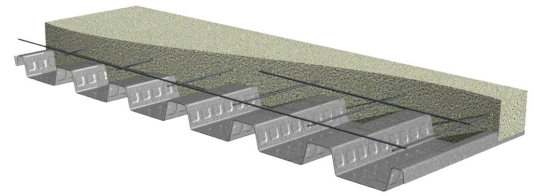


1.5VLR-36 COMPOSITE DECK GRADE 50 STEEL

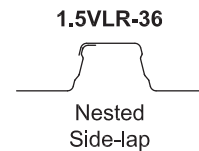
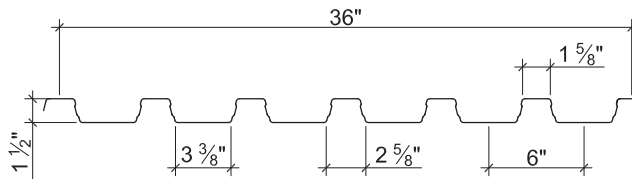
LRFD

1.5VLR COMPOSITE DECK

- 1.5VLR-36 Deck used with Side-lap Screws



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	0.178	0.155	0.179	0.169	671	634	4035
20	2.0	0.0358	50	0.217	0.197	0.229	0.224	859	840	4874
19	2.3	0.0418	50	0.257	0.239	0.278	0.266	1042	997	5666
18	2.6	0.0474	50	0.290	0.277	0.318	0.306	1193	1148	6398
16	3.3	0.0598	50	0.367	0.364	0.402	0.393	1508	1474	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

1.5VLR-36 COMPOSITE DECK-SLABS

NORMAL WEIGHT CONCRETE (145 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	6'-5"	7'-5"	7'-8"	37.5	3.43	3.86	5.03
		20	7'-7"	8'-6"	8'-9"	37.9	3.68	4.58	5.03
		19	8'-2"	9'-3"	9'-7"	38.2	3.91	5.25	5.03
		18	8'-6"	9'-11"	10'-3"	38.5	4.11	5.85	5.03
		16	9'-2"	11'-2"	11'-3"	39.2	4.50	7.12	5.03
5"	3½"	22	5'-8"	6'-5"	6'-8"	55.6	9.34	5.65	7.51
		20	6'-7"	7'-5"	7'-8"	56.0	9.97	6.74	7.81
		19	7'-3"	8'-1"	8'-4"	56.3	10.55	7.77	7.81
		18	7'-6"	8'-8"	8'-11"	56.6	11.05	8.69	7.81
		16	8'-1"	9'-9"	10'-0"	57.3	12.09	10.68	7.81
6"	4½"	22	5'-3"	6'-0"	6'-2"	67.7	15.62	7.20	8.36
		20	6'-2"	6'-11"	7'-1"	68.1	16.63	8.60	9.11
		19	6'-10"	7'-6"	7'-9"	68.4	17.55	9.92	9.49
		18	7'-1"	8'-0"	8'-4"	68.7	18.36	11.12	9.49
		16	7'-8"	9'-1"	9'-5"	69.4	20.03	13.72	9.49

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	1886/2344	1191/1200	813/694	585/437	437/293	336/205	264/150	169/86
	20	2244/2515	1420/1287	972/745	702/469	527/314	406/220	320/160	208/93
	19	2471/2670	1634/1367	1121/791	811/498	610/333	472/234	374/170	245/98
	18	2471/2803	1825/1435	1253/830	908/523	684/350	531/246	421/179	278/103
	16	2470/3074	1966/1574	1536/911	1116/573	843/384	656/269	522/196	348/113
5"	22	2760/6375	1742/3264	1189/1889	856/1189	640/796	491/559	385/408	247/236
	20	3304/6809	2090/3486	1431/2017	1033/1270	775/851	598/597	472/435	307/252
	19	3815/7203	2417/3688	1658/2134	1200/1344	903/900	699/632	553/461	363/266
	18	3835/7546	2713/3863	1863/2235	1350/1408	1018/943	790/662	627/482	414/279
	16	3834/8253	3054/4225	2305/2445	1675/1539	1266/1031	986/724	785/528	524/305
6"	22	3516/10667	2221/5461	1517/3160	1093/1990	818/1333	629/936	494/682	318/395
	20	4218/11357	2670/5815	1829/3365	1322/2119	993/1419	767/997	606/726	396/420
	19	4663/11986	3093/6137	2123/3551	1538/2236	1158/1498	898/1052	711/767	469/443
	18	4663/12537	3477/6419	2389/3714	1733/2339	1308/1567	1016/1100	807/802	535/464
	16	4662/13681	3713/7004	2966/4053	2157/2552	1632/1710	1272/1201	1014/875	679/506

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.

1.5VLR-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	Deflection	Moment	Shear
Total	Topping		1	2	3	(psf)	$I_d = (I_{cr} + I_u)/2$ (in ⁴ /ft)	ϕM_{no} (kip-ft/ft)	ϕV_{no} (kip/ft)
3½"	2"	22	7'-0"	8'-1"	8'-4"	28.8	2.66	3.70	5.03
		20	8'-4"	9'-4"	9'-7"	29.2	2.87	4.37	5.03
		19	8'-11"	10'-2"	10'-6"	29.5	3.06	4.99	5.03
		18	9'-3"	10'-10"	11'-2"	29.8	3.22	5.55	5.03
		16	10'-0"	12'-3"	12'-0"	30.5	3.54	6.72	5.03
4"	2½"	22	6'-9"	7'-9"	8'-0"	33.4	3.85	4.25	5.83
		20	7'-11"	8'-11"	9'-2"	33.8	4.15	5.03	5.92
		19	8'-6"	9'-8"	10'-0"	34.1	4.42	5.76	5.92
		18	8'-10"	10'-4"	10'-8"	34.4	4.65	6.41	5.92
		16	9'-6"	11'-8"	11'-7"	35.1	5.11	7.79	5.92
4¾"	3¼"	22	6'-4"	7'-3"	7'-6"	40.3	6.20	5.10	6.35
		20	7'-5"	8'-4"	8'-8"	40.7	6.68	6.06	7.11
		19	8'-1"	9'-1"	9'-5"	41.0	7.11	6.95	7.32
		18	8'-4"	9'-9"	10'-1"	41.3	7.47	7.75	7.32
		16	9'-0"	11'-0"	11'-1"	42.0	8.22	9.46	7.32

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)

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	1814/1815	1149/929	787/537	569/338	427/226	330/159	261/116	170/67
	20	2149/1959	1362/1003	935/580	678/365	510/244	396/172	314/125	207/72
	19	2461/2089	1562/1069	1074/619	779/389	588/261	457/183	364/133	242/77
	18	2481/2198	1738/1125	1196/651	869/410	657/274	511/193	407/140	272/81
	16	2480/2420	1977/1239	1456/717	1060/451	803/302	627/212	501/154	336/89
4"	22	2086/2626	1320/1344	905/778	654/490	491/328	379/230	300/168	196/97
	20	2476/2833	1570/1450	1078/839	781/528	588/354	456/248	362/181	239/104
	19	2840/3018	1803/1545	1239/894	899/563	679/377	528/264	420/193	279/111
	18	2917/3174	2010/1625	1383/940	1005/592	760/396	591/278	471/203	314/117
	16	2916/3492	2325/1788	1689/1034	1229/651	931/436	727/306	581/223	390/129
4¾"	22	2503/4234	1584/2168	1085/1254	784/790	589/529	455/371	359/271	235/156
	20	2979/4561	1889/2335	1297/1351	940/851	708/570	549/400	435/291	287/168
	19	3425/4853	2174/2485	1494/1438	1085/905	819/606	637/426	506/310	336/179
	18	3610/5104	2429/2613	1671/1512	1215/952	918/638	715/448	570/326	380/189
	16	3609/5612	2877/2873	2052/1662	1494/1047	1132/701	884/492	706/359	475/207

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.

1.5VLR-36 COMPOSITE DECK-SLABS

LRFD

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

$f'_c = 3000$ psi

Total Slab Depth (in.)	Cover Depth (in.)	Theoretical Concrete Volume (yd³/100 ft²)	Min. A _s for T&S (in.²)	Recommended Reinforcing for Temperature and Shrinkage	
				WWR	(OR) Bekaert Dramix® Steel Fiber Alternate to WWR (lb/yd³)
Normal Weight Concrete (145 pcf)					
3½	2	0.78	0.028	6x6-W1.4xW1.4	23
4	2½	0.94	0.028	6x6-W1.4xW1.4	18
4½	3	1.09	0.028	6x6-W1.4xW1.4	15
5	3½	1.24	0.032	6x6-W2.1xW2.1	15
5½	4	1.40	0.036	6x6-W2.1xW2.1	15
6	4½	1.55	0.041	6x6-W2.1xW2.1	15
Light Weight Concrete (110 pcf)					
3½	2	0.78	0.028	6x6-W1.4xW1.4	33
4	2½	0.94	0.028	6x6-W1.4xW1.4	25
4½	3	1.09	0.028	6x6-W1.4xW1.4	20
4¾	3¼	1.17	0.029	6x6-W2.1xW2.1	20
5	3½	1.24	0.032	6x6-W2.1xW2.1	20
5¾	4¼	1.48	0.038	6x6-W2.1xW2.1	20

Notes:

1. FRC reinforcement is based on IAPMO UES 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.

NOTICE: Design defects that could cause injury or death may result from relying on the information in this document without independent verification by a qualified professional. The information in this document is provided "AS IS". Nucor Corporation and its affiliates expressly disclaim: (i) any and all representations, warranties and conditions and (ii) all liability arising out of or related to this document and the information in it.