

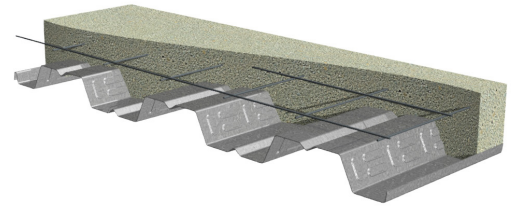
2VLI-36/2VLJ-36 COMPOSITE DECKS

GRADE 50 STEEL

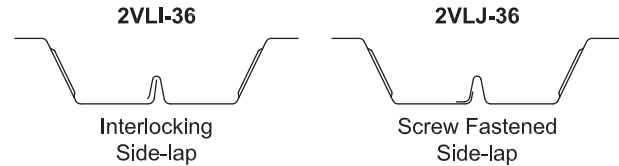
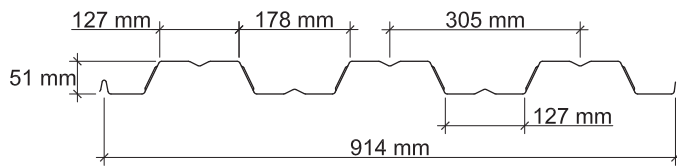
Metric
LSD

2VLI COMPOSITE DECKS

- 2VLI-36 Deck used with TSWs or BPs
- 2VLJ-36 Deck used with Side-lap Screws



Nominal Dimensions



Section Properties

Deck Gage	Deck Weight w_{dd} (kg/m ²)	Base Metal Thickness t (mm)	Yield Strength F_y (MPa)	Effective Moment of Inertia at Service Load* $I_d = (2I_e + I_y)/3$		Effective Section Modulus* at $F_y = 345$ MPa		Factored Moment*		Vertical Web Shear* ϕV_n (kN)
				I_{d+} (mm ⁴ x10 ³)	I_{d-} (mm ⁴ x10 ³)	S_{e+} (mm ³ x10 ³)	S_{e-} (mm ³ x10 ³)	ϕM_{n+} (N-m)	ϕM_{n-} (N-m)	
22	7.81	0.75	345	442.5	442.5	13.12	13.71	4071	4256	31
20	9.28	0.91	345	558.5	555.8	17.53	18.12	5437	5621	45
18	12.21	1.20	345	760.6	760.6	26.08	26.88	8091	8339	61
16	15.62	1.52	345	960.0	960.0	34.57	35.05	10725	10877	76

*Physical Properties per meter (m) of width

Factored Reactions at Supports Based on Web Crippling, ϕR_n (kN/m)

Deck Gage	Bearing Length of Webs (mm)											
	One-Flange Loading						Two-Flange Loading					
	End Bearing				Interior Bearing		End Bearing				Interior Bearing	
	40	50	75	100	100	150	40	50	75	100	100	150
22	7.3	7.9	9.1	10.1	14.6	16.8	6.7	7.1	8.0	8.7	17.6	20.4
20	10.5	11.3	12.9	14.3	20.9	23.9	10.3	10.9	12.1	13.2	25.6	29.5
18	17.7	18.9	21.6	23.8	35.1	39.9	18.8	19.8	21.9	23.7	43.7	50.1
16	27.2	29.0	32.9	36.1	53.9	60.9	30.7	32.2	35.5	38.2	67.7	77.3

Standard Features

- ASTM A653/A653M SS GR50 Min., with Z275/G90 galvanized or ZF75/A25 galvanealed
- Standard lengths – 1.83 m to 12.8 m
- ULC Listed
- Cold-formed steel deck conforms to CAN/CSA S136-16 and meets the guidelines of CSSBI 12M-2018.

Optional Features

- Inquire regarding cost and lead times for:
 - Short cuts < 1.83 m
 - Sheet Lengths > 12.8 m
 - Alternative metallic and painted finishes
- Factory Hanger Tabs

2VLI-36/2VLJ-36 COMPOSITE DECK-SLABS

NORMAL WEIGHT CONCRETE (2325 kg/m³)

Metric
LSD

Slab Depth		Maximum Unshored Spans			Composite Deck-Slab Properties				
Total (mm)	Topping (mm)	Deck Gage	Maximum Unshored Construction Clear Span (mm)			Concrete + Deck (kPa)	Deflection $I_d = (I_{cr} + I_u)/2$ (mm ⁴ × 10 ⁹ /m)	Moment ϕM_{no} (kN-m/m)	Shear ϕV_{no} (kN/m)
			1	2	3				
102	51	22	2677	2962	3060	1.8	5656.54	15.08	62
		20	2885	3413	3527	1.8	6052.59	17.85	62
		18	3182	4087	3844	1.9	6724.33	22.74	62
		16	3418	4313	4057	1.9	7373.27	27.67	62
140	89	22	2344	2601	2667	2.7	14038.27	21.60	78
		20	2537	3004	3104	2.7	14958.69	25.69	92
		18	2802	3652	3461	2.7	16521.74	32.92	94
		16	3016	3926	3693	2.8	18039.29	40.31	94
165	114	22	2184	2423	2489	3.3	22636.01	27.37	90
		20	2380	2802	2894	3.3	24055.21	32.66	104
		18	2630	3409	3249	3.3	26476.00	42.07	118
		16	2833	3747	3499	3.3	28841.97	49.16	118

Note:

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

Superimposed Factored Load, ϕW_n , / Deflection at L/360 (kPa)

NWC (2325 kg/m³), $f'_c = 20$ MPa

Total Slab Depth	Deck Gage	Span (mm)							
		1800	2100	2400	2700	3000	3300	3600	4200
102	22	34.9/42	25/26.5	18.6/17.7	14.2/12.4	11.1/9	8.8/6.8	7/5.2	4.5/3.3
	20	41.8/45	30.1/28.3	22.5/19	17.3/13.3	13.6/9.7	10.8/7.3	8.7/5.6	5.8/3.5
	18	53.8/50	38.9/31.5	29.2/21.1	22.6/14.8	17.9/10.8	14.4/8.1	11.7/6.2	7.9/3.9
	16	65.9/54.8	47.8/34.5	36.1/23.1	28/16.2	22.2/11.8	17.9/8.9	14.7/6.8	10.2/4.3
140	22	49.9/104.4	35.8/65.7	26.6/44	20.3/30.9	15.8/22.6	12.5/16.9	10/13	6.4/8.2
	20	60/111.3	43.2/70	32.3/46.9	24.8/32.9	19.4/24	15.5/18.1	12.4/13.9	8.2/8.7
	18	77.9/122.9	56.3/77.4	42.3/51.9	32.7/36.4	25.8/26.5	20.7/19.9	16.9/15.3	11.5/9.7
	16	96/134.2	69.6/84.5	52.5/56.6	40.7/39.7	32.4/29	26.1/21.7	21.4/16.8	14.8/10.5
165	22	63.5/168.4	45.5/106.1	33.9/71	26/49.9	20.2/36.3	16/27.3	12.8/21	8.3/13.2
	20	76.5/178.9	55.1/112.7	41.2/75.5	31.7/53	24.9/38.6	19.9/29	16/22.4	10.7/14.1
	18	99.7/197	72.2/124	54.2/83.1	42/58.4	33.2/42.5	26.8/31.9	21.8/24.6	14.9/15.5
	16	117.2/214.6	85/135.1	64.1/90.5	49.7/63.5	39.5/46.3	31.9/34.8	26.1/26.8	18.1/16.9

Notes:

- The composite deck-slab design is based on tested performance and engineering analysis in accordance Section 7.6.1 of CSSBI 12M-2018.
- For high loads long term concrete creep should be considered.
- Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs.

2VLI-36/2VLJ-36 COMPOSITE DECK-SLABS

LIGHT WEIGHT CONCRETE (1840 kg/m³)

Metric
LSD

Slab Depth		Maximum Unshored Spans			Composite Deck-Slab Properties				
Total (mm)	Topping (mm)	Deck Gage	Maximum Unshored Construction Clear Span (mm)			Concrete + Deck (kPa)	Deflection $I_d = (I_{cr} + I_u)/2$ (mm ⁴ ×10 ⁹ /m)	Moment ϕM_{no} (kN-m/m)	Shear ϕV_{no} (kN/m)
			1	2	3				
102	51	22	2883	3163	3268	1.5	4853.75	14.70	57
		20	3106	3642	3763	1.5	5219.20	17.37	69
		18	3421	4315	4059	1.5	5834.78	22.04	69
		16	3652	4549	4279	1.5	6424.70	26.75	69
115	64	22	2743	3029	3129	1.7	6816.85	16.82	61
		20	2957	3490	3606	1.7	7319.16	19.91	76
		18	3259	4162	3914	1.7	8163.12	25.32	81
		16	3500	4390	4129	1.8	8970.47	30.79	81
135	84	22	2572	2852	2946	2.1	10785.71	20.26	68
		20	2774	3288	3398	2.1	11558.70	24.03	83
		18	3060	3970	3734	2.1	12858.91	30.68	98
		16	3290	4191	3942	2.1	14106.33	37.42	100

Note:

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

Superimposed Factored Load, ϕW_n , / Deflection at L/360 (kPa)

LWC (1840 kg/m³), $f'_c = 25$ MPa

Total Slab Depth	Deck Gage	Span (mm)							
		1800	2100	2400	2700	3000	3300	3600	4200
102	22	34.4/36.1	24.8/22.7	18.6/15.2	14.3/10.7	11.2/7.8	9/5.8	7.2/4.5	4.8/2.8
	20	41/38.8	29.6/24.4	22.3/16.4	17.2/11.5	13.6/8.4	10.9/6.3	8.9/4.8	6/3
	18	52.5/43.4	38.1/27.3	28.7/18.3	22.3/12.8	17.7/9.3	14.3/7	11.7/5.4	8.1/3.4
	16	64.1/47.8	46.6/30.1	35.2/20.2	27.4/14.1	21.8/10.3	17.7/7.8	14.6/5.9	10.2/3.7
115	22	39.4/50.7	28.4/31.9	21.2/21.4	16.3/15	12.8/10.9	10.2/8.2	8.2/6.3	5.5/4
	20	47/54.4	33.9/34.3	25.5/22.9	19.7/16.1	15.6/11.7	12.4/8.8	10.2/6.8	6.8/4.3
	18	60.3/60.7	43.8/38.2	33/25.6	25.6/18	20.3/13.1	16.4/9.8	13.5/7.6	9.3/4.7
	16	73.8/66.7	53.6/42	40.5/28.2	31.6/19.8	25.1/14.4	20.4/10.8	16.8/8.3	11.7/5.2
135	22	47.4/80.2	34.1/50.5	25.6/33.9	19.6/23.7	15.4/17.3	12.3/13	9.9/10	6.6/6.3
	20	56.7/86	41/54.2	30.8/36.2	23.7/25.5	18.8/18.5	15/13.9	12.2/10.7	8.3/6.8
	18	73.1/95.7	53/60.2	40/40.3	31/28.3	24.6/20.6	19.9/15.5	16.3/11.9	11.3/7.5
	16	89.7/104.9	65.2/66.1	49.3/44.2	38.4/31.1	30.6/22.6	24.8/17	20.4/13.1	14.3/8.2

Notes:

- The composite deck-slab design is based on tested performance and engineering analysis in accordance Section 7.6.1 of CSSBI 12M-2018.
- For high loads long term concrete creep should be considered.
- Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs.

2VLI-36/2VLJ-36 Composite Deck-Slab Information

Total Slab Depth (mm)	Cover Depth (mm)	Theoretical Concrete Volume (m ³ /m ²)	Min. A _s for T&S (mm ² /m)	Recommended WWR for Temperature and Shrinkage
Normal Weight Concrete (2325 kg/m³)				
102	51	0.077	60	152x152-MW9.1xMW9.1
115	64	0.089	60	152x152-MW9.1xMW9.1
125	74	0.101	60	152x152-MW9.1xMW9.1
140	89	0.114	87	152x152-MW13.3xMW13.3
150	99	0.127	117	152x152-MW18.7xMW18.7
165	114	0.140	162	152x152-MW25.8xMW25.8
Light Weight Concrete (1840 kg/m³)				
102	51	0.077	60	152x152-MW9.1xMW9.1
115	64	0.089	60	152x152-MW9.1xMW9.1
125	74	0.101	60	152x152-MW9.1xMW9.1
135	84	0.108	72	152x152-MW11.1xMW11.1
140	89	0.114	87	152x152-MW13.3xMW13.3
160	109	0.133	147	152x152-MW22.6xMW22.6

Notes:

1. Recommended temperature and shrinkage reinforcement in accordance with CSSBI S3-08, Table 2.

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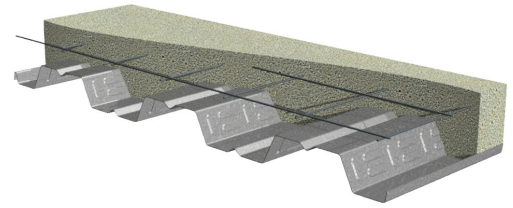
2VLI-36/2VLJ-36 COMPOSITE DECKS

GRADE 50 STEEL

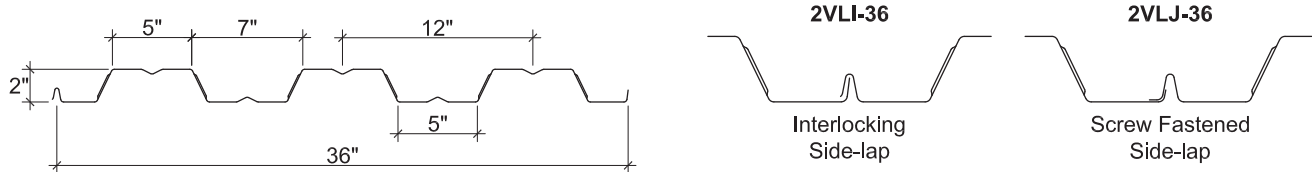
Imperial
LSD

2VLI COMPOSITE DECKS

- 2VLI Deck-36 used with TSWs or BPs
- 2VLJ Deck-36 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 $I_d = (2I_e + I_p)/3$		Effective Section Modulus at $F_y = 50$ ksi		Factored 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	0.324	0.324	0.244	0.255	915	957	2101
20	1.9	0.0358	50	0.409	0.407	0.326	0.337	1222	1264	3096
18	2.5	0.0474	50	0.557	0.557	0.485	0.500	1819	1875	4147
16	3.2	0.0598	50	0.703	0.703	0.643	0.652	2411	2445	5209

Factored 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			
	1½"	2"	3"	4"	4"	6"	1½"	2"	3"	4"	4"	6"
22	494	543	625	694	1007	1157	456	491	550	600	1212	1406
20	709	777	891	987	1441	1650	698	750	836	908	1762	2035
18	1196	1304	1485	1638	2419	2750	1277	1364	1509	1633	3008	3454
16	1841	1999	2265	2489	3707	4192	2084	2216	2439	2627	4665	5327

Standard Features

- ASTM A653/A653M SS GR50 Min., with Z275/G90 galvanized or ZF75/A25 galvanized
- Standard lengths – 6'-0" to 42'-0"
- ULC Listed
- Cold-formed steel deck conforms to CAN/CSA S136-16 and meets the guidelines of CSSBI 12M-2018.

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

2VLI-36/2VLJ-36 COMPOSITE DECK-SLABS

NORMAL WEIGHT CONCRETE (145 pcf)

Imperial
LSD

		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				
4"	2"	22	8'-10"	9'-9"	10'-1"	37.9	4.14	3.38	4.25
		20	9'-6"	11'-2"	11'-7"	38.2	4.43	4.00	4.29
		18	10'-6"	13'-5"	12'-8"	38.8	4.92	5.10	4.29
		16	11'-3"	14'-2"	13'-4"	39.5	5.39	6.21	4.29
5½"	3½"	22	7'-8"	8'-6"	8'-9"	56.0	10.32	4.85	5.37
		20	8'-4"	9'-10"	10'-2"	56.3	11.00	5.77	6.36
		18	9'-2"	12'-0"	11'-4"	56.9	12.14	7.39	6.54
		16	9'-11"	12'-11"	12'-2"	57.6	13.25	9.05	6.54
6½"	4½"	22	7'-2"	7'-11"	8'-2"	68.1	16.78	6.16	6.21
		20	7'-10"	9'-2"	9'-6"	68.4	17.83	7.36	7.21
		18	8'-8"	11'-2"	10'-8"	69.0	19.61	9.48	8.22
		16	9'-4"	12'-4"	11'-6"	69.7	21.36	11.08	8.22

Note:

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

		Superimposed Factored Load, ϕW_n / Deflection at L/360 (psf)					NWC (145 pcf), $f'_c = 3000$ psi			
Total Slab Depth	Deck Gage	Span (ft-in.)								
		6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	14'-0"	
4"	22	703/837	504/527	375/353	286/248	223/180	176/135	140/104	90/65	
	20	841/895	605/563	452/377	347/265	272/193	216/145	174/111	115/70	
	18	1084/994	783/626	588/419	455/294	359/214	288/161	234/124	159/78	
	16	1329/1090	963/686	726/459	563/323	447/235	361/176	295/136	203/85	
5½"	22	1007/2088	721/1315	536/881	408/618	317/451	250/338	199/261	127/164	
	20	1211/2224	871/1401	650/938	499/659	391/480	311/361	250/278	165/175	
	18	1572/2456	1136/1546	853/1036	659/727	520/530	417/398	339/307	230/193	
	16	1939/2681	1406/1688	1059/1131	822/794	652/579	526/435	431/335	297/211	
6½"	22	1284/3395	921/2138	685/1432	523/1006	408/733	322/551	257/424	166/267	
	20	1549/3607	1115/2271	834/1521	641/1068	503/779	400/585	323/450	214/283	
	18	2020/3968	1461/2498	1098/1674	849/1175	672/857	540/643	440/496	300/312	
	16	2374/4321	1721/2721	1297/1823	1007/1280	799/933	645/701	528/540	365/340	

Notes:

- The composite deck-slab design is based on tested performance and engineering analysis in accordance Section 7.6.1 of CSSBI 12M-2018.
- For high loads long term concrete creep should be considered.
- Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs.

2VLI-36/2VLJ-36 COMPOSITE DECK-SLABS

LIGHT WEIGHT CONCRETE (115 pcf)

Imperial
LSD

Slab Depth		Maximum Unshored Spans			Composite Deck-Slab Properties				
Total	Topping	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)
			1	2	3				
4"	2"	22	9'-6"	10'-5"	10'-9"	30.4	3.63	3.31	3.96
		20	10'-2"	11'-11"	12'-4"	30.7	3.90	3.91	4.96
		18	11'-3"	14'-2"	13'-4"	31.3	4.35	4.97	4.96
		16	12'-0"	14'-11"	14'-1"	32.0	4.79	6.03	4.96
4½"	2½"	22	9'-0"	9'-11"	10'-3"	35.1	5.07	3.78	4.27
		20	9'-9"	11'-5"	11'-10"	35.4	5.44	4.47	5.26
		18	10'-9"	13'-8"	12'-10"	36.0	6.06	5.69	5.78
		16	11'-6"	14'-5"	13'-7"	36.7	6.65	6.92	5.78
5¼"	3¼"	22	8'-6"	9'-5"	9'-8"	42.3	7.88	4.51	4.76
		20	9'-2"	10'-10"	11'-2"	42.6	8.44	5.35	5.75
		18	10'-1"	13'-1"	12'-4"	43.2	9.38	6.84	6.81
		16	10'-10"	13'-10"	13'-0"	43.9	10.28	8.34	7.09

Note:

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

Total Slab Depth	Deck Gage	Superimposed Factored Load, ϕW_n , / Deflection at L/360 (psf)								LWC (115 pcf), $f'_c = 4000$ psi
		Span (ft-in.)								
		6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	14'-0"	
4"	22	697/734	502/462	375/309	288/217	226/158	180/119	145/91	97/57	
	20	830/788	600/496	450/332	347/233	274/170	220/128	178/98	121/62	
	18	1064/880	771/554	581/371	451/261	358/190	289/142	236/110	163/69	
	16	1300/969	944/610	714/408	555/287	442/209	358/157	295/121	206/76	
4½"	22	795/1025	572/645	428/432	329/303	258/221	205/166	165/128	110/80	
	20	949/1099	685/692	514/463	397/325	313/237	251/178	204/137	138/86	
	18	1219/1225	883/771	666/516	516/363	410/264	331/198	271/153	187/96	
	16	1491/1345	1083/847	819/567	637/398	507/290	411/218	338/168	236/105	
5¼"	22	949/1594	683/1003	511/672	392/472	308/344	245/258	197/199	131/125	
	20	1136/1707	820/1074	615/720	475/505	375/368	300/277	244/213	165/134	
	18	1465/1896	1062/1194	800/800	621/562	492/409	398/307	325/237	225/149	
	16	1799/2079	1307/1309	987/877	769/616	612/449	496/337	408/259	285/163	

Notes:

- The composite deck-slab design is based on tested performance and engineering analysis in accordance Section 7.6.1 of CSSBI 12M-2018.
- For high loads long term concrete creep should be considered.
- Use Composite Deck-Slab Strength Web Based Solutions for alternate slabs.

2VLI-36/2VLJ-36 COMPOSITE DECK-SLABS

2VLI-36/2VLJ-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 WWR for Temperature and Shrinkage
Normal Weight Concrete (145 pcf)				
4	2	0.93	0.028	6x6-W1.4xW1.4
4½	2½	1.08	0.028	6x6-W1.4xW1.4
5	3	1.23	0.028	6x6-W1.4xW1.4
5½	3½	1.39	0.041	6x6-W2.1xW2.1
6	4	1.54	0.055	6x6-W2.9xW2.9
6½	4½	1.70	0.077	6x6-W4.0xW4.0
Light Weight Concrete (110 pcf)				
4	2	0.93	0.028	6x6-W1.4xW1.4
4½	2½	1.08	0.028	6x6-W1.4xW1.4
5	3	1.23	0.028	6x6-W1.4xW1.4
5¼	3¼	1.31	0.034	6x6-W1.7xW1.7
5½	3½	1.39	0.041	6x6-W2.1xW2.1
6¼	4¼	1.62	0.069	6x6-W3.5xW3.5

Notes:

1. Recommended temperature and shrinkage reinforcement in accordance with CSSBI S3-08, Table 2.

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