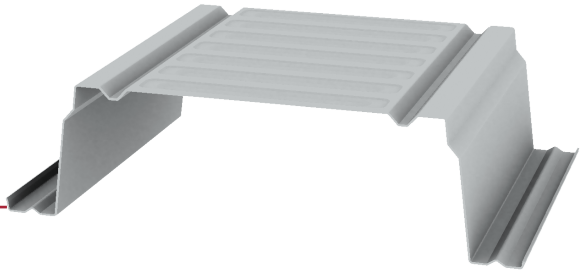
SMD®
Structural Floor and Roof Solutions

Product Data Sheet Profile Details and Sectional Properties

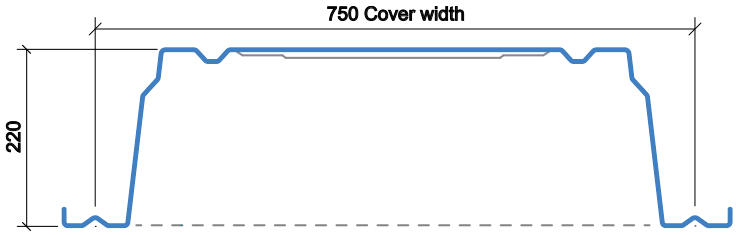
TR220™

Floor deck profile



Deck profile

The additive floor TR220 combines high strength of the 220mm deep steel deck profile with the performance of a ribbed reinforced concrete slab to provide a long span floor solution. The use of TR220 installed to bottom flanges provides a slim floor construction to reduce the structural zone without the need for intermediate supports.



Options

- Two steel thicknesses provide design flexibility
- Un-propped spans up to 6m
- Lightweight compared to other long-span flooring solutions
- Reduces structural floor zone, utilising slab depth within beam web
- Option to support on slim floor beam or steel wings
- Available in plain galvanised or a selection of soffit colours

Concrete volume and weight

Slab Depth mm	Volume of Concrete m^3/m^2	Weight of Concrete (Normal Weight) Wet (kN/m^2)	Dry (kN/m^2)
300	0.117	3.04	2.93
310	0.127	3.30	3.18
320	0.137	3.56	3.43
330	0.147	3.82	3.68
340	0.157	4.08	3.93
350	0.167	4.34	4.18
360	0.177	4.60	4.43
370	0.187	4.86	4.68
380	0.197	5.12	4.93
390	0.207	5.38	5.18
400	0.217	5.64	5.43

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). Concrete Weight – These tables indicate concrete and reinforcement weight only, they do not include the weight of the deck. Concrete weights are based on the concrete densities specified in BS EN 1991-1-1 as follows: Normal Weight Concrete – 26kN/m³ (wet) and 25 kN/m³ (dry).

Profile properties

Nominal Thickness mm	Design Thickness (bare steel) mm	Available Grades N/mm2	Depth of Profile mm	Weight of Profile kg/m^2	Weight of Profile kN/m^2	Height of Neutral axis mm	Area of Steel mm^2/m	Moment of Inertia cm^4/m
1.13	1.09	350	220	14.8	0.15	159.9	1681	1374.2
1.25	1.21	350	220	16.4	0.16	159.9	1866	1525.5

TR220™ Load tables

Steel Grade S350 – Normal Weight Concrete

Total Unfactored Applied Load (kN/m²) Maximum Permissible Span (m)

Span Condition	Fire Rating (hours)	Slab Depth (mm)	Bar Axis (mm)	Mesh	1.13mm Gauge				1.25mm Gauge			
					3.5	5.0	7.5	10.0	3.5	5.0	7.5	10.0
Single	1.0	300	70	A193	5.75 (16)	5.64 (16)	5.75 (20)	5.58 (20)	5.95 (16)	5.64 (16)	5.95 (20)	5.58 (20)
		310	70	A193	5.65 (16)	5.65 (16)	5.65 (20)	5.65 (20)	5.85 (16)	5.67 (16)	5.85 (20)	5.65 (20)
		320	70	A252	5.55 (16)	5.55 (16)	5.55 (20)	5.55 (20)	5.75 (16)	5.69 (16)	5.75 (20)	5.71 (20)
		350	70	A393	-	-	-	-	5.55 (16)	5.55 (16)	5.55 (20)	5.55 (20)
		375	70	A393	-	-	-	-	5.35 (16)	5.35 (16)	5.35 (20)	5.35 (20)
		400	70	A393	-	-	-	-	5.25 (16)	5.25 (16)	5.25 (20)	5.25 (20)
	1.5	320	90	A252	5.36 (20)	4.90 (20)	5.42 (25)	4.92 (25)	5.36 (20)	4.90 (20)	5.42 (25)	4.92 (25)
		330	90	A252	5.38 (20)	4.93 (20)	5.47 (25)	4.98 (25)	5.38 (20)	4.93 (20)	5.47 (25)	4.98 (25)
		340	90	A252	-	-	-	-	5.39 (20)	4.96 (20)	5.52 (25)	5.03 (25)
		350	90	A393	-	-	-	-	5.40 (20)	4.98 (20)	5.55 (25)	5.08 (25)
		375	90	A393	-	-	-	-	5.35 (20)	5.04 (20)	5.35 (25)	5.20 (25)
		400	90	A393	-	-	-	-	5.25 (20)	5.09 (20)	5.25 (25)	5.25 (25)
	2.0	340	120	A252	-	-	-	-	5.16 (25)	4.75 (25)	5.40 (32)	4.92 (32)
		350	120	A252	-	-	-	-	5.19 (25)	4.78 (25)	5.46 (32)	4.99 (32)
		360	120	A393	-	-	-	-	5.20 (25)	4.81 (25)	5.45 (32)	5.04 (32)
		370	120	A393	-	-	-	-	5.23 (25)	4.85 (25)	5.35 (32)	5.10 (32)
		375	120	A393	-	-	-	-	5.24 (25)	4.86 (25)	5.35 (32)	5.13 (32)
		400	120	A393	-	-	-	-	5.25 (25)	4.94 (25)	5.25 (32)	5.25 (32)
Single (Propped)	1.0	300	70	A393	7.70 (20)	7.00 (20)	7.35 (25)	6.56 (25)	7.70 (20)	7.00 (20)	7.55 (25)	6.73 (25)
		310	70	A393	7.72 (20)	7.04 (20)	7.40 (25)	6.62 (25)	7.72 (20)	7.04 (20)	7.59 (25)	6.78 (25)
		320	70	2×A252	7.72 (20)	7.07 (20)	7.44 (25)	6.67 (25)	7.72 (20)	7.07 (20)	7.63 (25)	6.83 (25)
		350	70	2×A393	-	-	-	-	7.73 (20)	7.14 (20)	7.75 (25)	6.97 (25)
		375	70	2×A393	-	-	-	-	7.76 (20)	7.21 (20)	7.84 (25)	7.08 (25)
		400	70	2×A393	-	-	-	-	7.79 (20)	7.27 (20)	7.93 (25)	7.19 (25)
	1.5	320	90	2×A252	6.66 (25)	4.89 (20)	5.41 (25)	6.25 (32)	6.66 (25)	6.09 (25)	5.41 (25)	6.25 (32)
		330	90	2×A252	6.68 (25)	4.92 (20)	5.46 (25)	6.33 (32)	6.68 (25)	6.13 (25)	5.46 (25)	6.33 (32)
		340	90	2×A252	6.70 (25)	4.95 (20)	5.51 (25)	6.40 (32)	6.70 (25)	6.17 (25)	5.51 (25)	6.40 (32)
		350	90	2×A393	-	-	-	-	6.70 (25)	6.18 (25)	5.54 (25)	6.45 (32)
		375	90	2×A393	-	-	-	-	6.74 (25)	6.26 (25)	5.65 (25)	6.61 (32)
		400	90	2×A393	-	-	-	-	6.78 (25)	6.33 (25)	5.74 (25)	6.75 (32)
	2.0	340	120	2×A252	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)
		350	120	2×A393	-	-	-	-	5.15 (25)	4.76 (25)	5.44 (32)	4.97 (32)
		360	120	2×A393	-	-	-	-	5.18 (25)	4.79 (25)	5.49 (32)	5.03 (32)
		370	120	2×A393	-	-	-	-	5.20 (25)	4.83 (25)	5.55 (32)	5.09 (32)
		375	120	2×A393	-	-	-	-	5.22 (25)	4.84 (25)	5.57 (32)	5.12 (32)
		400	120	2×A393	-	-	-	-	5.27 (25)	4.92 (25)	5.70 (32)	5.25 (32)
Single (Propped x2)*	1.0	300	70	A393	7.70 (20)	7.00 (20)	7.35 (25)	6.56 (25)	7.70 (20)	7.00 (20)	7.55 (25)	6.73 (25)
		310	70	A393	7.72 (20)	7.04 (20)	7.40 (25)	6.62 (25)	7.72 (20)	7.04 (20)	7.59 (25)	6.78 (25)
		320	70	2×A252	7.72 (20)	7.07 (20)	7.44 (25)	6.67 (25)	7.72 (20)	7.07 (20)	7.63 (25)	6.83 (25)
		350	70	2×A393	-	-	-	-	7.73 (20)	7.14 (20)	7.75 (25)	6.97 (25)
		375	70	2×A393	-	-	-	-	7.76 (20)	7.21 (20)	7.84 (25)	7.08 (25)
		400	70	2×A393	-	-	-	-	7.79 (20)	7.27 (20)	7.93 (25)	7.19 (25)
	1.5	320	90	2×A252	6.66 (25)	4.89 (20)	5.41 (25)	6.25 (32)	6.66 (25)	6.09 (25)	5.41 (25)	6.25 (32)
		330	90	2×A252	6.68 (25)	4.92 (20)	5.46 (25)	6.33 (32)	6.68 (25)	6.13 (25)	5.46 (25)	6.33 (32)
		340	90	2×A252	6.70 (25)	4.95 (20)	5.51 (25)	6.40 (32)	6.70 (25)	6.17 (25)	5.51 (25)	6.40 (32)
		350	90	2×A393	-	-	-	-	6.70 (25)	6.18 (25)	5.54 (25)	6.45 (32)
		375	90	2×A393	-	-	-	-	6.74 (25)	6.26 (25)	5.65 (25)	6.61 (32)
		400	90	2×A393	-	-	-	-	6.78 (25)	6.33 (25)	5.74 (25)	6.75 (32)
	2.0	340	120	2×A252	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)	5.14 (25)	4.73 (25)	5.39 (32)	4.91 (32)
		350	120	2×A393	-	-	-	-	5.15 (25)	4.76 (25)	5.44 (32)	4.97 (32)
		360	120	2×A393	-	-	-	-	5.18 (25)	4.79 (25)	5.49 (32)	5.03 (32)
		370	120	2×A393	-	-	-	-	5.20 (25)	4.83 (25)	5.55 (32)	5.09 (32)
		375	120	2×A393	-	-	-	-	5.22 (25)	4.84 (25)	5.57 (32)	5.12 (32)
		400	120	2×A393	-	-	-	-	5.27 (25)	4.92 (25)	5.70 (32)	5.25 (32)

Parameters assumed for span tables

Figures contained in this table are based on design to BS EN 1993-1-3 unless noted otherwise. For extensive calculations covering specific design cases contact SMD Technical Team.

Spans: Measured centre to centre of supports.

Bearing: Assumed support width of 400mm with minimum deck bearing of 50mm.

Concrete: Normal concrete NC30/37. The wet weight of reinforced concrete is taken to be 26kN/m³ and dry concrete 25kN/m³.

Bar: Figures in brackets indicate diameter of bottom bar reinforcement required, 1 bar per trough.

***Propping:** Where propping is indicated, additional support devices may be required as part of the propping system, contact SMD Technical team for guidance.

ArcelorMittal