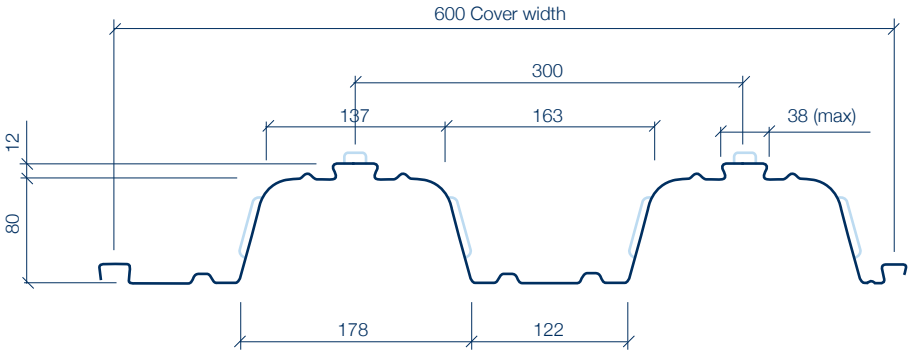
JSW structural metal decking ltd
Engineers in Steel Decking Systems

TR80+ Data Sheet

TR80+



- Un-propped spans in excess of 4.5m
- Reduced concrete volume when compared to other decks available on the market
- 140mm slab depth required to achieve a typical 1 hour fire rating
- Fire Rating up to 4.0hrs
- Soffit 'Wedge Nut' fixings available with load capacity of up to 1kN
- Acoustic Robust Solution – Refer 'Robust Standard Details'

TR80+ Section Properties

Nominal Thickness	Design Thickness (Bare Steel)	Grade	Depth of Profile	Weight of Profile		Height of Neutral Axis	Area of Steel	Moment of Inertia
mm	mm	N/mm²	mm	kg/m²	kN/m²	mm	mm²/m	cm⁴/m
0.9	0.86	S350	80 / 92*	11.37	0.112	42.3	1385	172.9
1.0	0.96	S350	80 / 92*	12.59	0.123	42.4	1539	192.3
1.2	1.16	S350	80 / 92*	15.10	0.148	42.5	1860	231.1

Note: Figures against depth of profile indicate the nominal depth, with overall depth (including height of re-entrant) marked *.

Concrete Volume and Weight

Slab Depth	Volume of Concrete	Weight of Concrete (Normal Weight)		Weight of Concrete (Lightweight)	
mm	m³/m²	Wet (kN/m²)	Dry (kN/m²)	Wet (kN/m²)	Dry (kN/m²)
140	0.096	2.26	2.22	1.79	1.70
150	0.106	2.50	2.45	1.98	1.88
160	0.116	2.74	2.68	2.17	2.05
170	0.126	2.97	2.91	2.35	2.23
180	0.136	3.21	3.14	2.54	2.41
200	0.156	3.68	3.60	2.91	2.76
225	0.181	4.27	4.18	3.38	3.20
250	0.206	4.86	4.76	3.85	3.64

Deflection
This table is based on concrete poured to a constant thickness and does not take account for deflection of the decking or supporting beams. (as a guide, to account for the deflection of the decking a concrete volume of span/250 should be added to the figures indicated in the table).

Concrete Weight
These tables indicate concrete weight only and do not include the weight of decking or reinforcement.
Concrete weights are based on the concrete densities specified in BS5950 Part 4 clause 3.3.3 as follows:

Normal Weight Concrete - 2400kg/m³ (wet) and 2350 kg/m³ (dry).
Lightweight Concrete - 1900kg/m³ (wet) and 1800 kg/m³ (dry).

TR80+ Load Span Tables (Normal Weight Concrete) – Steel Grade S350

Maximum spans (m) using Normal Weight Concrete (wet density 2400 kg/m³) for S350 grade steel.

Span Type	Fire Rating (hours)	Slab Depth (mm)	Mesh	Maximum Permissible Span (m)											
				0.9mm Gauge				1.0mm Gauge				1.2mm Gauge			
				Total Unfactored Applied Load (kN/m²)											
				3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0
Single Span	1.0	140	A193	3.92	3.92	3.47	3.04	4.21	4.21	3.54	3.10	4.39	4.39	3.67	3.22
		160	A193	3.73	3.73	3.73	3.28	4.02	4.02	3.92	3.35	4.23	4.23	4.06	3.48
		200	A252	3.42	3.42	3.42	3.42	3.69	3.69	3.69	3.69	3.98	3.98	3.98	3.98
	1.5	150	A193	3.82	3.78	3.10	2.74	4.12	3.81	3.15	2.78	4.31	3.88	3.23	2.87
		175	A193	3.61	3.61	3.42	3.01	3.89	3.89	3.46	3.05	4.13	4.13	3.55	3.14
		200	A252	3.42	3.42	3.42	3.42	3.69	3.69	3.69	3.68	3.98	3.98	3.98	3.73
	2.0	160	A193	3.73	3.36	2.85	2.53	3.98	3.37	2.87	2.56	3.96	3.41	2.92	2.60
		175	A193	3.61	3.61	3.02	2.68	3.89	3.63	3.04	2.71	4.13	3.61	3.09	3.75
		200	A252	3.42	3.42	3.42	3.21	3.69	3.69	3.69	3.22	3.98	3.98	3.74	3.24
Double Span	1.0	140	A193	4.42	3.90	3.33	2.96	4.59	3.98	3.40	3.02	4.70	4.13	3.53	3.14
		160	A193	4.18	4.16	3.55	3.17	4.49	4.24	3.63	3.24	5.02	4.41	3.78	3.37
		200	A252	3.78	3.78	3.78	3.78	4.12	4.12	4.12	3.85	4.62	4.62	4.48	3.99
	1.5	150	A193	3.95	3.50	3.01	2.69	4.00	3.55	3.06	2.73	4.11	3.65	3.15	2.82
		175	A193	4.01	3.78	3.26	2.92	4.31	3.83	3.32	2.97	4.42	3.94	3.42	3.07
		200	A252	3.77	3.77	3.77	3.37	4.12	4.12	3.82	3.41	4.62	4.54	3.91	3.51
	2.0	160	A193	3.60	3.21	2.78	2.49	3.63	3.24	2.81	2.52	3.68	3.30	2.86	2.57
		175	A193	3.77	3.37	2.92	2.63	3.79	3.40	2.95	2.65	3.85	3.45	3.01	2.71
		200	A252	3.77	3.77	3.41	3.06	4.12	3.97	3.44	3.08	4.48	4.01	3.48	3.13
Double Span (Propped)	1.0	140	A393	5.02	**4.49**	**3.67**	**3.15**	5.09	4.57	**3.80**	**3.27**	5.23	4.70	**4.05**	**3.50**
		160	A393	5.24	4.74	**4.04**	**3.48**	5.32	4.81	**4.18**	**3.61**	5.47	4.95	4.33	**3.86**
		200	2 x A252	5.42	5.40	**4.67**	**4.05**	5.98	5.48	**4.82**	**4.19**	6.14	5.63	4.99	**4.47**
	1.5	150	A393	4.64	4.18	3.65	3.28	4.69	4.22	3.69	3.31	4.78	4.31	3.76	3.38
		175	A393	4.92	4.47	3.93	3.55	4.97	4.52	3.97	3.59	5.08	4.61	4.06	3.67
		200	2 x A252	5.25	4.81	4.26	3.87	5.32	4.87	4.32	3.92	5.54	5.07	4.50	4.09
	2.0	160	A393	4.39	3.97	3.47	3.13	4.42	3.99	3.50	3.15	4.47	4.04	3.54	3.19
		175	2 x A252	4.58	4.16	3.66	3.31	4.61	4.19	3.69	3.33	4.72	4.29	3.78	3.42
		200	2 x A252	4.85	4.43	3.93	3.57	4.88	4.47	3.96	3.60	4.95	4.53	4.02	3.65

Design Table Limits – Criteria

Typically, spans are governed by the maximum 'un-propped' condition at Construction Stage, except where values are for propped spans and/or are indicated as follows:

Spans shown in **red** indicate where spans are limited by the fire condition, greater spans may be achievable by either increasing mesh size or addition of bottom reinforcement – refer JSWSMD Deck Design Software or contact JSWSMD Technical Department.

Spans shown in **blue** indicate where spans are limited by the composite/normal stage conditions, greater spans may be achievable where shear studs are provided. Refer JSWSMD Deck Design Software or Contact JSWSMD Technical Department.

TR80+ Fire Insulation Thickness

Minimum Insulation Thickness (x) of Concrete (mm)					
Fire Rating	1 hr	1.5 hr	2 hr	3 hr	4 hr
NWC	60	70	80	115	130
LWC	60	70	80	100	115

The image and table above details the minimum insulation thickness required to suit fire design criteria – in accordance with BS5950 Part 8 or clarified by further test information.

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