128/11651	2487/5965	2060/3452	1754/2174	1407/1456	1095/1022	873/745	582/431

Notes:

- For high loads long term concrete creep should be considered.
- Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs or ASD design.

1.5VL-36/1.5VLI-36/1.5PLVLI-36 COMPOSITE DECK-SLABS

LIGHT WEIGHT CONCRETE (110 pcf)

LRFD

			Maximum Unshored Spans			Composite Deck-Slab Properties			
Slab Depth		Deck Gage	Maximum Unshored Construction Clear Span			Concrete + Deck (psf)	Deflection $I_d = (I_{cr} + I_u)/2$ (in ⁴ /ft)	Moment ϕM_{no} (kip-ft/ft)	Shear ϕV_{no} (kip/ft)
Total	Topping		1	2	3				
3½"	2"	22	7'-1"	8'-4"	8'-5"	24.8	2.07	2.58	3.02
		20	8'-7"	9'-10"	10'-2"	25.2	2.24	3.03	3.02
		19	9'-2"	10'-10"	11'-2"	25.5	2.39	3.44	3.02
		18	9'-7"	11'-6"	11'-10"	25.8	2.52	3.80	3.02
		16	10'-5"	12'-11"	12'-5"	26.5	2.79	4.56	3.02
4"	2½"	22	6'-9"	7'-11"	8'-0"	29.4	3.06	3.18	3.62
		20	8'-1"	9'-4"	9'-7"	29.8	3.31	3.75	3.62
		19	8'-8"	10'-3"	10'-8"	30.1	3.54	4.27	3.62
		18	9'-1"	11'-0"	11'-4"	30.4	3.73	4.73	3.62
		16	9'-10"	12'-3"	12'-0"	31.1	4.12	5.71	3.62
4¾"	3¼"	22	6'-4"	7'-5"	7'-6"	36.3	5.07	4.23	4.59
		20	7'-7"	8'-9"	9'-0"	36.7	5.48	5.00	4.59
		19	8'-2"	9'-8"	9'-11"	37.0	5.85	5.72	4.59
		18	8'-6"	10'-3"	10'-8"	37.3	6.17	6.36	4.59
		16	9'-3"	11'-6"	11'-5"	38.0	6.81	7.71	4.59

Note:

1. Maximum unshored spans do not consider web-crippling. Required bearing should be determined based on specific span conditions.

Superimposed Design Load, ϕW_n , / Deflection at L/360 (psf)

LWC (110 pcf), $f'_c = 3000$ psi

Total Slab Depth	Deck Gage	Span (ft-in.)							
		4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"
3½"	22	1262/1410	797/722	544/417	392/263	293/176	225/123	176/90	113/52
	20	1480/1528	939/782	643/452	464/285	348/191	268/134	212/97	138/56
	19	1480/1634	1071/837	734/484	531/305	399/204	309/143	244/104	160/60
	18	1479/1723	1177/882	814/510	589/321	444/215	344/151	273/110	180/63
	16	1479/1904	1176/975	975/564	712/355	538/238	418/167	332/121	221/70
4"	22	1556/2088	983/1069	671/618	484/389	362/261	279/183	219/133	141/77
	20	1772/2260	1163/1157	796/669	576/421	432/282	334/198	264/144	172/83
	19	1772/2415	1330/1236	913/715	661/450	497/301	385/212	305/154	201/89
	18	1772/2546	1410/1303	1015/754	736/475	555/318	431/223	342/162	226/94
	16	1771/2811	1409/1439	1168/833	894/524	676/351	526/246	419/179	279/104
4¾"	22	2072/3463	1310/1773	896/1026	647/646	485/432	374/304	294/221	191/128
	20	2249/3745	1556/1917	1067/1109	772/698	581/468	450/328	356/239	233/138
	19	2249/3997	1785/2046	1226/1184	889/745	670/499	520/350	413/255	273/148
	18	2249/4213	1790/2157	1367/1248	993/786	749/526	583/369	463/269	308/156
	16	2248/4649	1789/2380	1483/1377	1213/867	918/581	715/408	571/297	382/172

Notes:

1. For high loads long term concrete creep should be considered.
2. Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs or ASD design.

1.5VL-36/1.5VLI-36/1.5PLVLI-36 COMPOSITE DECK-SLABS

LRFD

1.5VL-36/1.5VLI-36/1.5PLVLI-36 Composite Deck-Slab Information

Total Slab Depth (in.)	Cover Depth (in.)	Theoretical Concrete Volume (yd ³ /100 ft ²)	Min. A _s for T&S (in. ²)	Recommended Reinforcing for Temperature and Shrinkage	
				WWR	(OR) Bekaert Dramix® Steel Fiber Alternate to WWR (lb/yd ³)
				3D 65/60BG	
Normal Weight Concrete (145 pcf)					
3½	2	0.78	0.028	6x6-W1.4xW1.4	27
4	2½	0.94	0.028	6x6-W1.4xW1.4	22
4½	3	1.09	0.028	6x6-W1.4xW1.4	19
5	3½	1.24	0.032	6x6-W2.1xW2.1	18
5½	4	1.40	0.036	6x6-W2.1xW2.1	18
6	4½	1.55	0.041	6x6-W2.1xW2.1	18
Light Weight Concrete (110 pcf)					
3½	2	0.78	0.028	6x6-W1.4xW1.4	42
4	2½	0.94	0.028	6x6-W1.4xW1.4	30
4½	3	1.09	0.028	6x6-W1.4xW1.4	23
4¾	3¼	1.17	0.029	6x6-W2.1xW2.1	22
5	3½	1.24	0.032	6x6-W2.1xW2.1	22
5¾	4¼	1.48	0.038	6x6-W2.1xW2.1	22

Notes:

1. FRC reinforcement is based on IAPMO UES ER-497 and ER-465.
2. Dramix® fibers may be used in UL or ULC fire rated assemblies in lieu of WWR. See UL file R19307 for additional information.

For information on Bekaert Dramix® fibers contact 770-514-2295 or infobuilding@bekaert.com.

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