

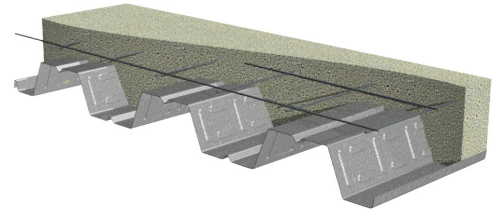
3VLI-36/3VLJ-36/3PLVLI-36 COMPOSITE DECKS

GRADE 50 STEEL

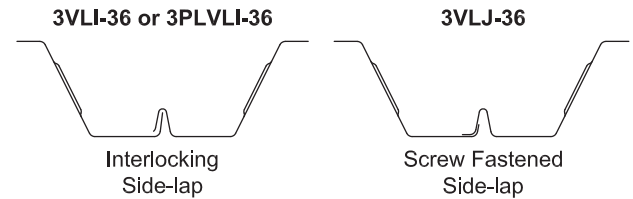
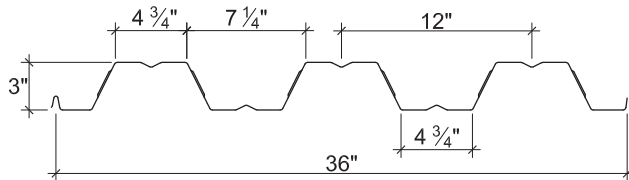
LRFD

3VLI COMPOSITE DECKS

- 3VLI-36 Deck used with TSWs or BPs
- 3VLJ-36 Deck used with Side-lap Screws
- 3PLVLI-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	1.7	0.0295	50	0.732	0.737	0.387	0.410	1452	1537	2138
20	2.1	0.0358	50	0.919	0.921	0.512	0.539	1920	2021	3777
19	2.4	0.0418	50	1.099	1.101	0.639	0.669	2397	2509	5152
18	2.7	0.0474	50	1.253	1.253	0.761	0.794	2854	2977	6628
16	3.5	0.0598	50	1.580	1.580	1.013	1.013	3799	3799	9312

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"	4"	8"	1 1/2"	2"	3"	4"	4"	8"
22	540	593	683	759	1164	1354	510	549	615	671	1353	1588
20	780	855	980	1085	1668	2065	792	851	948	1031	1975	2481
19	1046	1143	1305	1443	2221	2795	1119	1198	1330	1442	2665	3407
18	1324	1444	1645	1814	2798	3504	1473	1573	1742	1883	3389	4314
16	2049	2226	2521	2771	4291	5324	2430	2585	2845	3065	5275	6656

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

3VLI-36/3VLJ-36/3PLVLI-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				
5"	2"	22	10'-0"	10'-7"	11'-0"	44.0	7.54	5.16	4.72
		20	11'-9"	12'-5"	12'-10"	44.4	8.04	6.14	5.61
		19	12'-3"	13'-10"	14'-3"	44.7	8.49	7.03	5.61
		18	12'-8"	15'-1"	14'-10"	45.0	8.89	7.86	5.61
		16	13'-4"	16'-8"	15'-8"	45.8	9.72	9.60	5.61
6½"	3½"	22	8'-9"	8'-3"	9'-4"	62.1	15.94	6.80	5.90
		20	10'-4"	10'-11"	11'-3"	62.5	16.93	8.11	7.36
		19	11'-4"	12'-2"	12'-7"	62.8	17.82	9.31	7.97
		18	11'-8"	13'-4"	13'-8"	63.1	18.62	10.41	7.97
		16	12'-4"	15'-0"	14'-6"	63.9	20.27	12.75	7.97
7½"	4½"	22	8'-2"	7'-2"	8'-2"	74.2	24.12	7.98	6.77
		20	9'-7"	10'-2"	10'-6"	74.6	25.57	9.52	8.23
		19	10'-9"	11'-5"	11'-9"	74.9	26.87	10.95	9.46
		18	11'-2"	12'-5"	12'-10"	75.2	28.04	12.26	9.70
		16	11'-10"	14'-0"	13'-11"	76.0	30.47	15.06	9.70

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.)							
		8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"
5"	22	592/643	456/451	360/329	288/247	233/190	191/149	157/120	108/80
	20	713/686	552/481	437/351	352/263	287/203	237/159	197/128	138/85
	19	825/724	641/508	509/370	411/278	337/214	279/168	233/135	166/90
	18	927/758	721/533	574/388	465/291	382/224	317/176	266/141	191/94
	16	1144/829	893/582	713/424	579/319	478/245	399/193	336/154	245/103
6½"	22	775/1360	597/955	469/696	375/523	303/403	247/317	203/253	138/170
	20	938/1445	725/1014	573/739	461/555	375/428	308/336	255/269	178/180
	19	1088/1521	843/1068	669/778	540/585	441/450	365/354	304/283	215/190
	18	1225/1589	952/1116	756/813	612/611	502/470	416/370	349/296	249/198
	16	1517/1729	1182/1214	943/885	766/665	631/512	527/403	443/322	321/216
7½"	22	907/2059	698/1446	548/1054	438/792	354/610	288/479	236/384	160/257
	20	1100/2182	850/1533	672/1117	540/839	439/646	361/508	299/407	208/272
	19	1278/2293	991/1611	785/1174	633/882	518/679	428/534	356/428	252/286
	18	1441/2393	1120/1681	890/1225	720/920	590/709	489/557	410/446	292/299
	16	1791/2600	1396/1826	1113/1331	904/1000	745/770	621/606	523/485	379/325

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.

3VLI-36/3VLJ-36/3PLVLI-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				
5"	2"	22	11'-1"	11'-10"	12'-2"	33.8	5.75	4.95	4.02
		20	12'-7"	13'-8"	14'-1"	34.2	6.19	5.86	5.48
		19	13'-1"	15'-3"	15'-5"	34.5	6.59	6.70	5.61
		18	13'-6"	16'-7"	15'-10"	34.8	6.94	7.47	5.61
		16	14'-3"	17'-9"	16'-9"	35.6	7.66	9.09	5.61
5½"	2½"	22	10'-7"	11'-4"	11'-8"	38.4	7.51	5.45	4.30
		20	12'-2"	13'-1"	13'-6"	38.8	8.07	6.46	5.77
		19	12'-9"	14'-7"	14'-11"	39.1	8.57	7.39	6.36
		18	13'-2"	15'-11"	15'-5"	39.4	9.02	8.23	6.36
		16	13'-10"	17'-3"	16'-3"	40.2	9.93	10.02	6.36
6¼"	3¼"	22	9'-11"	10'-6"	11'-0"	45.2	10.78	6.26	4.75
		20	11'-9"	12'-4"	12'-9"	45.6	11.57	7.43	6.21
		19	12'-3"	13'-10"	14'-3"	45.9	12.27	8.51	7.44
		18	12'-8"	15'-1"	14'-10"	46.2	12.89	9.49	7.55
		16	13'-4"	16'-7"	15'-8"	47.0	14.16	11.56	7.55

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.)							
		8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"
5"	22	577/491	448/344	355/251	286/188	234/145	193/114	161/91	114/61
	20	691/528	538/371	428/270	346/203	284/156	236/123	198/98	142/66
	19	796/562	620/395	494/287	401/216	331/166	275/131	232/104	168/70
	18	891/592	695/416	555/303	452/227	373/175	311/138	263/110	191/74
	16	1093/654	854/459	684/334	558/251	462/193	387/152	328/122	241/81
5½"	22	635/641	492/450	390/328	314/246	256/189	211/149	176/119	124/80
	20	761/689	591/483	470/352	380/265	312/204	259/160	217/128	155/86
	19	876/731	682/513	544/374	441/281	363/216	302/170	254/136	184/91
	18	981/769	765/540	611/394	497/296	410/228	342/179	288/143	210/96
	16	1204/847	941/595	753/433	614/325	508/251	426/197	360/158	264/105
6¼"	22	728/920	564/646	446/471	359/354	293/272	242/214	201/171	141/115
	20	874/987	679/693	540/505	436/379	358/292	297/230	248/184	177/123
	19	1008/1047	785/735	625/536	507/402	417/310	347/244	292/195	210/130
	18	1130/1100	881/772	703/563	571/423	471/325	393/256	331/205	240/137
	16	1388/1208	1085/848	868/618	707/464	585/358	490/281	415/225	304/151

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.

3VLI-36/3VLJ-36/3PLVLI-36 COMPOSITE DECK-SLABS

LRFD

3VLI-36/3VLJ-36/3PLVLI-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)					
5	2	1.08	0.028	6x6-W1.4xW1.4	27
5½	2½	1.23	0.028	6x6-W1.4xW1.4	22
6	3	1.39	0.028	6x6-W1.4xW1.4	19
6½	3½	1.54	0.032	6x6-W2.1xW2.1	18
7	4	1.70	0.036	6x6-W2.1xW2.1	18
7½	4½	1.85	0.041	6x6-W2.1xW2.1	18
Light Weight Concrete (110 pcf)					
5	2	1.08	0.028	6x6-W1.4xW1.4	42
5½	2½	1.23	0.028	6x6-W1.4xW1.4	30
6	3	1.39	0.028	6x6-W1.4xW1.4	23
6¼	3¼	1.47	0.029	6x6-W2.1xW2.1	22
6½	3½	1.54	0.032	6x6-W2.1xW2.1	22
7¼	4¼	1.77	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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