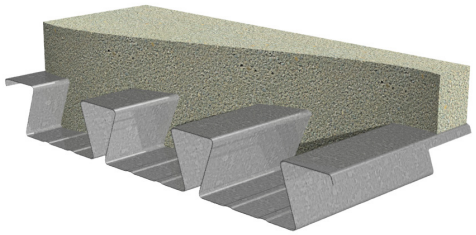
3.5DS-24 FL DOVETAIL DECK
GRADE 50 STEEL

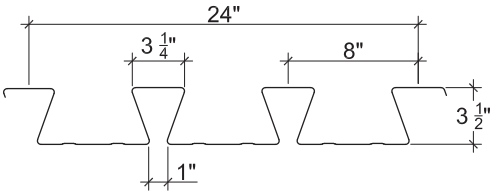
LRFD

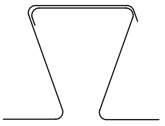
3.5DS-24 FL DOVETAIL DECK

- **Enhanced 2-Coat Polyester Paint**
- **White Factory Primer Paint**
- **Galvanized Finish**
- **UL Listed**



Nominal Dimensions





Nested
Side-lap

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 $I_d = (2I_e+I_g)/3$ I_d+ (in⁴/ft)	I_d- (in⁴/ft)	Effective Section Modulus at F_y = 50 ksi S_e+ (in³/ft)	S_e- (in³/ft)	Design Moment øM$_n$+ (lb-ft/ft)	øM$_n$- (lb-ft/ft)	Vertical Web Shear øV$_n$ (lb/ft)
20	3.4	0.0359	50	1.951	1.805	0.714	0.757	2677	2840	5706
18	4.5	0.0478	50	2.681	2.505	1.052	1.108	3947	4156	10356
16	5.6	0.0598	50	3.421	3.243	1.414	1.505	5301	5645	14868

Design Reactions at Supports Based on Web Crippling, øR$_n$ (lb/ft)

Deck Gage	Bearing Length of Webs: One-Flange Loading, End Bearing 2"	3"	4"	5"	Interior Bearing 4"	6"	Two-Flange Loading, End Bearing 2"	3"	4"	5"	Interior Bearing 4"	6"
20	1315	1507	1669	1812	2580	2953	1301	1450	1576	1687	3044	3515
18	2241	2553	2815	3046	4363	4960	2435	2695	2915	3108	5269	6048
16	3392	3843	4223	4557	6567	7425	3924	4319	4652	4945	8048	9192

Standard Features

- ASTM A653 SS GR 50 Min. with G90
- Standard lengths – 6'-0" to 40'-0"
- Tables conform to ANSI/SDI C-2017
- IAPMO UES ER-423 and UL Listed

Optional Features

- Inquire regarding cost and lead times for:
  - -19 or 17 gage
  - -Alternative metallic and painted finishes

3.5DS-24 FL DOVETAIL DECK-SLAB
NORMAL WEIGHT CONCRETE (145 pcf)

LRFD

Maximum Unshored Spans

Slab Depth		Deck	Maximum Unshored Construction Clear Span		
Total	Topping	Gage	1	2	3
5½"	2"	20	12'-10"	13'-4"	13'-10"
		18	14'-4"	16'-2"	16'-6"
		16	15'-2"	18'-8"	17'-6"
5¾"	2¼"	20	12'-7"	13'-1"	13'-6"
		18	14'-2"	15'-10"	16'-4"
		16	15'-0"	18'-5"	17'-4"
6"	2½"	20	12'-4"	12'-10"	13'-3"
		18	14'-0"	15'-7"	16'-1"
		16	14'-10"	18'-1"	17'-2"

Composite Deck-Slab Properties

Concrete + Deck	Deflection	Moment	Shear
	$I_d = (I_{cr}+I_u)/2$	ϕM_{no}	ϕV_{no}
(psf)	(in^4/ft)	(kip-ft/ft)	(kip/ft)
58.6	14.12	12.22	6.44
59.7	15.73	15.68	6.44
60.8	17.27	18.38	6.44
61.6	15.95	12.68	6.73
62.7	17.72	16.30	6.73
63.8	19.36	19.79	6.73
64.7	17.93	13.17	7.02
65.8	19.89	16.93	7.02
66.9	21.69	20.55	7.02

Notes:

1. Maximum unshored spans are based on 20 psf uniform construction live load and 150 plf concentrated construction live load.
2. 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.)							
		15'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	23'-0"	25'-0"
5½"	20	364/182	267/125	231/105	200/89	173/77	151/66	114/50	86/39
	18	485/203	362/139	315/117	275/100	242/85	212/74	165/56	129/43
	16	580/223	435/153	380/129	334/110	294/94	260/81	204/62	162/48
5¾"	20	376/206	277/141	239/119	207/101	179/87	156/75	117/57	88/44
	18	504/229	375/157	327/132	285/112	250/96	220/83	171/63	133/49
	16	627/250	471/172	412/145	361/123	319/105	282/91	222/69	176/54
6"	20	390/232	286/159	247/134	214/114	185/97	161/84	121/64	90/50
	18	522/257	389/176	339/149	296/126	259/108	228/93	177/71	137/55
	16	650/280	488/192	427/162	375/138	330/118	292/102	230/77	182/60

Notes:

1. For high loads long term concrete creep should be considered.
2. See Composite Deck-Slab Superimposed Load tool for alternate slabs or ASD design.

3.5DS-24 FL DOVETAIL DECK-SLAB
LIGHT WEIGHT CONCRETE (110 pcf)

LRFD

Maximum Unshored Spans

Slab Depth		Deck	Maximum Unshored Construction Clear Span		
Total	Topping	Gage	1	2	3
5½"	2"	20	14'-2"	14'-10"	15'-3"
		18	15'-3"	17'-10"	17'-7"
		16	16'-2"	19'-10"	18'-8"
5¾"	2¼"	20	14'-0"	14'-6"	15'-0"
		18	15'-1"	17'-7"	17'-5"
		16	16'-0"	19'-8"	18'-6"
8"	4½"	20	12'-2"	12'-8"	13'-1"
		18	13'-10"	15'-4"	15'-10"
		16	14'-8"	17'-10"	17'-0"

Composite Deck-Slab Properties

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)
45.3	10.97	11.39	6.44
46.4	12.49	14.08	6.44
47.5	13.99	16.77	6.44
47.6	12.33	12.10	6.73
48.7	13.90	14.97	6.73
49.8	15.44	17.59	6.73
68.2	30.55	16.76	8.62
69.3	34.03	21.50	9.37
70.4	37.15	26.05	9.37

Notes:

1. Maximum unshored spans are based on 20 psf uniform construction live load and 150 plf concentrated construction live load.
2. 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.)							
		15'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	23'-0"	25'-0"
5½"	20	350/142	260/97	226/82	198/69	173/59	152/51	117/39	91/30
	18	444/161	333/111	291/93	256/79	225/68	199/58	157/44	124/34
	16	539/181	407/124	357/104	314/89	278/76	247/66	196/50	157/39
5¾"	20	373/159	277/109	241/92	211/78	184/67	162/58	125/44	97/34
	18	473/180	355/123	311/104	273/88	240/75	213/65	167/49	133/38
	16	565/199	427/137	374/115	330/98	292/84	259/72	206/55	165/43
8"	20	514/395	382/271	332/228	289/194	253/166	222/144	171/109	132/85
	18	681/440	511/302	447/254	393/216	346/185	306/160	241/122	192/95
	16	841/481	636/330	558/278	492/236	436/202	387/175	309/133	248/103

Notes:

1. For high loads long term concrete creep should be considered.
2. See Composite Deck-Slab Superimposed Load tool for alternate slabs or ASD design.

3.5DS-24 FL DOVETAIL DECK-SLAB

3.5DS-24 FL Deck-Slab Information

f'_c = 3000 psi

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): 4D 65/60BG
Normal Weight Concrete (145 pcf)					
5½	2	1.41	0.028	6x6-W1.4xW1.4	23
5¾	2¼	1.49	0.028	6x6-W1.4xW1.4	20
6	2½	1.56	0.028	6x6-W1.4xW1.4	18
6½	3	1.72	0.028	6x6-W1.4xW1.4	15
7	3½	1.87	0.032	6x6-W2.1xW2.1	15
7¼	3¾	1.95	0.034	6x6-W2.1xW2.1	15
7½	4	2.03	0.036	6x6-W2.1xW2.1	15
8	4½	2.18	0.041	6x6-W2.1xW2.1	15
Light Weight Concrete (110 pcf)					
5½	2	1.41	0.028	6x6-W1.4xW1.4	33
5¾	2¼	1.49	0.028	6x6-W1.4xW1.4	28
6	2½	1.56	0.028	6x6-W1.4xW1.4	25
6½	3	1.72	0.028	6x6-W1.4xW1.4	20
7	3½	1.87	0.032	6x6-W2.1xW2.1	20
7½	4	2.03	0.036	6x6-W2.1xW2.1	20
8	4½	2.18	0.041	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.