

Building Systems UK

A Tata Steel enterprise



RoofDek manual

Structural roof decking and trays



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Building Systems UK

Tata Steel is one of Europe's leading steel producers. Our comprehensive range of high quality products and services are supported by steel making sites in the UK and the Netherlands, a European-wide distribution and service centre network and downstream businesses ranging from tubes and building systems to plating.

Our approach to business is unique. We believe our strength is how we build collaborative relationships that create new success for our customers, adding value to their business and helping them to perform in their markets.

As a company, we are dedicated to managing our operations responsibly and to continuously improving our performance. We operate in a way that is safe for our people and which respects the environment, with care towards the communities surrounding our operations and beyond.

Sustainability

Steel is an essential material, intrinsic to our way of life and to the products society will demand in a sustainable future. Steel is a material that is used, not consumed. It is recycled and used again, without any loss of quality, time after time. At Tata Steel, we are committed to making the products society needs and to making them in the most responsible way possible.

This means, practically, that we commit to:

- Producing steel products for the future.
- Investing in sustainable steel making.
- Improving our existing processes.
- Facilitating the recycling loop.

Left:

South Devon College, Paignton
Architect: LHC
Image © Alamy

Cover photo:

Waitrose, Bagshot
Decking installer: Progressive
Image © Forum Architecture Ltd



Introducing RoofDek

Tata Steel offers the most comprehensive range of structural roof decking all under one UK manufacturer's roof. We also supply additional profiles to complement our UK manufactured range from Tata Steel Europe.

Key benefits: RoofDek

- Technical support with a free diaphragm design service and RoofDek Analysis Software, powered by Tekla Tedds, to aid design.
- The most extensive cost-effective and efficient range of roof deck profiles in the UK. Huge span range from 1m to 12m.
- Ten unique trapezoidal deck profiles and three structural liner tray profiles in three steel and two aluminium gauges enable effective and efficient design.
- Colorcoat HPS200 Ultra® pre-finished steel soffits offer significant extra protection and corrosion resistance for aggressive internal environments.
- Sustainable roof deck: Factory produced with the backing of a robust quality management and environmental management standards. Full traceability of all components. Certified 'Very Good' to BREs responsible sourcing standard BES 6001.

Technically the best, with a structural design service providing diaphragm design for decks and full support calculations for all profiles. With decks ranging from 32mm to 210mm deep and a range of structural liner trays, we support all types of insulated roof systems:

- Single ply membrane.
- Standing seam systems.
- Green and brown roofs.
- Built-up cladding
- Slates and tiles.
- Three ply felt.
- Asphalt.

FM (Factory Mutual) Approved RoofDek profiles

A range of RoofDek profiles have been FM approved in particular gauges and finishes. FM design is carried out to specific standards, the product selectors and load/span tables in this manual do not apply, please refer to FM Approval for RoofDek, page 23 within Section 2 Design details.



Maiden Erlegh School, Reading

Decking installer: Hodge Single Ply

RoofDek

Professional support

Tata Steel maintains a friendly technical help desk which is freely available to all Architects, Engineers and Contractors to assist with all aspects of RoofDek trapezoidal deck and liner tray design.

Help desk: 01244 892199
www.tatasteelconstruction.com/roofdek
E: technical.structuralproducts@tatasteeleurope.com

Design calculations and diaphragm design

The Technical Department are able to provide design calculations for live, dead, wind and snow drift loads and where required, diaphragm design calculations.

Specification service

The Tata Steel RoofDek team provide a comprehensive specification service. Assistance in creating specifications for RoofDek and liner trays can be provided to ensure the correct deck or liner tray is specified for the right application.

RoofDek Analysis Software

RoofDek Analysis Software has been created in partnership with leading international developer Trimble, best known for the very widely-adopted Tekla Tedds structural design software. With all calculations compliant with Eurocodes, the package enables structural engineers and designers to carry out full deck analysis to achieve optimum design and cost efficiencies.

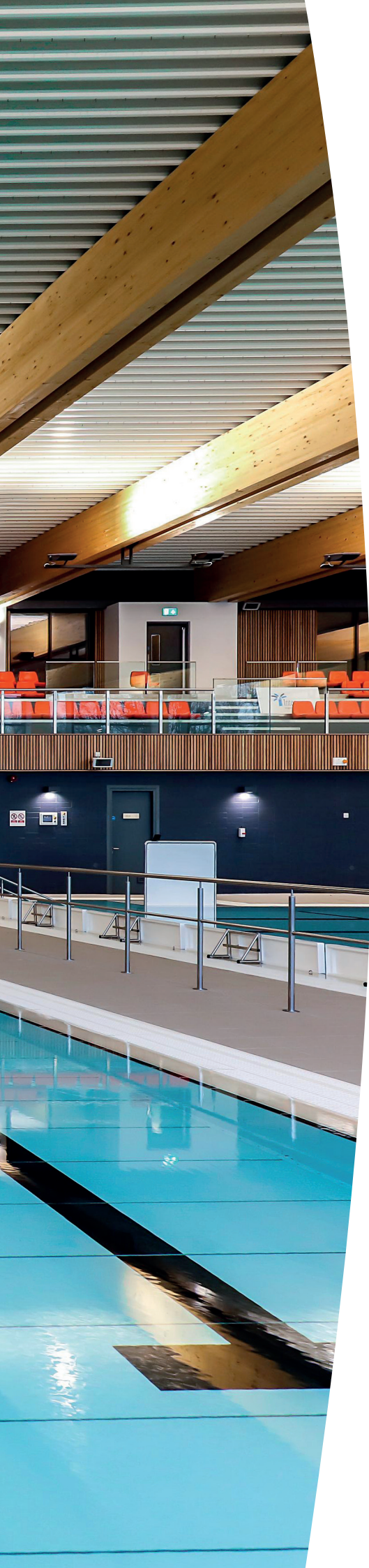
To download the RoofDek software, visit www.tatasteelconstruction.com/roofdek

On-line RoofDek selector

RoofDek on-line selector provides a quick and easy method to find the right RoofDek profile for any application, with a calculation summary available for any particular selection made.

www.tatasteelconstruction.com/roofdek





Section 1

Product selectors

RoofDek trapezoidal profiles D32S to D60

Developed to optimise the designer's needs for efficiency, aesthetics and structural performance

Load/span figures

These tables are based on S280 steel and a minimum of 165 MPa aluminum and a combined imposed load of 1.50kN/m^2 , a construction line load of 1.5kN/m and a deflection limit of $L/200$. The factor of safety used is 1.5 for live load and 1.35 for dead load. Where actual design loads exceed these, the spans must be reduced. Subject to satisfactory fixings, the decks will resist wind uplift to at least 1.50kN/m^2 to a deflection limit of $L/150$.

Full load/span tables are shown in Section 4.

Maximum cantilevers assume 0.9kN point load on the end, with the adjacent span being the single span as shown in the table. The end of the cantilever must be stiffened with an angle

flashing.

Self curving

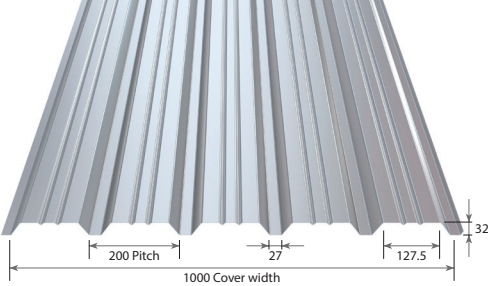
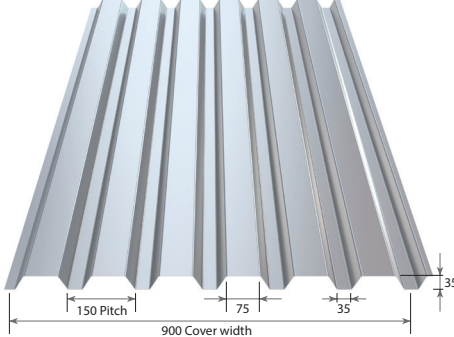
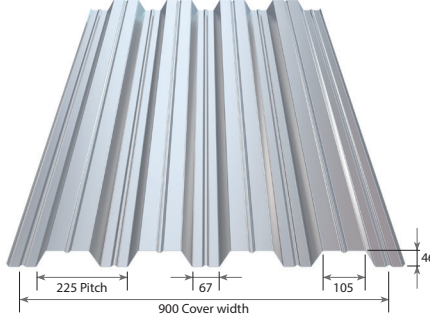
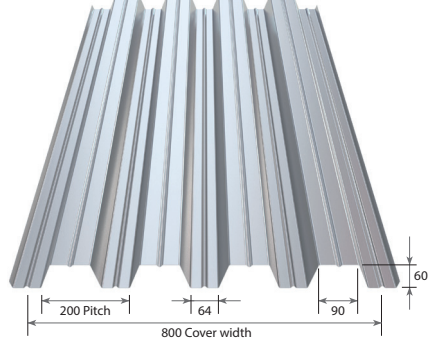
Self curving can induce stress marking in the sheet. The radius limits suggested in the tables reduce the visible effect of this; however some perceptible distortion may occur.

Factory curving

RoofDek D35 and D46 can be supplied crimp curved down to 400mm radius. The maximum crimped curve sheet length is 5m with a minimum straight 200mm lead in and 200mm lead out leg.



RoofDek trapezoidal profiles D32S to D60

Profile		Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
D32S		0.70mm steel. Interior finishes available, Colorcoat® PE15 liner and metallic coating	6.66	1789	2152	40	408
		0.90mm steel. Interior finishes available, Colorcoat® PE15 liner and metallic coating	8.57	1941	2603	45	485
		1.20mm steel. Interior finishes available, Colorcoat® PE15 liner and metallic coating	11.44	2104	2822	50	526
D35		0.70mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra®, Colorcoat Prisma® and metallic coating	7.29	1879	2519	40 (F0.40)*	470
		0.90mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	9.38	2114	2835	50	529
		1.20mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	12.52	2404	3224	60	601
		0.90mm aluminium.	3.24	1514	2054	40 (F0.40)*	378
		1.20mm aluminium.	4.32	1690	2267	50	423
D46		0.70mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	7.26	2433	3256	55 (F0.40)*	608
		0.90mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra®, Colorcoat Prisma® and metallic coating	9.34	2708	3631	65 (F0.40)*	677
		1.20mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	12.47	2994	4015	75	749
		0.90mm aluminium.	3.23	1865	2501	55 (F0.40)*	466
		1.20mm aluminium.	4.30	2059	2761	65	515
D60		0.70mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra®, Colorcoat Prisma® and metallic coating	8.41	3022	4038	70	756
		0.90mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra® and metallic coating	10.82	3348	4489	80	837
		1.20mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	14.44	3672	4923	85	918
		0.90mm aluminium.	3.74	2300	3084	70	575
		1.20mm aluminium.	4.98	2542	3408	80	635

Aluminium and other material specifications not shown here are available subject to minimum order quantity.
 Load/spans are calculated to Eurocodes 3 and 9, however a fixings check is also required.
 D32S and D35 are assumed to bear onto a 65mm purlin flange, D46 and D60 onto 100mm min. flange steel beam.
 All weights are based on Z275 galv and ARS aluminium (coating weight not included)

*(F0.40) - Factory crimp curving available to 0.40m radius.

RoofDek trapezoidal profiles D100 to D210

Designed for exceptional strength and span capability for all roofing types

Load/span figures

These tables are based on S280 steel and a minimum of 165 MPa aluminum and a combined imposed load of 1.50kN/m^2 , a construction line load of 1.5kN/m and a deflection limit of $L/200$. The factor of safety used is 1.5 for live load and 1.35 for dead load. Where actual design loads exceed these, the spans must be reduced. Subject to satisfactory fixings, the decks will resist wind uplift to at least 1.50kN/m^2 to a deflection limit of $L/150$.

Full load/span tables are shown in Section 4.

Sheet lengths – extended end laps

Sheet lengths in excess of 12 metres are not practical for installation on-site and may also be subject to delivery restrictions.

Extended end laps can be used to create a double span whilst keeping the deck length to a minimum. If a deck length in excess of 12 metres is required, please contact our Technical Department for assistance.



RoofDek trapezoidal profiles D100 to D200

Profile	Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
D100	0.70mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra®, Colorcoat Prisma® and metallic coating	9.61	4409	5345	110	1102
	0.90mm steel. Interior finishes available, Colorcoat® PE15, Colorcoat HPS200 Ultra® and metallic coating	12.37	4788	6420	120	1197
	1.20mm steel. Interior finishes available, Colorcoat® PE15 and metallic coating	16.37	5245	7034	125	1311
	0.90mm aluminium.	4.27	3298	4278	110	825
	1.20mm aluminium.	5.65	3642	4883	120	910
D137	1.25mm steel. Colorcoat® PE15 liner.	15.78	6176	8281	180	1544
	1.2mm aluminium.	5.23	4250	5100	110	1350
D153	0.75mm steel. Interior liner	10.50	5162	5536	165	1291
	0.88mm steel. Interior liner	12.33	5946	6697	175	1487
	1.25mm steel. Interior liner	17.54	6737	9034	195	1684
D159	1.25mm steel. Interior Colorcoat® PE15 liner.	19.19	7101	9522	220	1775
	1.50mm aluminium.	7.94	5243	7031	200	1311
D200	0.88mm steel. Interior liner	12.84	5698	7125	260	1424
	1.25mm steel. Interior liner	17.12	8403	10511	280	2101
	1.50mm steel. Interior liner	21.41	8947	11997	300	2237

Aluminium and other material specifications not shown here are available subject to minimum order quantity.
 Colorcoat® pre-finished steel is Colorcoat HPS200 Ultra®, available single or double-sided on selected specifications.
 Load/spans are calculated to Eurocodes 3 and 9, however a fixings check is also required.
 The decks are assumed to be bearing onto 100mm min. flange steel beam.
 All weights are based on Z275 galv and ARS aluminium (coating weight not included).

Acoustic RoofDek trapezoidal profiles D46 to D100

Perforated web roof decking to provide acoustic absorption, acoustic reduction and structural support

Tata Steel offers a range of tried and tested acoustic profiles which achieve various sound absorption ratings from A–D. Please refer to pages 26/27 within Section 2, Design details and/or contact our Technical Department for more information.

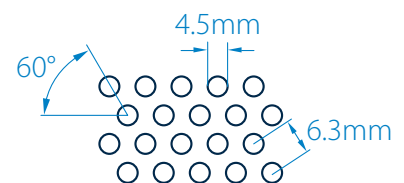
The decks illustrated on these pages are available with perforated webs to provide acoustic absorption. Two different open area percentage figures are in general use and both are shown. The percentage of exposed area (EA) is the open area divided by the exposed area of steel following around the profiles. The percentage of cover area (CA) is the open area divided by the plan area of the soffit.

The perforating patterns are illustrated here. Fully perforated deck may be available, please contact the Technical Department if required.

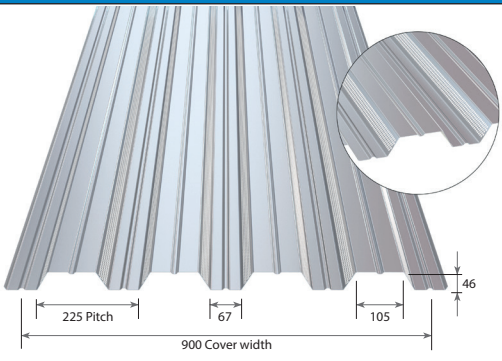
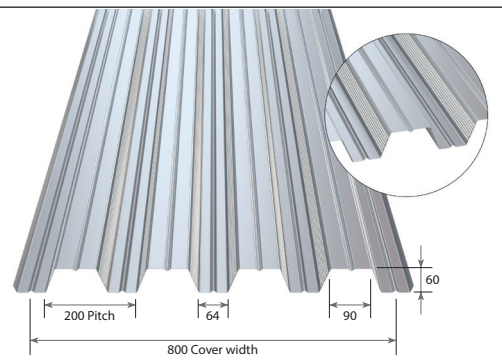
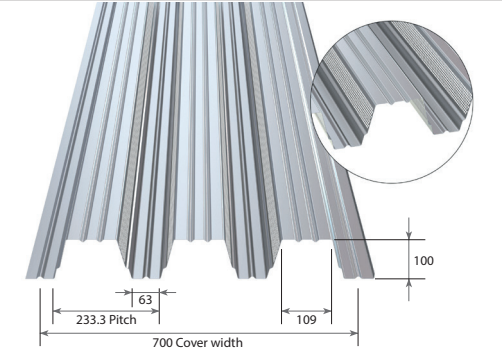
Full load/span tables are shown in Section 4.

D46, D60 and D100 use perforating pattern 4546

4.5mm holes at 6.3mm triangular centres.
Pattern open area 46%



Acoustic RoofDek trapezoidal profiles D46 to D100

Profile	Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
D46 perforated 9.94% / EA 11.05% / CA 	0.70mm steel. Interior Colorcoat® PE15 liner or metallic coating.	6.43	1614	2152	55 (F0.40)*	403
	0.90mm steel. Interior Colorcoat® PE15 liner or metallic coating.	8.27	2667	3360	65 (F0.40)*	667
	1.20mm steel. Interior Colorcoat® PE15 liner or metallic coating.	11.04	2959	3967	75	740
	0.90mm aluminium.	2.86	1202	1602	55 (F0.40)*	300
	1.20mm aluminium.	3.81	2031	2709	65	508
D60 perforated 13.17% / EA 16.46% / CA 	0.70mm steel. Interior Colorcoat® PE15 liner or metallic coating.	7.07	1647	2196	70	412
	0.90mm steel. Interior Colorcoat® PE15 liner or metallic coating.	9.11	2725	3633	80	681
	1.20mm steel. Interior Colorcoat® PE15 liner or metallic coating.	12.15	3621	4856	85	905
	0.90mm aluminium.	3.14	1232	1642	70	308
	1.20mm aluminium.	4.19	2123	2831	80	531
D100 perforated 12.00% / EA 17.15% / CA 	0.90mm steel. Interior Colorcoat® PE15 liner or metallic coating.	10.88	3574	4765	120	893
	1.20mm steel. Interior Colorcoat® PE15 liner or metallic coating.	14.40	5212	6881	125	1303
	0.90mm aluminium.	3.76	1647	2196	110	412
	1.20mm aluminium.	5.01	3062	4083	120	766

EA = Exposed Area, CA = Cover area (see notes opposite)

Aluminium and other material specifications not shown here are available subject to minimum order quantity.

Colorcoat® pre-finished steel is Colorcoat HPS200 Ultra®, available single or double-sided.

Load/spans are calculated to Eurocodes 3 and 9, however a fixings check is also required.

The decks are assumed to be bearing onto 100mm min. flange steel beam.

All weights are based on Z275 galv and ARS aluminium (coating weight not included)

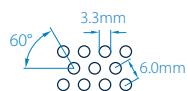
*(F0.40) - Factory crimp curving available to 0.40m radius.

Acoustic RoofDek trapezoidal profiles D137 to D200

Perforated web roof decking to provide acoustic absorption, acoustic reduction and structural support

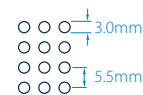
D137 and D159 use perforating pattern 3327

3.3mm holes at 6.0mm triangular centres.
Pattern open area 27%

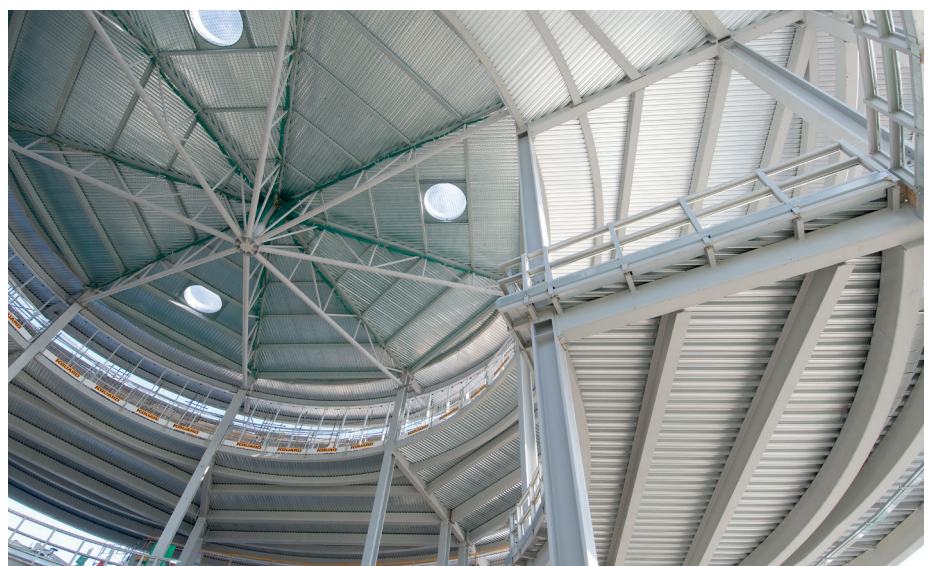


D153 and D200 use perforating pattern P3L-S

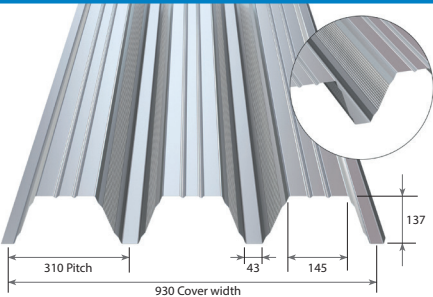
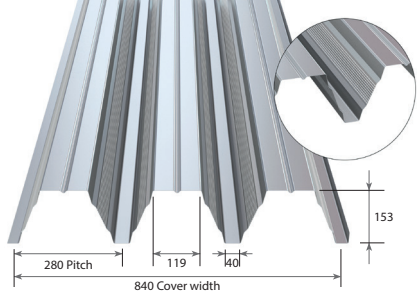
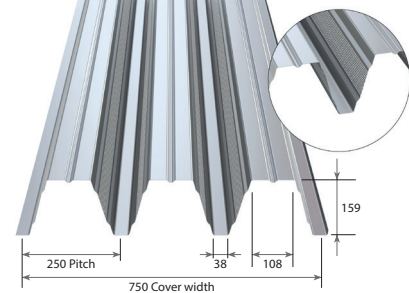
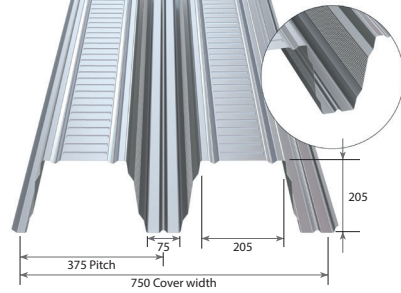
3.0mm holes at 5.5mm square centres.
Pattern open area 23.5%.



Full load/span tables are shown in Section 4.



Acoustic RoofDek trapezoidal profiles D137 to D200

Profile		Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
D137 perforated 6.52% / EA 9.32% / CA		1.25mm steel. Interior Colorcoat® PE15 liner.	14.75	6155	7598	180	1539
		1.20mm aluminium.	4.88	3700	4300	170	1250
D153 perforated 6.2% / EA 11.0% / CA		0.75mm steel. Interior liner	9.86	3421	4562	165	855
		0.88mm steel. Interior liner	11.58	5012	5786	175	1253
		1.25mm steel. Interior liner	16.46	6730	8550	195	1682
D159 perforated 7.22% / EA 9.63% / CA		1.25mm steel. Interior Colorcoat® PE15 liner.	17.81	7084	9054	220	1771
		1.50mm aluminium.	7.37	5222	6768	200	1305
D200 perforated 5.0% / EA 10.0% / CA		0.88mm steel. Interior liner	13.13	3583	4778	260	896
		1.25mm steel. Interior liner	18.67	7739	8838	280	1935
		1.50mm steel. Interior liner	22.41	8945	10768	300	2236

EA = Exposed Area, CA = Cover area (see notes opposite)

Aluminium and other material specifications not shown here are available subject to minimum order quantity.

Load spans are calculated to Eurocodes 3 and 9, however a fixings check is also required.

The decks are assumed to be bearing onto 100mm min. flange steel beam.

All weights are based on Z275 galv and ARS aluminium (coating weight not included)

RoofDek liner tray profiles

HLT90/600 to HLT145/600

Structural liner trays provide a neat planar inner surface spanning across the main steels and obviate the need for purlins or cladding rails. They are suitable for both roof and wall cladding.

Load/span figures

These tables are based on a combined imposed load of 1.50kN/m^2 , a construction line load of 1.5kN/m and a deflection limit of $L/200$. The factor of safety used is 1.5 for live load and 1.35 for dead load. Where actual design loads exceed these, the spans must be reduced. Subject to satisfactory fixings, the decks will resist wind uplift to at least 1.50kN/m^2 to a deflection limit of $L/150$.

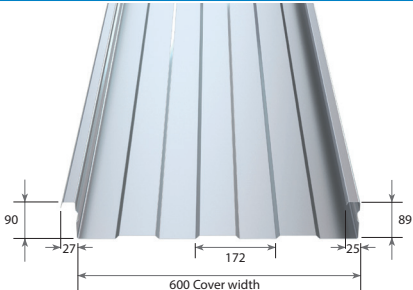
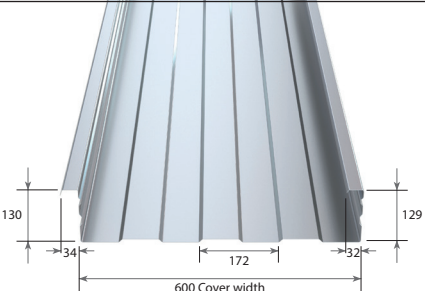
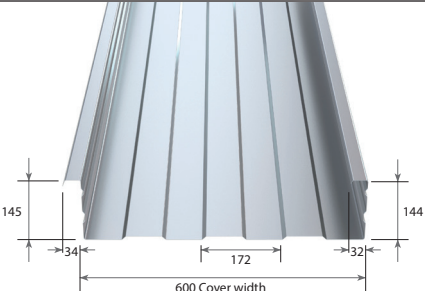
Full load/span tables are shown in Section 4.

Sheet lengths

Sheet lengths in excess of 12 metres are not practical for installation on-site and extended end laps cannot be used with liner trays, so double spans are limited to 6m. (see asterisk in table)



RoofDek liner tray profiles HLT90/600 to HLT145/600

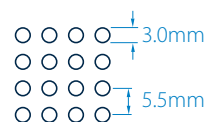
Profile		Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
HLT90/600		0.75mm steel, Interior liner	8.62	3270	2930	–	810
		1.00mm steel, Interior liner	11.49	3890	3900	–	970
		1.25mm steel, Interior liner	14.36	4170	4350	–	1040
HLT130/600		0.75mm steel, Interior liner	9.57	4270	3960	–	1060
		1.00mm steel, Interior liner	12.75	5210	5330	–	1300
		1.25mm steel, Interior liner	15.95	5590	5990	–	1390
HLT145/600		0.75mm steel, Interior liner	9.81	4410	3840	–	1100
		1.00mm steel, Interior liner	13.08	5460	5530	–	1360
		1.25mm steel, Interior liner	16.35	6070	6000*	–	1510

Acoustic RoofDek liner tray profiles

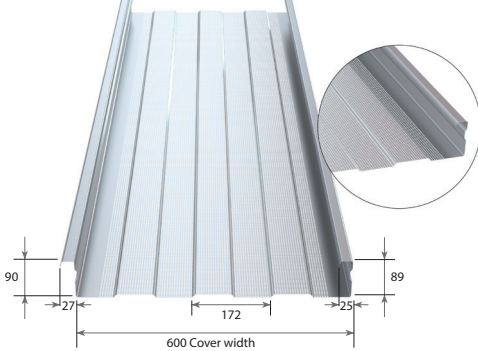
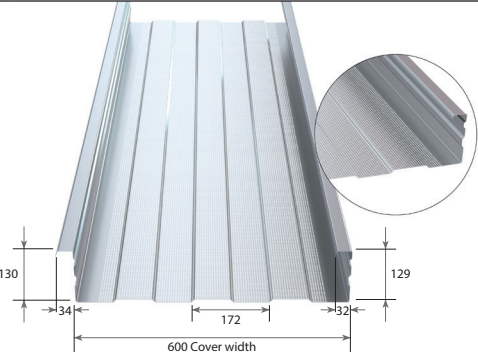
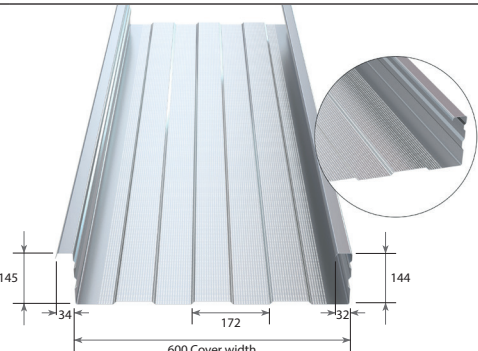
Liner trays use perforating pattern P3L-S

3.0mm holes at 5.5mm square centres.

Pattern open area 23.5%.



Acoustic RoofDek liner tray profiles

Profile		Material specification	Weight (kg/m ²)	Single span (mm)	Double span (mm)	Min. self curve (m)	Cantilever (mm)
HLT90/600 perforated 18.8% / EA 18.8% / CA		0.75mm steel. Interior liner	7.52	3240	2880	–	810
		1.00mm steel. Interior liner	10.02	3550	3850	–	880
		1.25mm steel. Interior liner	12.52	3810	4290	–	950
HLT130/600 perforated 18.8% / EA 18.8% / CA		0.75mm steel. Interior liner	8.47	4160	3630	–	1040
		1.00mm steel. Interior liner	11.28	5060	4940	–	1260
		1.25mm steel. Interior liner	14.12	5420	5620	–	1350
HLT145/600 perforated 18.8% / EA 18.8% / CA		0.75mm steel. Interior liner	8.72	4280	3520	–	1070
		1.00mm steel. Interior liner	11.63	5350	5100	–	1330
		1.25mm steel. Interior liner	14.54	5840	5820	–	1460



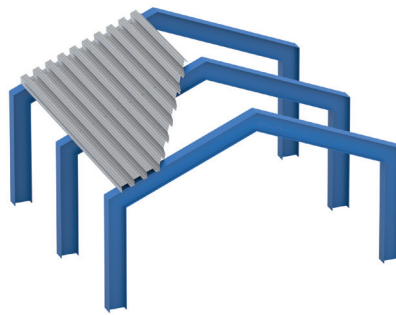


Section 2

Design details

Deck alignment

RoofDek may be laid between main frames (deck across the slope) or onto purlins (deck with the slope)



Material specification

Galvanised steel

Tata Steel Galvatite®, hot dip zinc coated steel BS EN 10346:2015. Guaranteed minimum yield stress 280N/mm². Minimum zinc coating mass 275g/m² total both sides. (Except D137 and D159 which have a guaranteed minimum yield stress 320N/mm²).

Interior liner Colorcoat® PE 15 pre-finished steel (standard decks and D137 and D159)

Tata Steel Colorcoat® PE 15 15µm polyester coating on steel substrate with Galvatite® metallic coating to BS EN 10346:2015, colour: White.

Interior liner Colorcoat® PE 15 pre-finished steel (D153, D200 and liner trays)

Tata Steel Colorcoat® PE 15 15µm polyester coating on steel substrate with Galvatite® metallic coating to BS EN 10346:2015, colour: Hamlet.

Colorcoat HPS200 Ultra® pre-finished steel

Tata Steel Galvalloy® metallic coating made with a special mix of 95% Zinc and 5% Aluminium that conforms to BS EN 10346:2015 is used with Colorcoat HPS200 Ultra® pre-finished steel. Available single sided with coating to interior or double sided (with 100 micron coating facing up).

Colorcoat Prisma® pre-finished steel

Colorcoat Prisma® comes with a Galvalloy metallic coating which is manufactured using a mix of 95% zinc and 5% aluminium that conforms to BS EN 10346:2015. Fully REACH compliant and chromate free.

Aluminium

ARS coated aluminium, alloy grade EN AW-3004 to BS EN 1396. Guaranteed minimum yield strength 180N/mm². Please enquire for the availability of other types of coating or finish if required.

MagiZinc®

A 3-phase system that utilises the electrochemical properties of zinc in combination with the favourable properties that aluminium and magnesium offer to cathodically protect the steel. The addition of magnesium helps to increase the corrosion resistance several times over when compared to standard galvanised coating in standard salt spray testing (ASTM B117).

Point and impact loads

Metal decking may mark if subjected to extreme point or impact load.

Where the sheet is required as an exposed soffit, a thicker gauge should be considered if localised marking is not acceptable.

Exterior soffits

It is recommended that Colorcoat HPS200 Ultra® pre-finished steel is used on exterior soffits. Where the deck runs from internal to external this specification should be used.

Fire performance

Deck performance

Surface spread of flame Class O (best in class to BS 476 part 6 & 7)

Reaction to fire performance dependent upon pre-finished steel product up to A1 rating to BS EN 13501-1 (again best in class and considered non-combustible).

Complete roof construction performance

Ratings for exposure and penetration to fire, dependent on build-up above deck. If required these are gained by testing to BS 476 part 3 or BS EN 1874 test 4.

LPCB system approval

LPCB - Loss Prevention Certification Board- Certificate of Product Approval Certificate Number 460a. To LPS1181 Part 1: Issue 1.2 Grade EXT B RoofDek with mineral wool insulation.

Eurocodes

Design

- BS EN 1993 Eurocode 3: Design of steel structures.
- Part 1-3: Cold-formed thin gauge members and sheeting.
- BS EN 1999 Eurocode 9: Design of aluminium structures.
- Part 1-4: Cold-formed structural sheeting.

Loading

Calculate loading to BS EN 1991 Eurocode1: Basis of design and actions on structures. Part 1-1: BS EN 1991-1-1 General actions – Densities, self-weight, imposed loads for buildings. Part 1-3: BS EN 1991-1-3 General actions – Snow loads. Part 1-4: BS EN 1991-1-4 General actions – Wind actions.

Actions

UK National Annex to Eurocode 1 Actions on structures Part 1-1: General actions – Densities, self-weight, imposed loads for buildings

Table NA.7 – Imposed loads on roofs not accessible except for normal maintenance and repair

Roof slope, α degrees	q_k kN/m ²	Q_k kN
$\alpha < 30^\circ$	0.6	0.9
$30^\circ < \alpha < 60^\circ$	$0.6[(60 - \alpha)/30]$	
$\alpha \geq 60^\circ$	0	

FM Approval for RoofDek

FM design – source of information

A number of Tata Steel RoofDek profiles are FM approved. For design information that applies to FM projects please refer to RoofNav (www.roofnav.com) or contact technical.structuralproducts@tatasteeleurope.com where we can provide you with a specific RoofDek FM specification tailored for your project requirements.

FM Testing

FM impose a strict testing and assessment regime, which includes factory control and inspections. Performance areas include wind uplift, foot traffic loads, insulation support, combustibility, coatings, fixings, live load deflection. It is important to note:

1. FM performance is in excess of the mandatory requirements.
2. FM provides reassurance that products are actually fit for purpose with test data to prove the product meets the standards required.
3. Rigorous comprehensive third party testing is carried out by highly trained engineers and consultants.
4. The audit regime is not limited to product audits but includes manufacturing procedures, raw materials, and factory audits which are carried out initially and on an ongoing basis.
5. FM is recognised worldwide by Engineers, Architects and professional bodies as a mark of quality, safety, reliability, that provides reassurance of a products' fitness for purpose in construction projects.

FM Certificate of Compliance

The following RoofDek specifications have been issued with a Certificate of Compliance to FM Approvals class 4451. For a full copy of the Certificate and the Approval Report, please contact Tata Steel Building Systems.

RoofDek D32S, RoofDek D35, RoofDek D46, RoofDek D60, RoofDek D100

Tata Steel Galvalite®, hot dip zinc coated steel BS EN 10346:2105.

Gauges: 0.9mm nom (0.84mm FM design thickness). 1.2mm nom (1.14mm FM design thickness).

RoofDek D159

Tata Steel Galvalite®, hot dip zinc coated steel BS EN 10346:2015.

Gauge: 1.25mm nom (1.18mm FM design thickness).

FM Standard 4451 Performance requirements satisfy:

- Allowable live load deflection.
- Combustibility from below the roof deck.
- Combination pull out/pull over resistance of fasteners (testing).
- Pull over resistance of fasteners (calculation).
- Side-lap fastener and side-lap crimping and interlocking resistance.
- Fastener pull out resistance for above deck components.
- Steel deck bending stresses under service wind loads.
- Foot traffic resistance of insulation.
- Bearing capacity of insulation.
- Drivability evaluation of fasteners.

FM allowable span tables, fastener specification and application data to FM standards

This information is contained in the Approval Report which must be read in full. Please contact our Technical Department, if you need a copy.

T: 01244 892199

E: technical.structuralproducts@tatasteeleurope.com



Life expectancy of RoofDek and internal environment categories

Establishing the life expectancy of RoofDek for internal environments is a two step process.
(for external environments Colorcoat HPS200 Ultra® is always recommended).

Step 1

Select appropriate indoor ambience category. Indoor ambience is specified in five categories, A1 - A5, Table A.2 in BS EN 10169:2010 Continuously organic coated (coil coated) steel flat products — Technical delivery conditions.

Ambience category	Typical building use	Estimated zinc loss rate
A1 Non aggressive	Offices, Schools, Residential (except kitchens and bathrooms), Dry storage buildings	Up to 0.1 microns per year
A2 Low aggressive	Sport halls, Supermarkets, Cinemas, Theatres, Cold stores	0.1 to 0.7 microns per year
A3 Medium aggressive	Industrial buildings with dry processes, Food processing, Kitchens and bathrooms	0.7 to 2.1 microns per year
A4 Aggressive	Factory buildings with wet processes (eg breweries, wine cellars), Swimming pools	2.1 to 4.2 microns per year
A5 High aggressive	Paper mills, Sea food processing, Dairies, Mushroom culture, Intensive livestock buildings	4.2 to 8.4 microns per year

Step 2

Read life expectancy from appropriate table below - depending on RoofDek finish.

Galvanized

Galvanised RoofDek is supplied to BS EN 10346 as Z275 - giving a minimum zinc coating mass 275g/m² total both sides (equates to 19.5 microns per side).

Recommended for Categories A1 and A2.

Estimated durability of Z275 galvanised steel

* RoofDek in Colorcoat HPS200 Ultra® is recommended (see below).

	Ambience category				
Zinc coating (microns per side)	A1	A2	A3*	A4*	A5*
19.5	200 years	200 to 30 years	30 to 9 years	9 to 5 years	5 to 2 years

Colorcoat HPS200 Ultra®

RoofDek in Colorcoat HPS200 Ultra® is recommended for applications in indoor ambience category A3, A4 and A5. Refer to Tata Steel Colorcoat HPS200 Ultra® technical brochure or the Colorcoat Connection® helpline for further information:

T: +44 (0) 1244 892434.

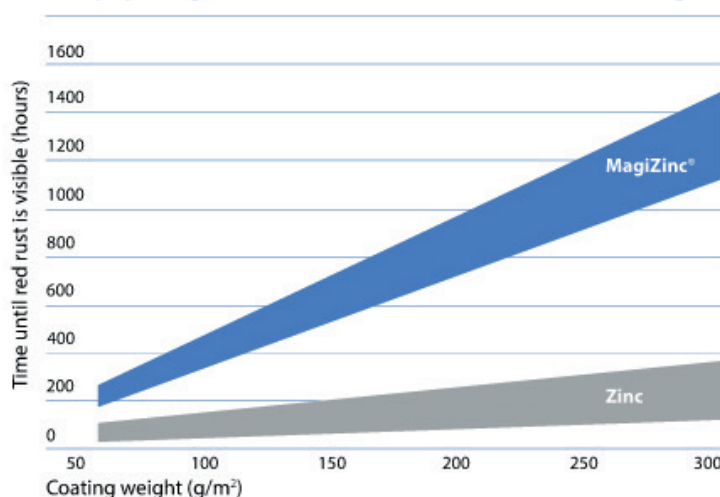
E: colorcoat.connection@tatasteeleurope.com

MagiZinc®

MagiZinc® is a 3-phase system that utilises the electrochemical properties of zinc in combination with the favourable properties that aluminium and magnesium offer to cathodically protect the steel. The addition of magnesium helps to increase the corrosion resistance several times over when compared to standard galvanised coating in standard salt spray testing (ASTM B117).

This increase in performance is attributed to the dramatic change in microstructure of the coating where there are 3 phases present. The 3 phases are: primary zinc dendrites, binary eutectic, consisting of Zinc and Zinc Magnesium, and ternary eutectic, consisting of Zinc and Zinc Magnesium and Aluminium nodules. The 3-phase microstructure allows for the formation of new oxide layers and complex corrosion products which aren't found on standard galvanised coating.

Salt spray testing (accelerated corrosion) of MZ and Zinc metallic coatings



Diaphragm design

Function of diaphragm action

- Transfers wind load from walls to brace walls running perpendicular.
- Replaces in plane roof bracing.

Benefits

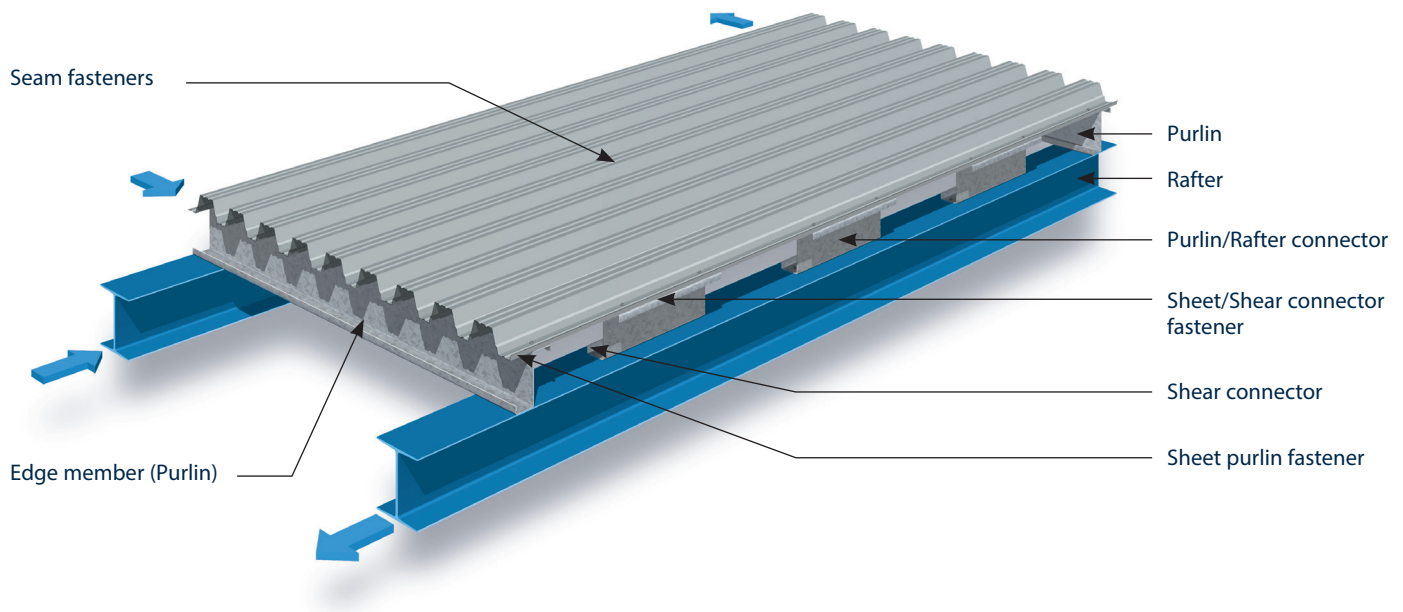
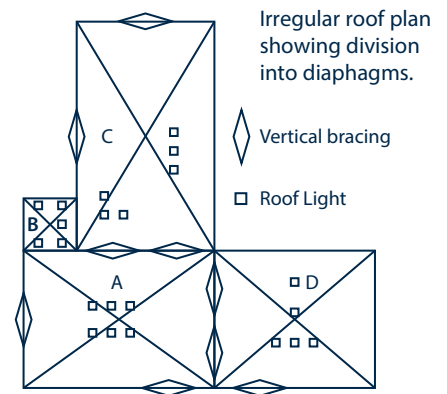
- Removes visual clutter in the roof - popular with architects.
- Saves money by removing some of the steel elements.

Limitations

- Diaphragm area must be surrounded by at least three braced walls.
- Deck must be fixed to the structure on all four edges of diaphragm area.

To design we need

- Drawings showing deck layout and braced walls.
- Line loads at diaphragm edges.



Diaphragm analysis program

We offer a free diaphragm design service. The analysis assumes that the diaphragm area is rectangular and braced on at least three sides.

Our analysis uses BS EN 1993-1-3.

Rain noise

Approved Document E, 2004

Amendment requires construction of new school buildings to follow guidance provided by Building Bulletin 93. BB 93 advises designers to consider the effect of impact noise from rain at an early stage of the roof design in order to minimise disturbance within the building.

What constitutes a problem level of rain noise is subjective. Roof systems employing a weatherproofing layer in full contact with insulation, supported by a metal deck are not usually problematic in practice. However for more critical applications rain noise may be reduced by the selective specification of the insulation system, and to a lesser extent the membrane, the fixing system, and the vapour control layer.

Rain generated impact sound transmission is measured by a test to Draft International Standard ISO 140-18.

A tank positioned 3.5m above the test roof is filled with water and consistently recharged.

The perforated base area, height and flow rate are calibrated to ensure a rainfall intensity of 0.67 Lmin/m³ (40mm/h). Sound intensity measurements are taken below the roof construction in the frequency range of 50 Hz to 5000 Hz.

Indicative sound level test results on D60 0.7mm deck are between 52 - 60dB.

The sound intensity level measures the amount of sound being transmitted through the roof and therefore the lower this figure is, the better.

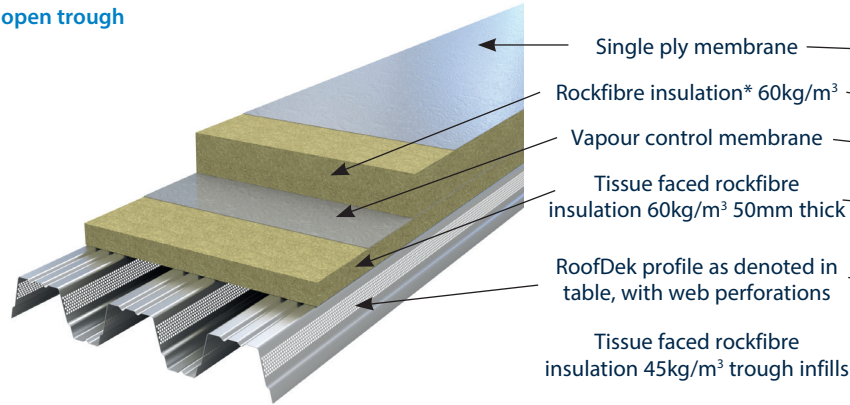
Further details, test reports and details of other combinations are available from Rockwool Limited and Kingspan Insulation Limited respectively.

Acoustic systems

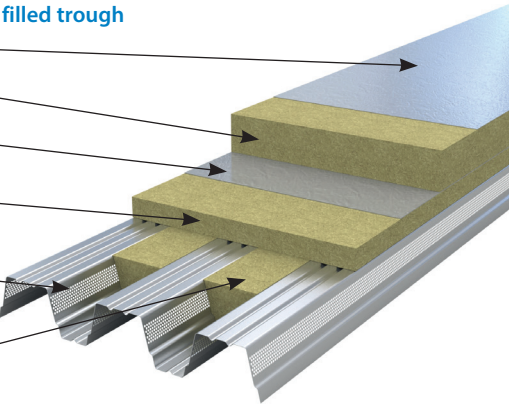
Sound absorption

Tata Steel has carried out a number of acoustic tests at Salford University for sound absorption using web perforated RoofDek, as depicted below. We also have other tested systems and data for acoustic engineers, please enquire with our technical department.

Constructions tested – trapezoidal RoofDek open trough



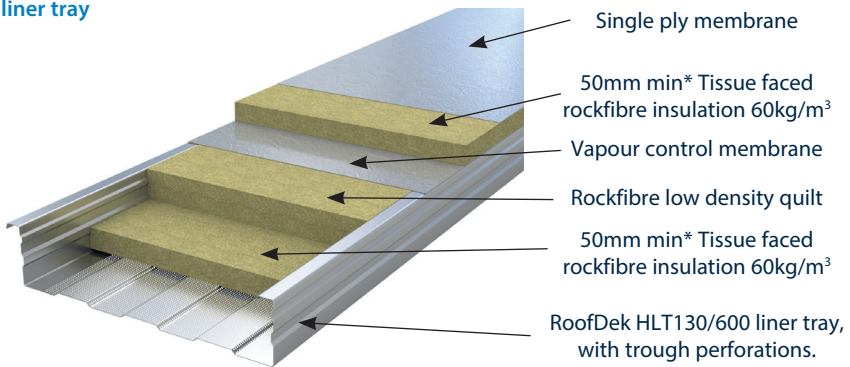
Constructions tested – trapezoidal RoofDek filled trough



Web perforations

For detailed information on the perforation patterns, open areas etc, please refer to the Acoustic RoofDek pages within Section 1, Product selectors

Constructions tested – RoofDek HLT130/600 liner tray



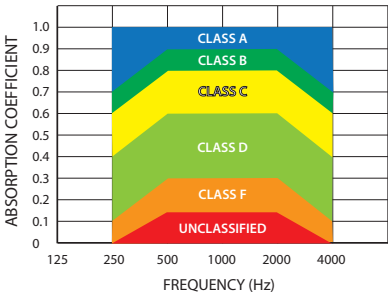
* Note that insulation above vapour control membrane should have at least 2 x the thermal resistance of the insulation below, so it is advisable to have considerably more insulation than was tested. (see installation details)

Absorption (α_p)

	D46		D60		D100		D159		HLT130/600
Frequency (Hz)	Open trough	Filled trough	Open trough	Filled trough	Open trough	Filled trough	Open trough	Filled trough	
125	0.95	1.00	0.90	1.00	0.95	1.00	0.95	1.00	1.00
250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
500	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1000	0.85	0.90	0.85	0.90	0.80	0.85	0.50	0.60	0.95
2000	0.50	0.60	0.50	0.60	0.50	0.60	0.30	0.55	0.85
4000	0.40	0.40	0.35	0.45	0.40	0.45	0.35	0.50	0.85
α _n	0.55	0.60	0.50	0.60	0.55	0.60	0.40	0.60	0.95
CLASS	D	C	D	C	D	C	D	C	A

Absorption co-efficient

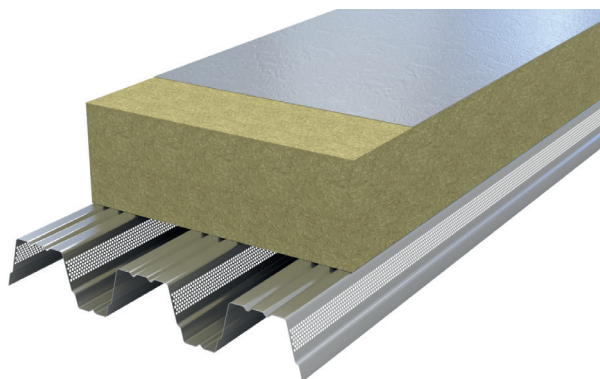
The fraction of energy absorbed on striking any surface, stated as values between 0 and 1.0. If a surface absorbs no sound its co-efficient of absorption is 0. If 100% of sound is absorbed the co-efficient is 1.0. Absorption is frequency dependent, lower frequencies are not absorbed as well as higher frequencies.



Sound reduction

Computer predictions

Construction details (for the system calculated below)



Weather sheet: Membrane thickness = 1.2mm

Insulation: Cavity width = 200mm
Insulation thickness = 200mm
Density = 80kg/m³
Fixing spacing = 233mm
Purlin spacing = 4000mm
Type = SOFT

Liner sheet: D100 Pitch = 233mm
Crown = 109mm
Valley = 63mm
Depth = 100mm
Thickness = 0.7/0.9/1.2mm

Predicted sound reduction values (dB)

Frequency (Hz)	0.7mm	0.9mm	1.2mm
100	17.4	19.4	21.7
125	19.2	21.2	23.7
160	21.8	24.0	26.5
200	26.1	28.3	30.8
250	30.4	29.9	29.5
315	30.1	35.7	35.4
400	29.3	40.2	40.6
500	22.4	39.2	45.1
630	37.0	37.8	50.0
800	45.3	31.2	48.6
1000	56.4	45.3	47.2
1250	60.8	56.4	39.3
1600	59.9	67.0	56.7
2000	70.6	66.9	67.2
2500	75.5	76.6	74.9
3150	77.8	81.9	83.1
4000	86.4	85.1	88.8
5000	91.9	93.0	92.8
Weighted Rw	37.0 dB	40.5 dB	43.2 dB

Sound Reduction Computer Program

The acoustic performance of this profiled metal cladding construction as detailed above has been predicted using a computer programme developed by the Department of Applied Acoustics at the University of Salford under a research contract funded by the Metal Cladding and Roofing Manufacturers Association.

CAUTION: The Predicted SRI values should be used only to provide guidance for preliminary design and/or appraisal of build construction systems. Laboratory measurements should still be used to provide definitive acoustic data. For a project specific calculation contact Tata Steel's Technical Department.

T: 01244 892199

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OTHER CONSTRUCTIONS: We can offer acoustic reduction calculations for a wide range of constructions using RoofDek profiles, please contact our Technical Department.

Other tested systems - some examples

Rockwool insulation – sound absorption and reduction Perforated D60 without trough infills

- Rockwool Acoustic Test Database A405 and Absorp 12.
- Fully bonded single ply membrane system.
- Hardrock DD SPA Insulation 100mm.
- Aluminium cored vapour control layer 2mm thick.
- Hardrock DD TFA Insulation 50mm.
- RoofDek D60 0.7mm steel deck with web perforations.
- Weighted sound absorption coefficient: 0.55 (LM).
- Absorption classification: Class C.
- Weighted Sound Reduction Index Rw = 39dB.

PIR Insulation – sound reduction only

- Kingspan Insulation (SRL test report C/00/5L/7950/1).
- Weighted Sound Reduction Index Rw = 27dB.
- Mechanically fastened single ply membrane system.
- Thermarroof TR26 (85mm).
- Polythene vapour control layer.
- RoofDek D60 0.7mm steel deck.

PIR and Rubbertech – sound reduction only

- Kingspan Insulation (SRL test report C/03/5L/0830/2).
- Weighted Sound Reduction Index Rw = 35dB.
- Mechanically fastened single ply membrane system.
- Thermarroof TR26 (85mm).
- Rubbertech R10 Acoustic Membrane.
- Polythene vapour control layer.
- RoofDek D60 0.7mm steel deck.

Fall arrest / fall protection systems

Where a roof is not provided with permanent edge protection (such as a parapet or guardrails), a personal fall protection system may be installed to facilitate safe maintenance procedures.

Such systems typically employ horizontal safety lines, secured to anchor posts which protrude above the roof and are attached to the building structure or, more commonly, fixed through to the RoofDek structural roof decking itself.

Systems shall be installed in accordance with the manufacturers specification by suitably trained Recognised or Registered installation companies. Only tested and approved systems can be used, as supplied by manufacturers such as SFS Group Fastening Technology Ltd or MSA Latchways and shall be compliant with:

- BS EN 795:2012 - Personal fall protection equipment. Anchor devices (Type A and Type C - single user)

- CEN/TS 16415:2013 - Personal fall protection equipment. Anchor devices - Recommendations for anchor devices for use by more than one person simultaneously (Type A and Type C - multiuser).

Securement of anchor post to RoofDek

The anchor post base plate is commonly fixed by screws or gravity toggle bolts penetrating the waterproofing and insulation and securing to the metal roof deck.

It is vital that any fixings go cleanly through the crown of the RoofDek profile and, therefore, the anchor base plate fixing centres accommodate such a requirement. By way of example, see the below alignment drawings.

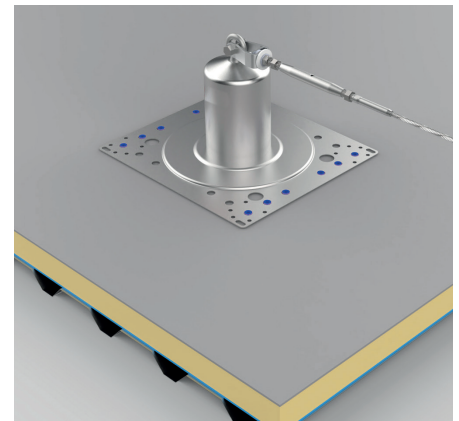
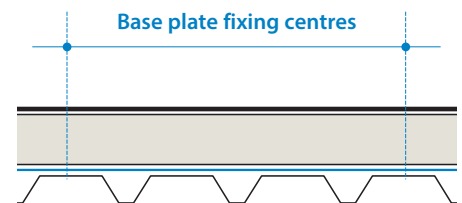
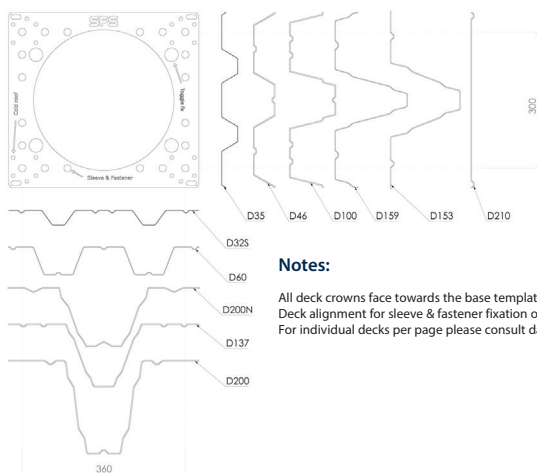


Illustration shows SFS fall protection fixed to RoofDek D35

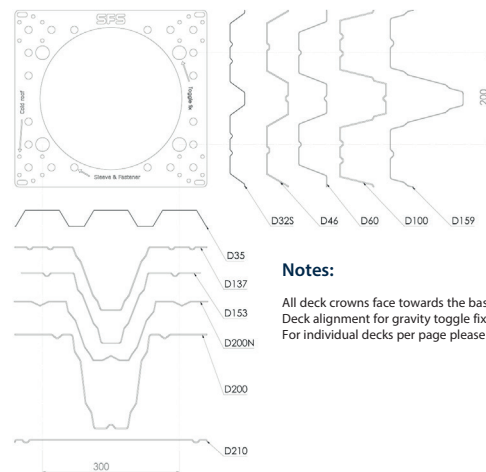


The base plate fixing centres must line up with the crowns of the steel deck.



Notes:

All deck crowns face towards the base template.
Deck alignment for sleeve & fastener fixation only.
For individual decks per page please consult data sheets.



Notes:

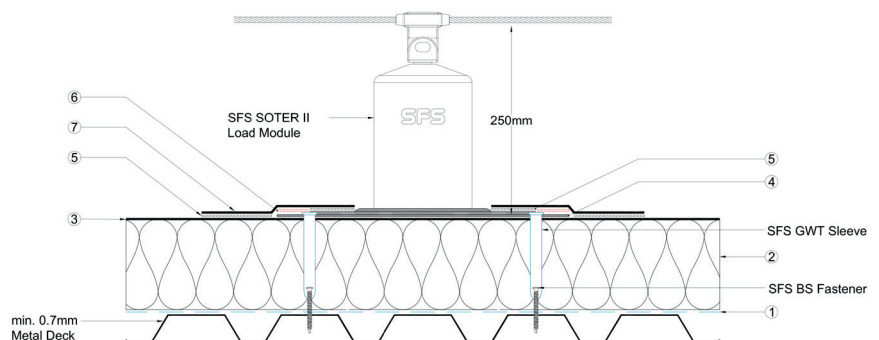
All deck crowns face towards the base template.
Deck alignment for gravity toggle fixation only.
For individual decks per page please consult data sheets.

Typical system using horizontal safety lines, attached to RoofDek

System illustrated here is SFS Soter II system with a single ply membrane roof on insulation and RoofDek D35.

Section Key:

1. Air & vapour control layer.
2. Thermal insulation, type and thickness determined to meet the U-value required.
3. PVC single ply membrane
4. SFS PVC coated SOTER II baseplate
5. Hot air weld
6. SFS Foil Faced Gasket
7. PVC single ply membrane weathering patch



Non-fragility

In the past a number of serious accidents arose due to people falling through roof lights. To avoid this a test was introduced some time ago to demonstrate the levels of fragility in roofing elements, which for safety was applied to metal roofing decking and liners (although there were no known cases of accidents arising due to non-fragility in these products).

All RoofDek products are non-fragile provided they are fixed in accordance with the specifications in this manual.

Roof constructions as tested to ACR (M) 001:2000 Test for Fragility of Roofing Assemblies (2nd edition).

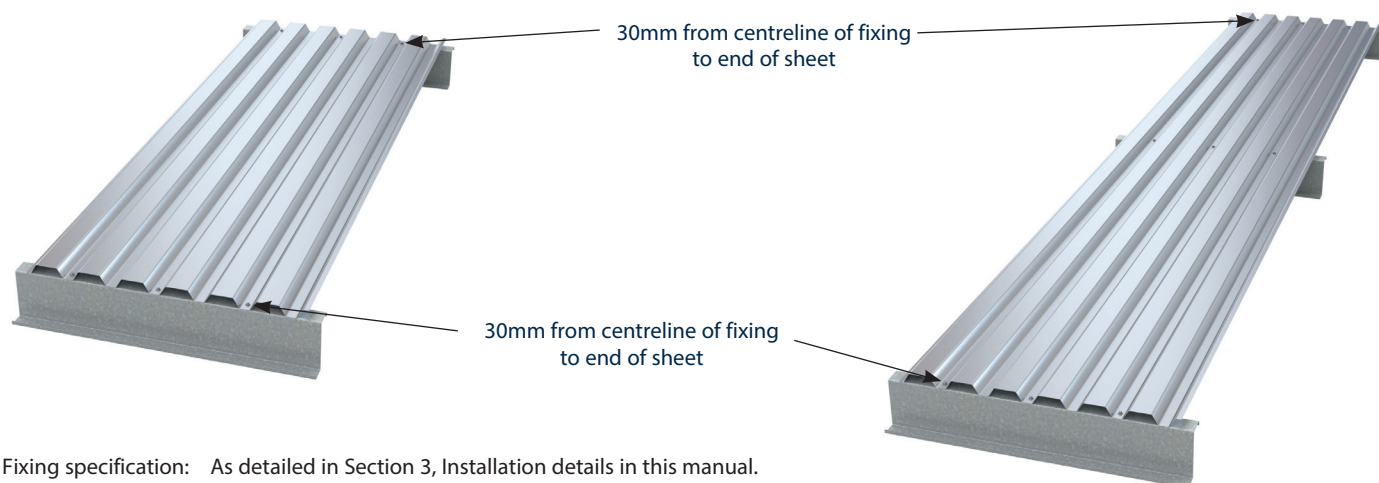
The steel assemblies tested achieved:

- Class B non-fragile assembly - double and multi span (D32S and all deeper decks)
- Class B non-fragile assembly - single span (D35 and all deeper decks)
- Class C non-fragile assembly - single span (D32S)

The aluminium assemblies tested achieved: D35 0.90mm achieved Class C for single-span, Class B for double-span, D159 1.50mm achieved Class B. The test program considered the shallowest and deepest profile within the product range, therefore, we have classed all other profiles as worst case single-span Class C, and double-span Class B for 0.90mm minimum gauge.

Non-fragility single span

Non-fragility double span



Fixing specification: As detailed in Section 3, Installation details in this manual.

Fixing frequency: As detailed in Section 3, Installation details in this manual.

Maximum span: As shown in Section 1, Product selectors in this manual, or by project calculation.

Notes:

1. The number of fixings per sheet must be increased proportionally when the sheet is cut at rake ie at hips.
2. Minimum end distance (30mm) is the minimum dimension between the centreline of the screws to the end of the sheet.
3. Every other pitch is based on always starting with a fixing in the first pitch of every sheet.

Assemblies tested at Swinden Technology Centre

Material I.D.	Test Nos	Material ID	Test Nos	Material I.D.	Test Nos
LAB I.D. SIN 106 A	118 - 129	LAB ID SIN 108 A	146 - 159	LAB I.D. SIN 109 B	161 - 173
LAB I.D. SIN 106 B	99 - 112	LAB ID SIN 108 B	132 - 145	LAB I.D. SIN 109 C	57 - 70
LAB I.D. SIN 106 C	85 - 98	LAB ID SIN 108 C	71 - 84	LAB I.D. SIN 143 A	424 - 437
				LAB I.D. SIN 143 B	438 - 451

ACR(M)001:2000 Test for fragility of roofing assemblies (second edition). Summary of test method.

Sheeting is fixed to a test rig specified in the document and a drop test is conducted, which involves releasing a 45kg sand bag from a height of 1.2m. The sand bag must impact the sample:

1. within 150mm of the centre of the test sample.
2. within 300mm of a support point, at least 150mm away from the support.
3. within 150mm of the edge of the sheet, adjacent to the underlap with the other sheet, at the weakest position.

Other test conditions specified in the document also have to be met.

Summary of classifications

Fragile	Impactor (sand bag) passes through assembly on first drop.
Class C Non-fragile	impactor is retained on the assembly for 5 minutes after 1st drop.
Class B Non-fragile	impactor is retained on the assembly for 5 minutes after 2nd drop in the same place as the 1st drop.
Class A Non-fragile	on conclusion of the 2nd drop there is no significant damage to the assembly





Section 3

Installation details

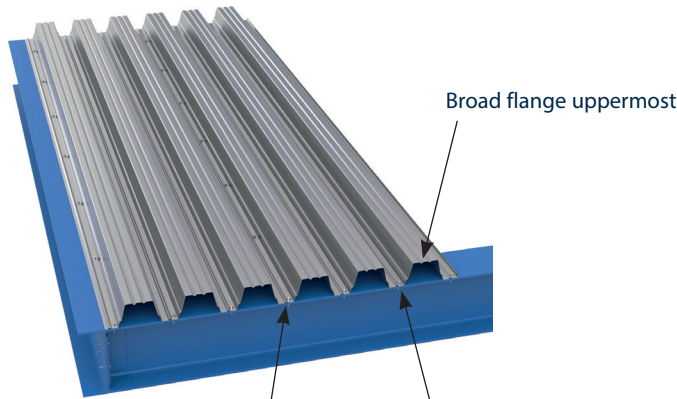
- 3.1 Fixing RoofDek
- 3.2 RoofDek fixings: end and edge distance, and separation. Bearing requirements
- 3.3 RoofDek at verges and change of direction
- 3.4 RoofDek change of direction (continued), ridge details
- 3.5 Vapour control details
- 3.6 Rake cutting and pitched RoofDek on horizontal support
- 3.7 RoofDek cantilever, extended end lap and attachment to soffit
- 3.8 Openings in RoofDek - trapezoidal deck profiles
- 3.9 Deck cut outs at supports
- 3.10 Openings in RoofDek liner tray, partition connection to deck soffit
- 3.11 Construction dead loads, beam stays
- 3.12 Accessory specification

Installation details

3.1 Fixing RoofDek

Orientation

RoofDek is laid broad flange up, unless otherwise specified by the roof designer.

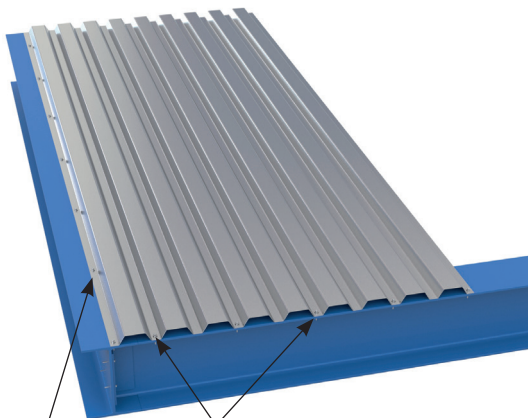


Where the profile has a wider side lap on one side, that goes underneath the narrower side lap.

Narrow flange down

Fixing to support and side laps - see the Accessory specification Section 3.12 for fixing specifications

D32S and D35



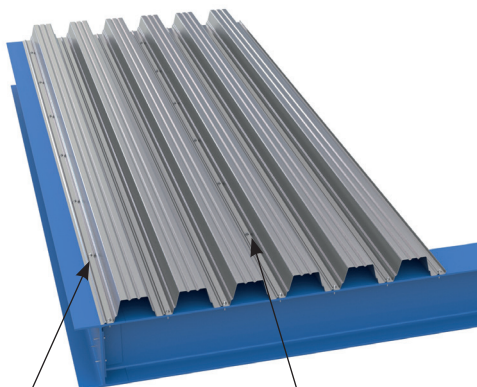
Fix to side support at 500mm c/c

If fixing in alternate troughs, always start and finish each sheet with a fixing

Fix every trough, at ridge and eaves. Fix alternate troughs at intermediate supports, or every trough if necessary for wind load, up to two fixings per trough. If using alternate troughs always start and finish each profile with a fixing.

Side stitching at 500mm c/c is recommended under mechanically fixed single ply and is required for diaphragm roofs, but otherwise is not obligatory for D32S and D35 with a fully supported underlap. Fix to side support at 500mm c/c.

D46 to D200



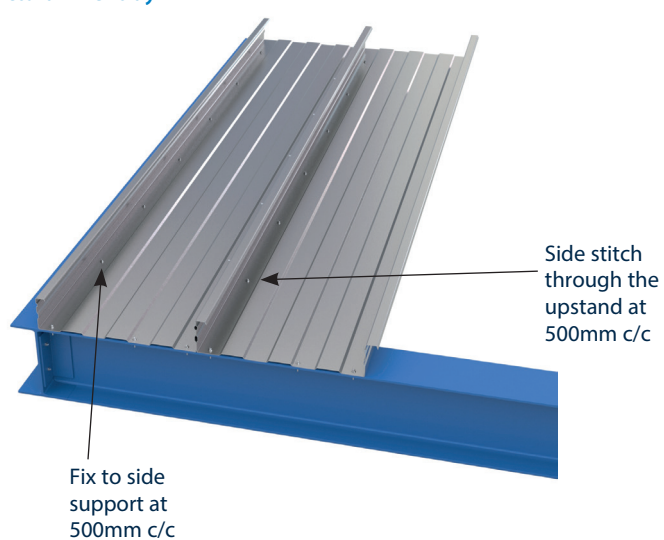
Fix to side support at 500mm c/c

Side stitch at 500mm c/c

Fix every trough, every support, 1- 4 fixings per trough, depending on wind load.
Side stitch at 500mm c/c
Fix to side support at 500mm c/c



Structural liner tray



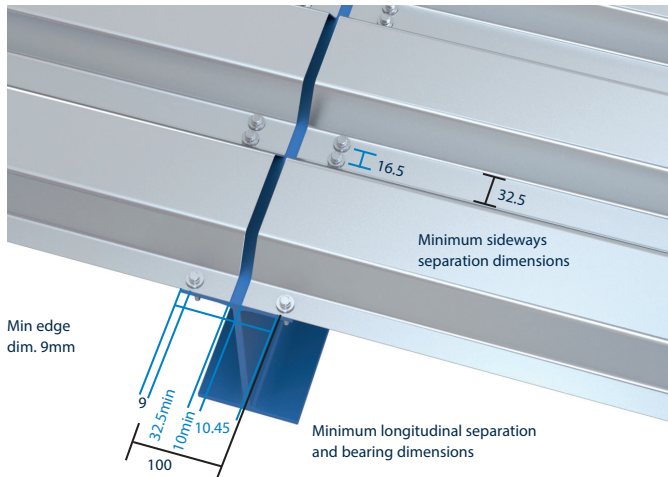
3-5 fixings per trough at every support. The fixings either side of the upstand must be placed within 75mm of it. Only fixings within 75mm of the upstand can be included in wind resistance calculations, the centre fixing is purely to resist wind chatter.

Side stitch at 500mm c/c
Fix to side support at 500mm c/c

Installation details

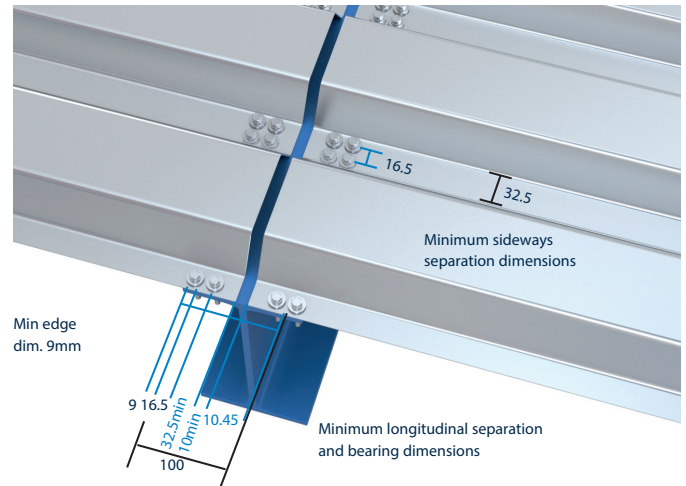
3.2 RoofDek fixing: end and edge distance and separation: bearing requirements

Minimum bearing on to steel - butted ends



No. of fixings longitudinally	Bearing
1 or 2 as shown	100mm
3No.	132mm
4No.	165mm

Requirements are identical for hot rolled steel beams or cold formed purlins.

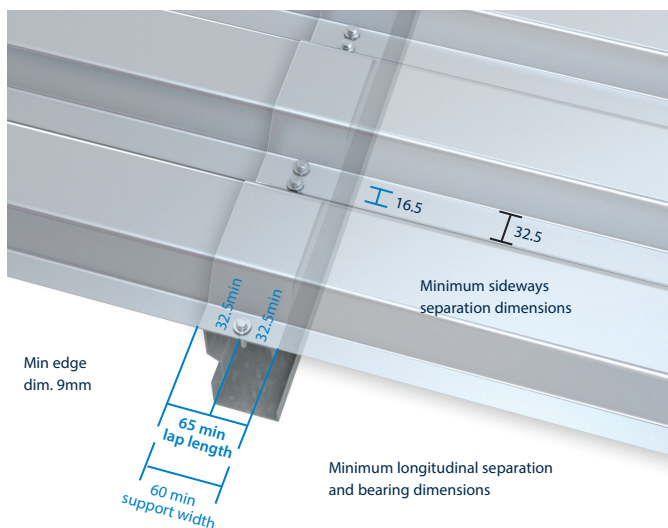


DIMENSIONS

All dimensions shown are minimum design dimensions taken from centreline of fixing to end of deck or support.

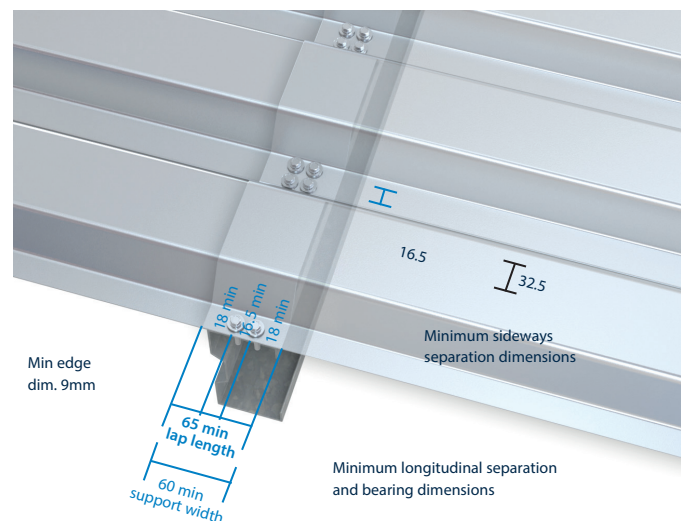
Dimensions in blue include an extra 2½mm to allow for negative sheet tolerance.

Minimum bearing on to steel - overlap ends



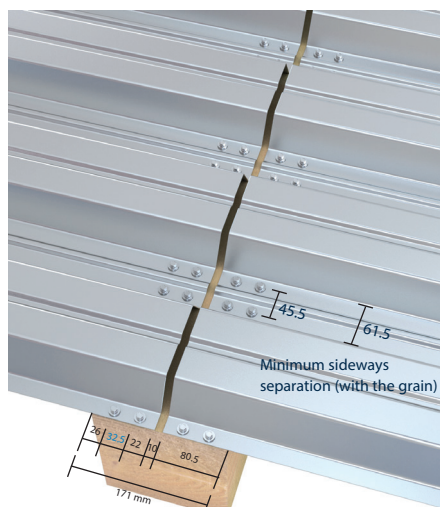
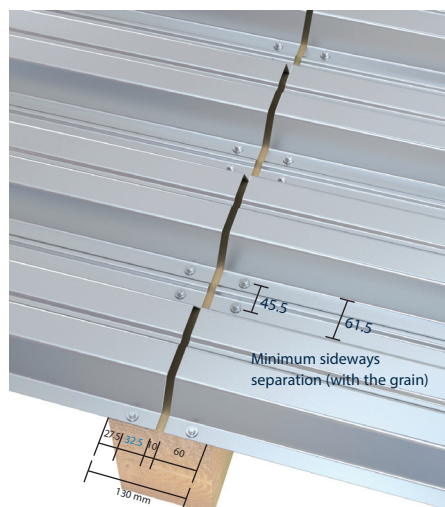
No. of fixings longitudinally	Bearing
1 or 2 as shown	60mm
3No.	60mm
4No.	67.5mm

No. of fixings longitudinally	Overlap
1 or 2 as shown	65mm
3No.	71mm
4No.	87.5mm



Requirements are identical for hot rolled steel beams or cold formed purlins.

Bearing on to timber - butted ends



Minimum bearing on timber Butted ends

No. of fixings longitudinally	Bearing
1 as shown	130mm
2 as shown	171mm
3No.	236mm
4No.	301mm

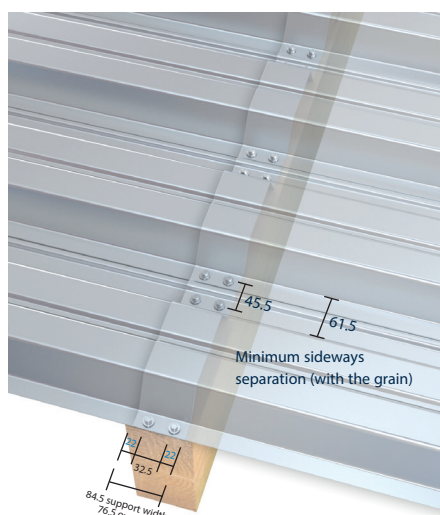
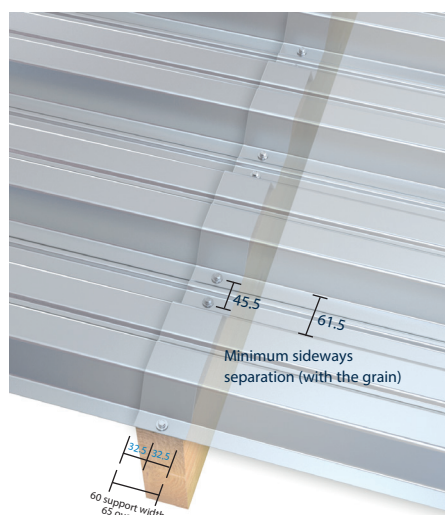
Minimum distance: fixings → end of timber (measured with the grain) = 10d or 65mm

DIMENSIONS

All dimensions shown are minimum design dimensions taken from centreline of fixing to end of deck or support.

Dimensions in blue include an extra 2½mm to allow for negative sheet tolerance.

Bearing on to timber - overlap ends



Minimum bearing on timber Overlap ends

No. of fixings longitudinally	Bearing
1 as shown	60mm
2 as shown	84.5mm
3No.	117mm
4No.	149.5mm

No. of fixings longitudinally	Overlap
1 as shown	65mm
2 as shown	76.5mm
3No.	109mm
4No.	87.5mm

Minimum distance: fixings → end of timber (measured with the grain) = 10d or 65mm

Bearing on to concrete and masonry via top hat



Continuous top hat spacer. Steel min. t 1.5mm. Height and legs 25mm nom. (can be varied).
Fix both flanges of top hat to the top of the wall at 300mm centres.
Fixing type to be Tapcon or similar, specifically designed for the brick / block / concrete type on the project and checked for wind uplift resistance by the fixing supplier.

Bearing directly on masonry

End and internal support: 100mm minimum bearing.

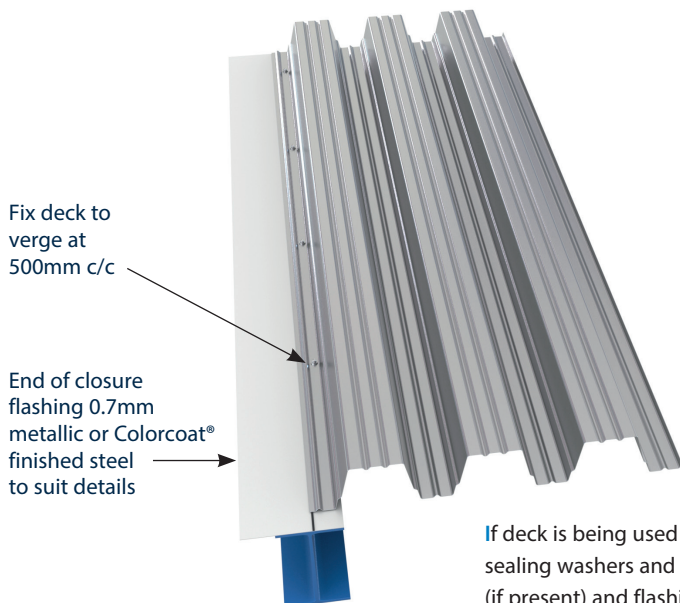
Minimum width of masonry required when using butted ends: 210mm.

When using 100mm overlap, the minimum width of masonry is 100mm.

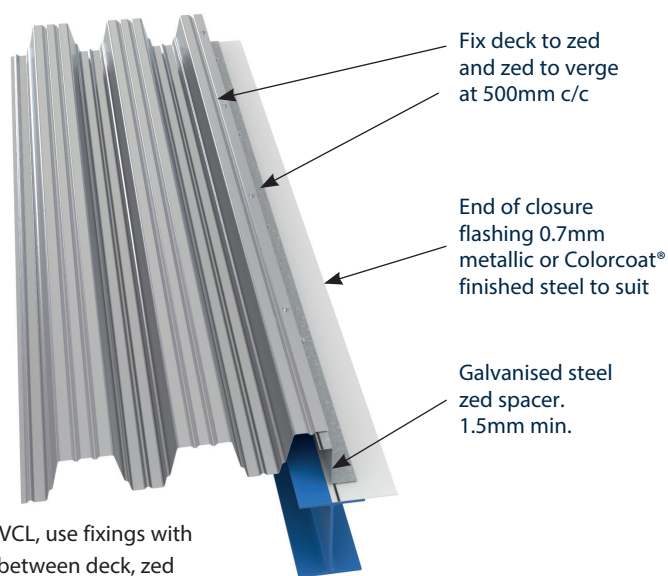
Installation details

3.3 RoofDek at verges and change of direction

Deck verge detail. Start of run

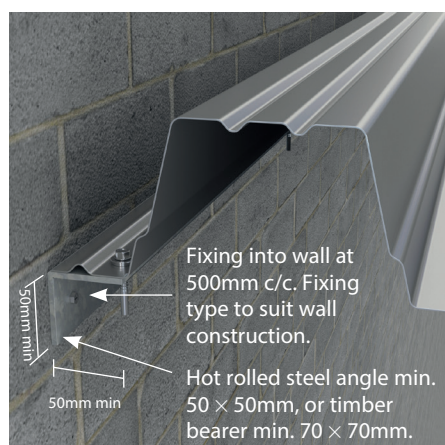


Deck verge detail. End of run



If deck is being used as a VCL, use fixings with sealing washers and seal between deck, zed (if present) and flashing continuously, using 4mm inside joint strip sealant. (see Accessory specification)

Deck verge detail. Wall abutment



Deck verge detail. Unsupported edge type 1

Type 1. Soffit fixed. (Type 1 can extend vertically to enclose insulation etc.)

Edge stiffener made from the same material as deck or thicker, to extend back to next pitch over from cut /free edge.

Vertical leg of stiffener = 30mm or 1/2 deck height, whichever is the less

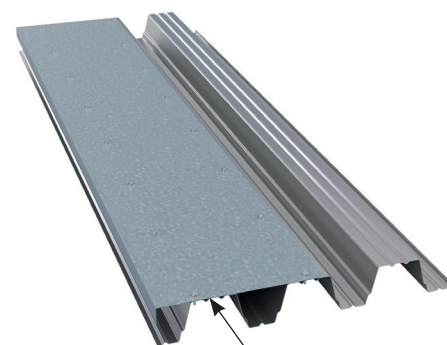
Fix deck to edge stiffener at 500mm c/c longitudinally.



Edge stiffener fixed to deck with stitcher fixings

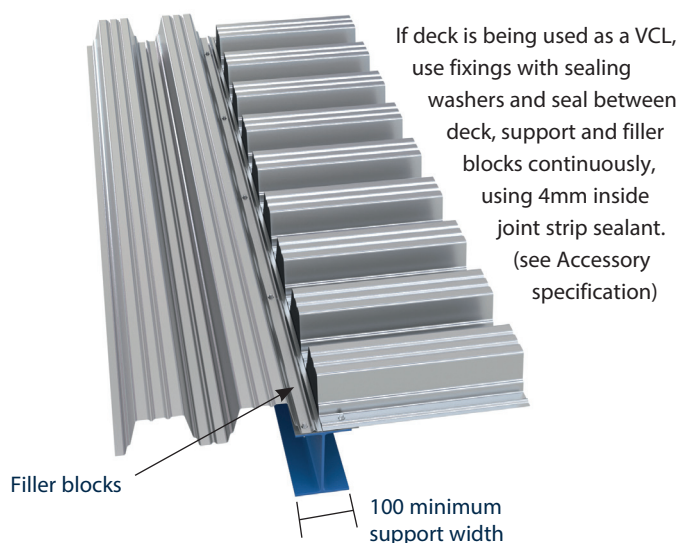
Deck verge detail. Unsupported edge type 2

Type 2. Crown fixed.

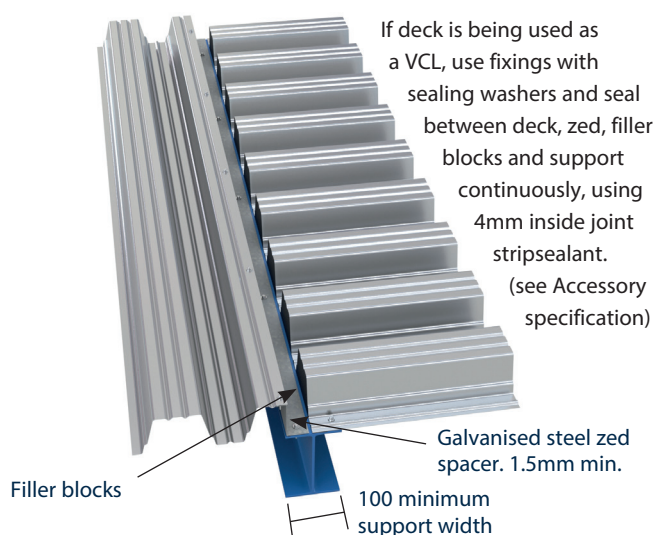


Edge stiffener fixed to deck with stitcher fixings

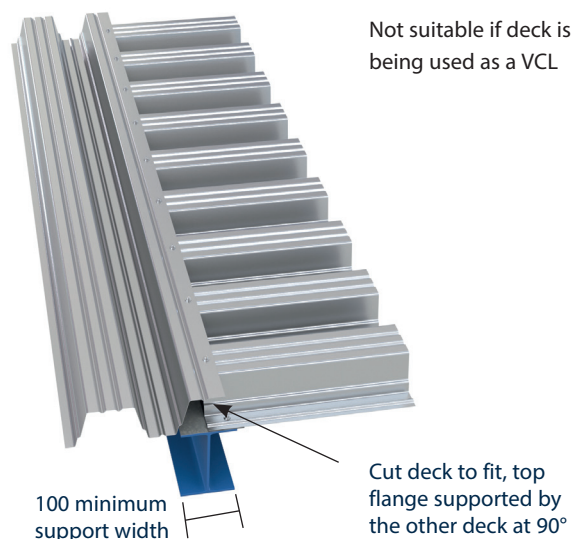
Deck change of direction. Start of run



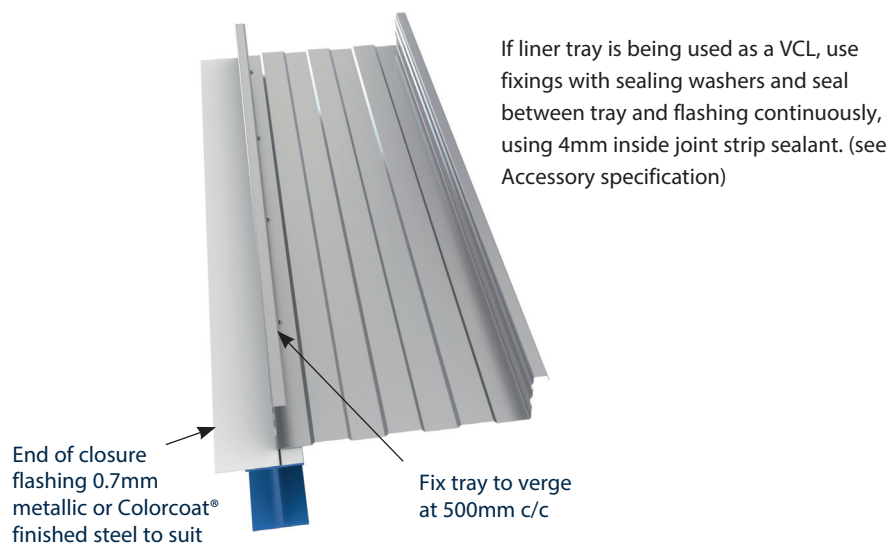
Deck change of direction. End of run (cut deck)



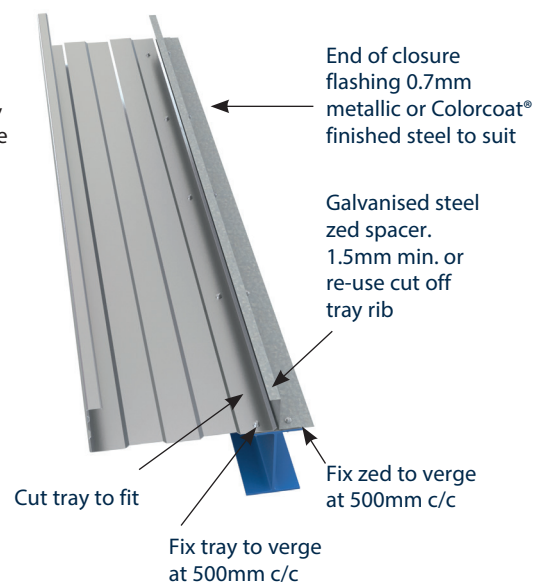
Deck change of direction. End of run (cut deck) alternative



Liner tray verge detail. Start of run



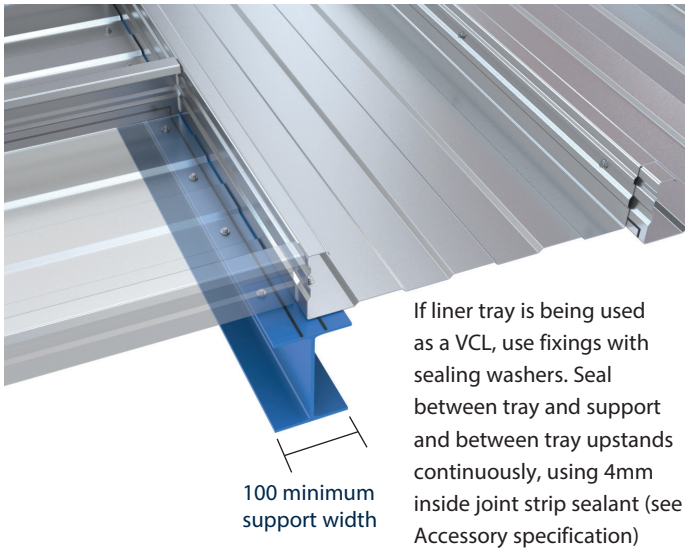
Liner tray verge detail. End of run



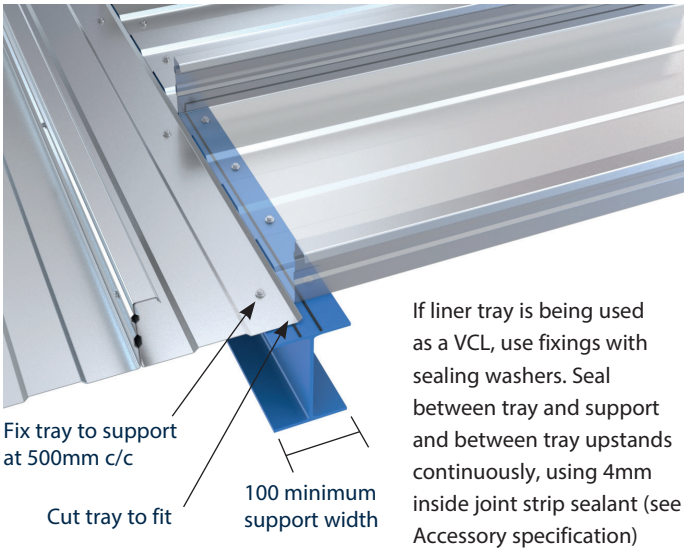
Installation details

3.4 RoofDek change of direction (continued), ridge details

Liner tray change of direction. Start of run



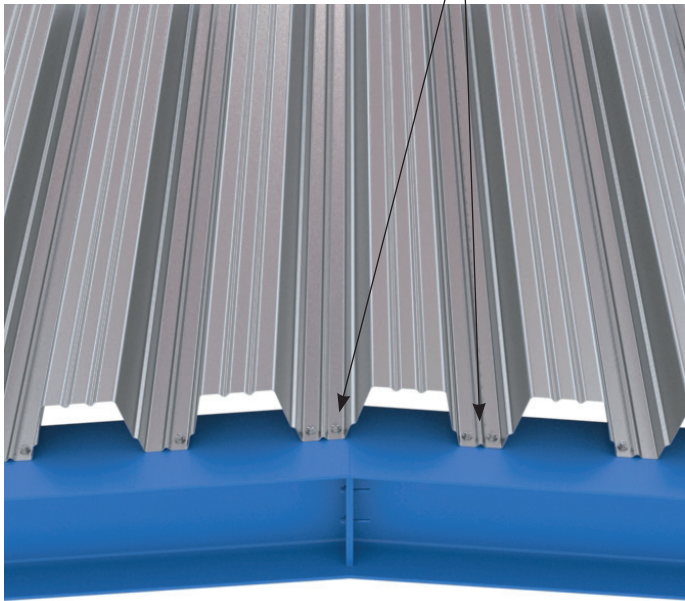
Liner tray change of direction. End of run



Deck on main frame at duo pitch ridge. Up to 5° roof pitch

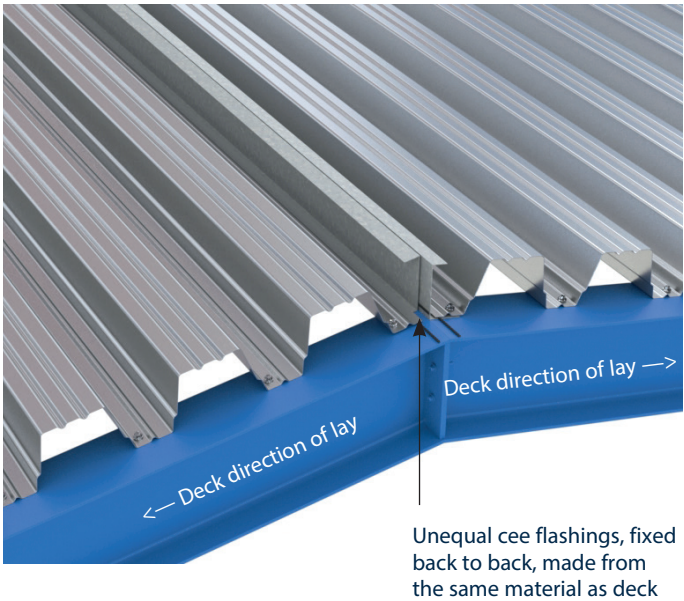
Where deck is being used as VCL, seal side laps and use sealing washers on fixings.

Double fix both sides of ridge to pull deck down

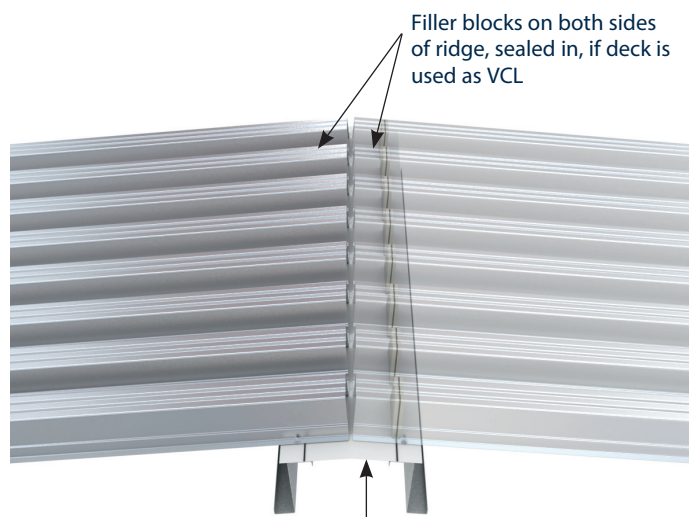


Deck on main frame at duo pitch ridge. Over 5° roof pitch

Where deck is being used as VCL, use sealing washers on fixings. Seal between the cees, and between the decks and cees.

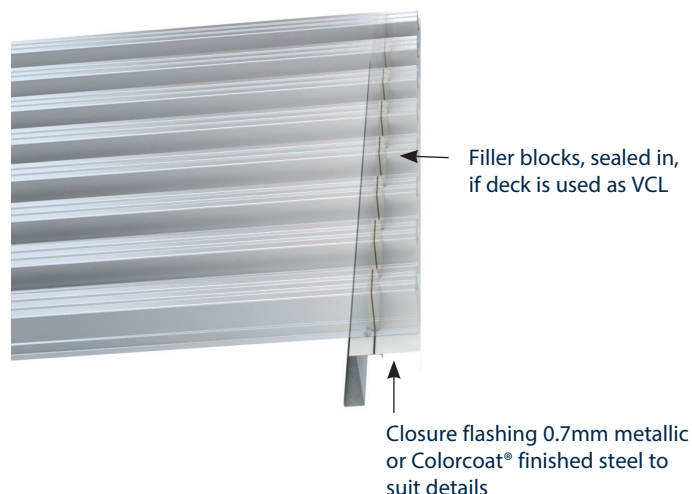


Deck on purlins at duo pitch ridge

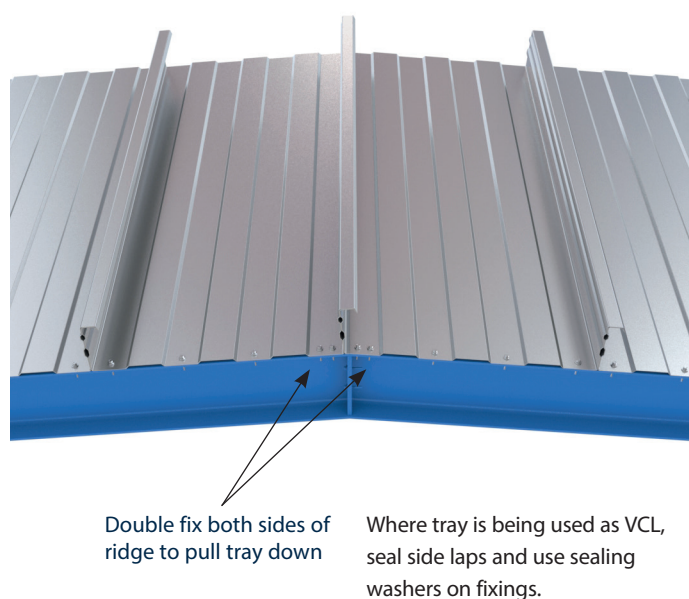


Where the deck cantilevers more than 250mm, the flashing must be located at and fixed to the top flange of the deck because the maximum flat dimension should not exceed 250mm. If a flashing is required underneath for aesthetic reason this will have to be post fitted.

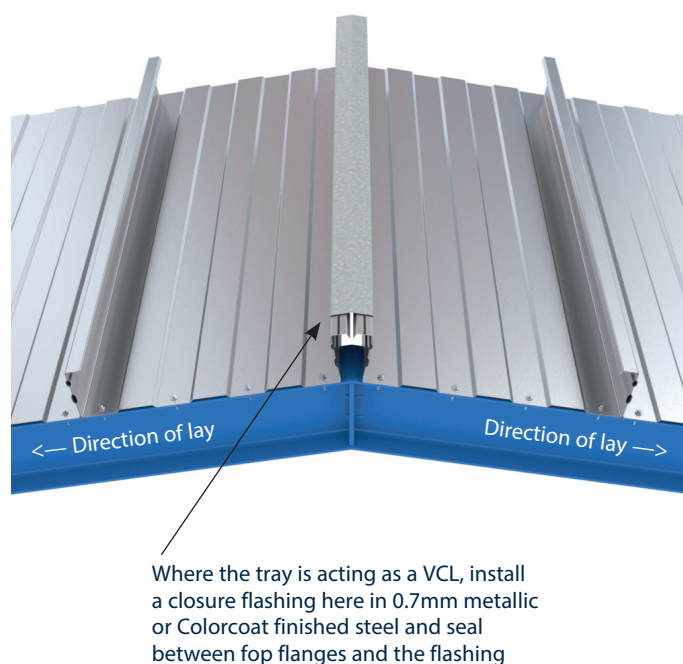
Deck on purlins at mono pitch ridge



Liner tray on main frame at duo pitch ridge. Up to 5° roof pitch



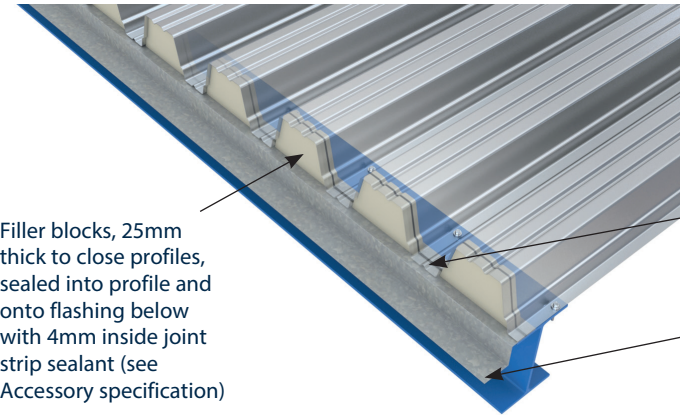
Liner tray on main frame at duo pitch ridge. Over 5° roof pitch



Installation details

3.5 Vapour control details

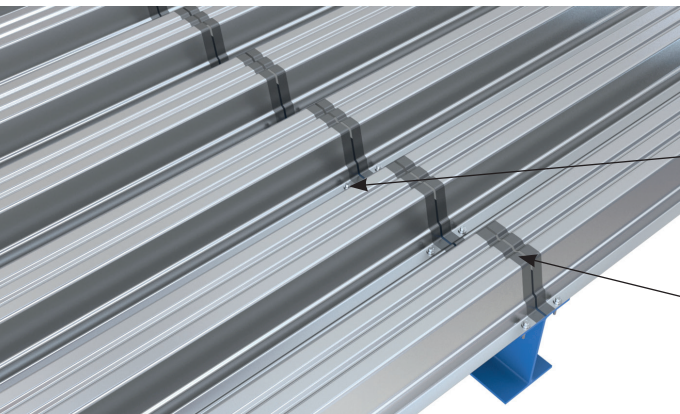
RoofDek trapezoidal profiles used as vapour control layer. Verge.



It may be necessary to use foil facing on polyethelene filler blocks to meet fire or acoustic criteria. Also if using rockfibre, it is vapour permeable and should be foil faced if used as part of a VCL,

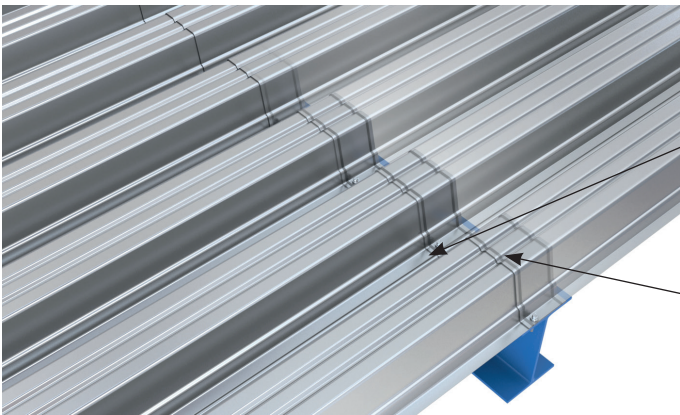
Seal side laps with 4mm inside joint strip sealant.

RoofDek trapezoidal profiles used as vapour control layer. Butt lap.



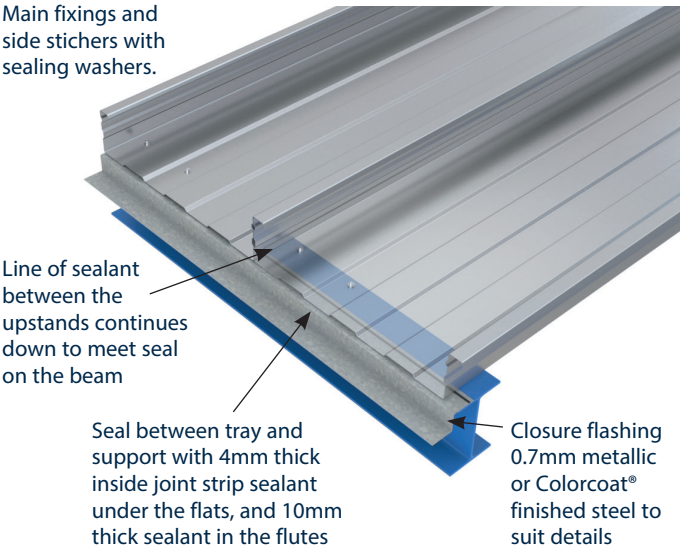
Seal side laps with 4mm inside joint strip sealant.

RoofDek trapezoidal profiles used as vapour control layer. Overlap.

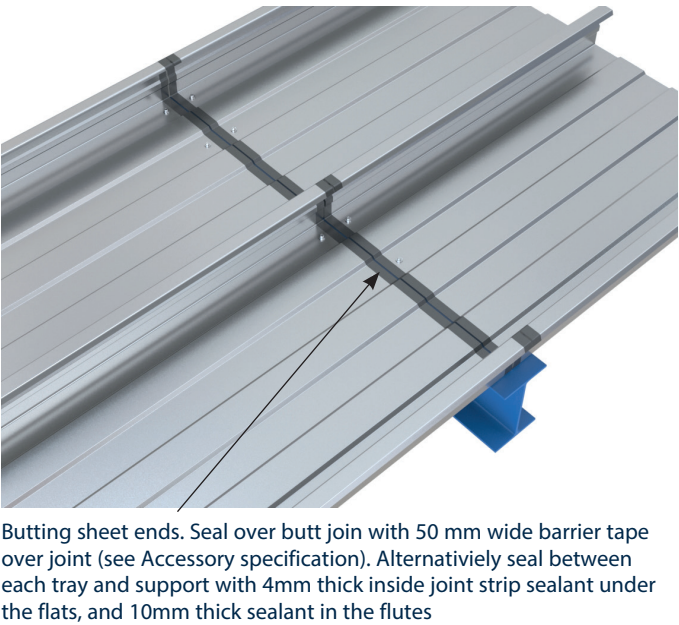


Seal side laps with 4mm inside joint strip sealant.

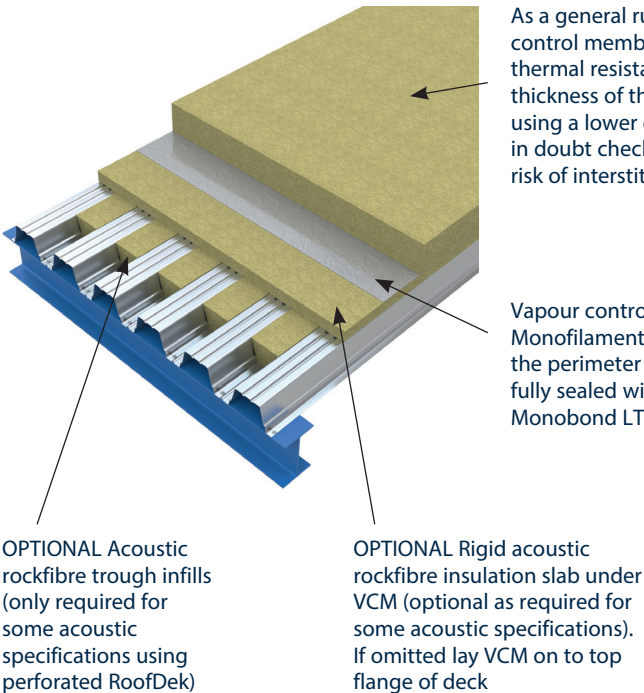
RoofDek liner tray used as vapour control layer. Verge



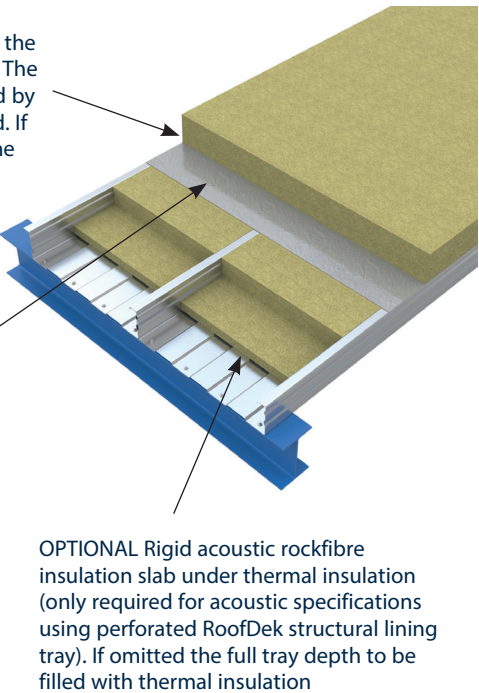
RoofDek liner tray used as vapour control layer. Butt lap



Use of vapour control membrane with RoofDek trapezoidal profiles.



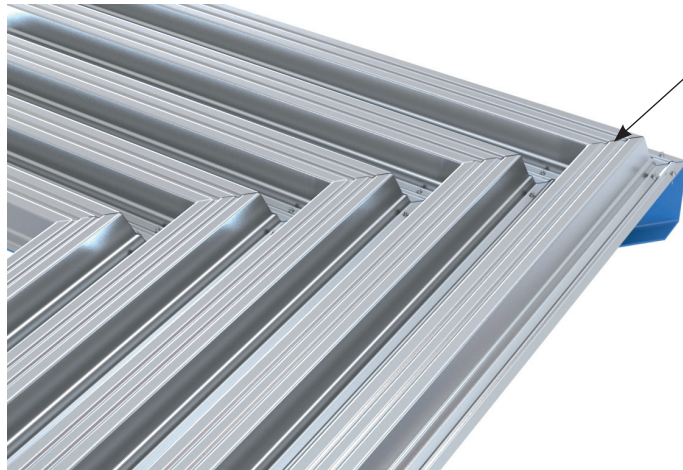
Use of vapour control membrane with RoofDek liner tray.



Installation details

3.6 Rake cutting and pitched RoofDek on horizontal support

Raked end joint verge or support

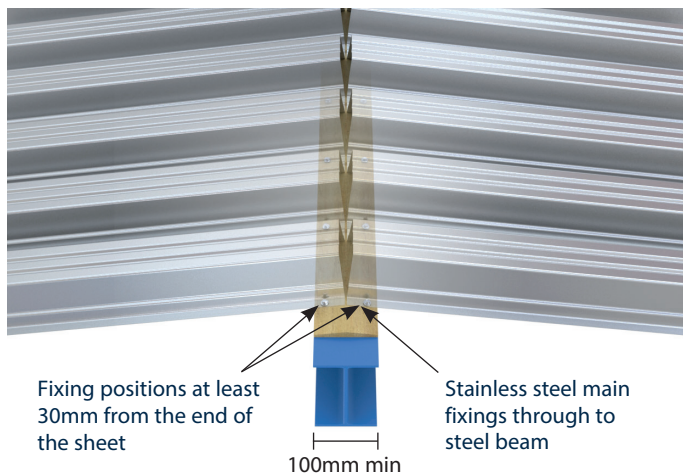


Rake cut deck (on-site operation)

Minimum support width for end joint 100mm

The deck or tray must be cut on-site where it lands onto a raked verge or support. Rake cut filler blocks must be left or right handed, however the deck cannot be used as a VCL, a separate vapour control membrane is required. Where the rake angle is greater than 45° a zed is needed to support the top flange of the deck. Galvanised decks may be cut with any type of site cutter, however Colorcoat finishes must be cut with a nibbler or reciprocating saw. All swarf should be removed. For further information see: Tata Steel How To 13. How To Cut Decks.

Pitched RoofDek on horizontal support - apex - with timber furring

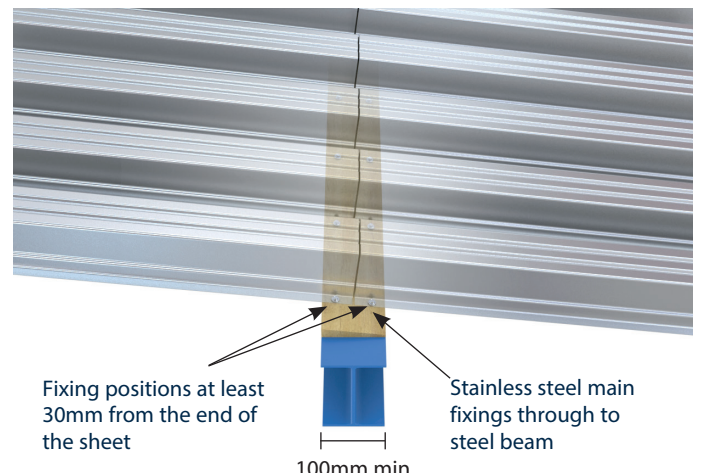


Fixing positions at least 30mm from the end of the sheet

100mm min

Stainless steel main fixings through to steel beam

Pitched RoofDek on horizontal support - butt joint - with timber furring

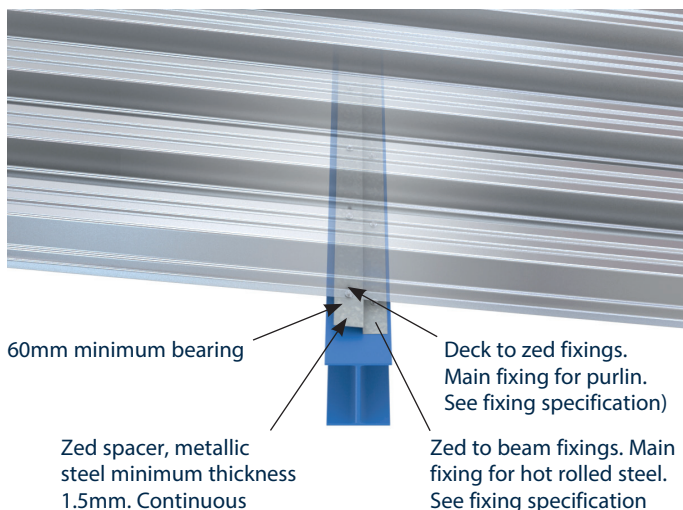


Fixing positions at least 30mm from the end of the sheet

100mm min

Stainless steel main fixings through to steel beam

Pitched deck on horizontal support. Zed spacer - (not suitable for butt joints)



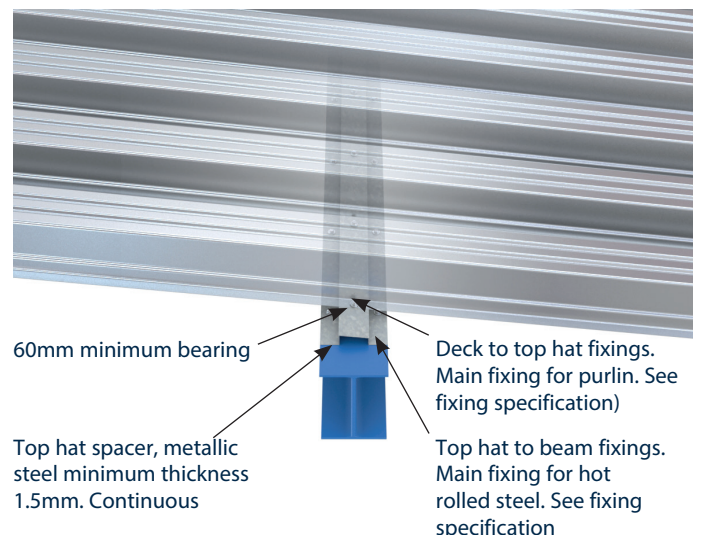
60mm minimum bearing

Deck to zed fixings. Main fixing for purlin. See fixing specification)

Zed spacer, metallic steel minimum thickness 1.5mm. Continuous

Zed to beam fixings. Main fixing for hot rolled steel. See fixing specification

Pitched deck on horizontal support. Top hat - (not suitable for butt joints)



60mm minimum bearing

Deck to top hat fixings. Main fixing for purlin. See fixing specification)

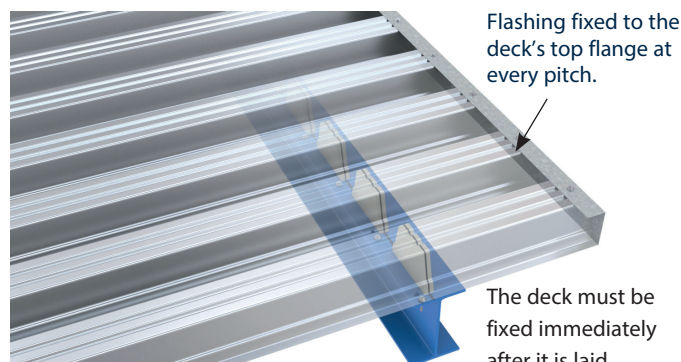
Top hat spacer, metallic steel minimum thickness 1.5mm. Continuous

Top hat to beam fixings. Main fixing for hot rolled steel. See fixing specification

Installation details

3.7 RoofDek cantilever, extended end lap and attachments to soffit

Overhanging deck (cantilever)

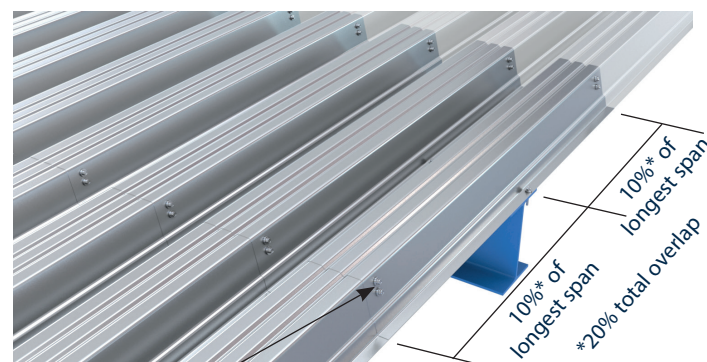


Internal span must be greater than cantilever.

If the cantilever is external, Colorcoat HPS200 Ultra® prefinished steel should be used.

Permissible cantilever length. See Section 1 Product selectors, column heading "Cantilever".

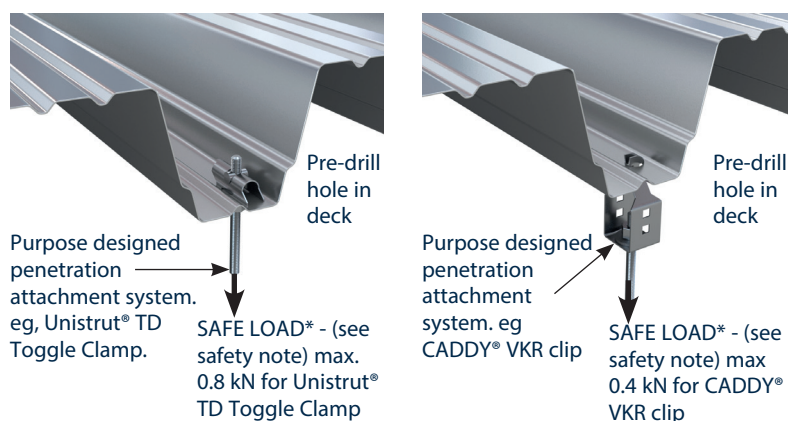
Extended end lap



Web to web fixings
Web to web stitchers at each end of lap, 30mm from end of sheet, 2 fixings per web, minimum separation = 20mm. Fixings must not go through perforated elements.

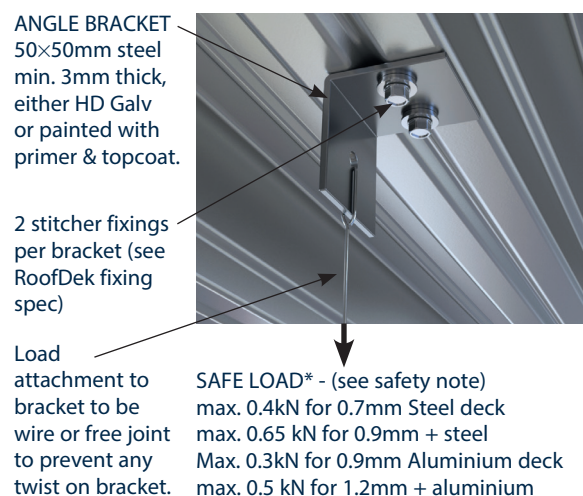
Length of lap
* 10 to 20% of span may be specified (20% to 40% total overlap). The longest of span 1 and span 2 is used to determine the length of the lap. The total length of lap is then twice the percentage specified.

Attachments to RoofDek soffit. Penetration type

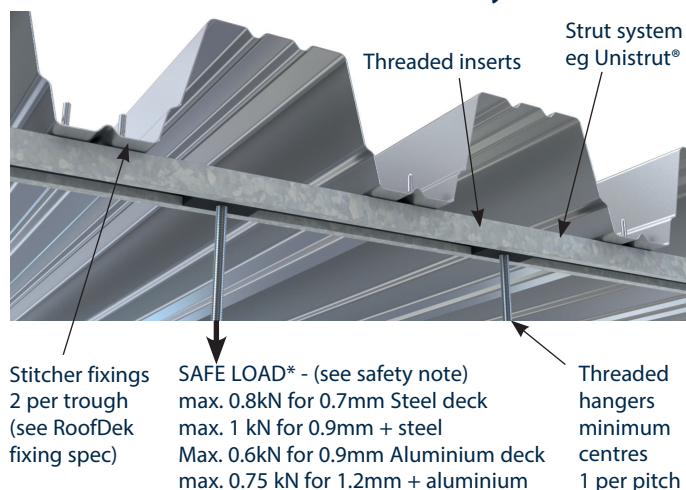


*** LOAD SAFETY NOTE - ALL ATTACHMENT TYPES** The deck capacity as well as the the load attachment system data given below must be checked for the point load applied

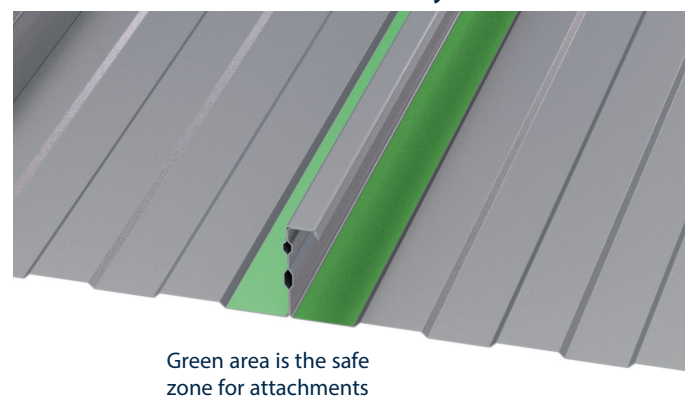
Attachments to RoofDek soffit. Angle bracket



Attachments to RoofDek soffit. Strut system



Attachments to RoofDek liner tray soffit.



All 3 attachment types shown for deck may be used with liner tray, however connections can only be made next to the upstand, as shown in green.

Installation details

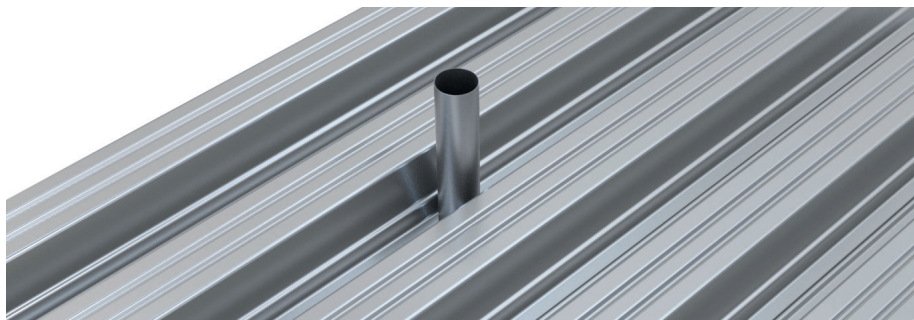
3.8 Openings in RoofDek - trapezoidal deck profiles

Small openings (trough width) in RoofDek trapezoidal profiles

Unstiffened circular openings are permissible within the deck trough only, refer to design rules and guidance table (following page). Small openings must be spaced at a minimum of 1.5m centres, in any direction.

Deck trough

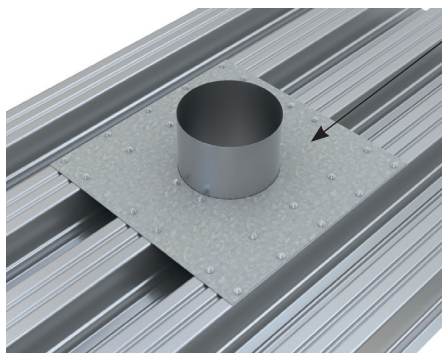
D32S - 27mm	D100 - 63mm
D35 - 35mm	D137 - 43mm
D46 - 67mm	D159 - 38mm
D60 - 64mm	D200 - 85mm



Medium openings (pitch width) in RoofDek trapezoidal profiles

Stiffened circular or rectangular openings are permissible up to one deck pitch wide, as shown here. Refer to design rules and guidance table (following page). The maximum length of a rectangular opening is also one deck pitch.

Small and medium openings must not be spaced at less than 1.5m c/c in any direction. The vapour control layer, preventing the ingress of moisture from inside the building to the roof void, must be fully and effectively maintained. This detail is not suitable for D210.



Distribution plate. 2mm thick galv. steel or 3mm for D159 & D200. Plate to be square, extending over the top flange of adjoining complete profiles.

Fixing specification. Fixed to top flange of deck, 2 fixings at each top flange, 2 rows above and below opening and to the side, as shown. Fixings into deck to be stitchers (see RoofDek fixing specification).

Deck pitch

D32S - 200mm	D100 - 233mm
D35 - 150mm	D137 - 310mm
D46 - 225mm	D159 - 250mm
D60 - 200mm	D200 - 375mm

Large openings (cover width) in RoofDek trapezoidal profiles

Framed rectangular openings are permissible up to one deck cover width with no restriction on length. Wider openings must be framed back to the structure. Refer to design rules and guidance table (following page).

Deck must be in a double layer each side of the opening

The C frame distributes the load from the severed deck onto adjoining deck, which must be double layer. (deck design to be single layer). Min. insulation t. 100mm.

Openings must be spaced at least every third deck.

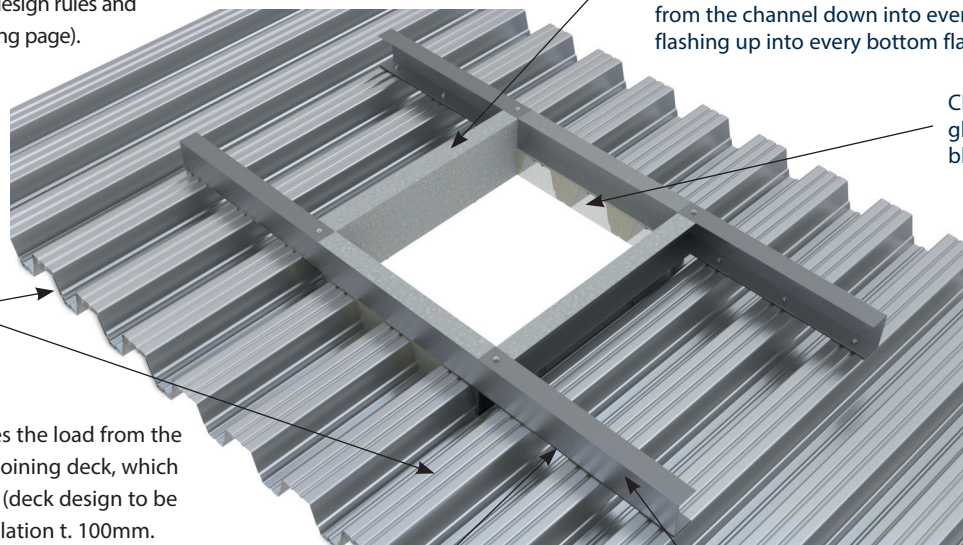
The deck and frame is not designed to carry load from elements within the opening.

Thermal break strip 5mm thick placed between deck and H frame (not needed where the channel is overlaid with insulation)

H frame made from plain C channel 1.6mm thick galv. steel min. 95 x 50mm extending over adjoining doubled up decks. Fixed to top flange of deck, 1 fixing at each top flange, Fixings into deck to be stitchers. (see RoofDek fixing specification)

Closure flashings 0.7mm steel to same finish as deck on all 4 sides of opening. Seal to preserve vapour barrier and infill behind with insulation. The flashing must be secured under the deck, to assist bearing. Fix into deck from the channel down into every top flange, from the flashing up into every bottom flange of deck

Closure flashing shown ghosted to see filler blocks behind



Tata RoofDek openings design rules and guidance

	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
Openings and penetrations in Tata RoofDek shall be taken into account in the verification of the ultimate and serviceability limit state design, in accordance with BS EN 1090-4 Clause B.11 and Tata guidelines	An unstiffened single opening up to 125mm x 125mm is permissible without any additional design analysis, provided the hole is positioned within 10% of the span from the end support or point of zero moment, in accordance with BS EN 1090-4 Clause B.11. The point of zero moment is found at each of the deck, and also positioned approximately 25% of the span distance from the central support for continuous decking. This point of zero moment, also known as the point of contraflexure (POC) exists between the cross-over from hogging to sagging moment in continuous decking.	An unstiffened small single opening of diameter not exceeding the deck bottom trough width can be accommodated at any position along the span. Multiple holes must be spaced no less than 1.50m apart, in any direction. A 10% reduction in strength and serviceability is considered within the Tata RoofDek design tool.	An unstiffened single opening of 125mm x 125mm is permissible at mid-span. A 20% reduction in strength and serviceability is considered within the Tata RoofDek design tool.	Openings up to 300mm x 300mm are permissible without framing but will require a stiffening plate. Plate specification and design considerations are both in accordance with BS EN 1090-4 Clause B.11, and accounted for in the Tata RoofDek design tool.	Openings between 300mm and 500mm may be framed. Alternatively, the opening is permissible without framing but will require a 2.00mm stiffening plate of width to cover a complete rib either side of the opening in accordance with BS EN 1090-4 Clause B.11. A 30% reduction in strength and serviceability is considered within the Tata RoofDek design tool.	Openings exceeding 500mm shall be framed.

Installation details

3.9 Deck cut outs at supports

Interruptions to bearing (eg Stub column on top of beam flange)

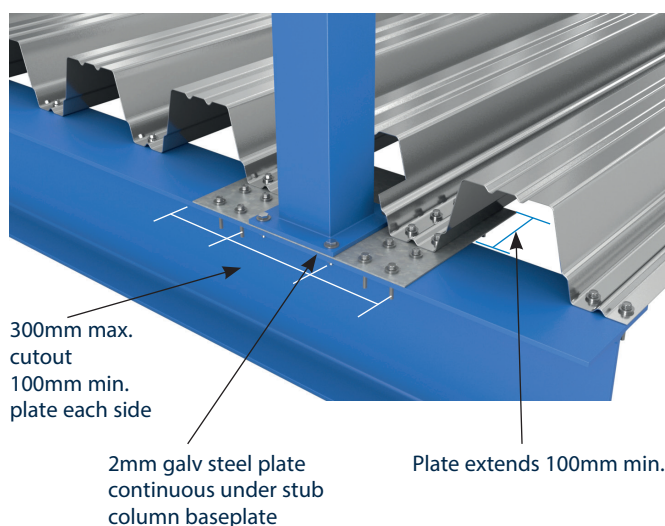
Where the end of the deck has to be cut to avoid an obstruction on the support, provision must be made to ensure full bearing support is still provided to the deck.

Gaps up to 300mm, maximum

The replacement bearing may be provided by a 2mm galv steel plate, secured to the top flange of the beam and the bottom flange of the deck, as shown here. The plate must be continuous under the obstruction as shown.

Gaps over 300mm.

Full bearing at least 50mm wide must be provided by a welded plate, extending the beam flange around the obstruction.



Fixing deck to plate
Purlin type*, through bottom flange of deck, into plate. Minimum 4 per bottom flange of deck.

Fixing 2mm plate to beam-
Hot rolled steel type*, through plate into beam. Min. 4 opposite every deck bottom flange.

* See RoofDek Accessory specification

Interruptions to side support

Where the side of the deck has to be cut to avoid an obstruction on the support, provision must be made to ensure sufficient stiffness is maintained in the deck to give good side support and avoid local deformation.

Gaps up to 200mm, maximum

Up to 200mm gaps may be accommodated without a stiffening plate, provided the deck is fixed to the side support directly on both sides, and generally at 500mm as per standard fixing recommendation. There must be at least (cutout_dim. x3) between cut outs.

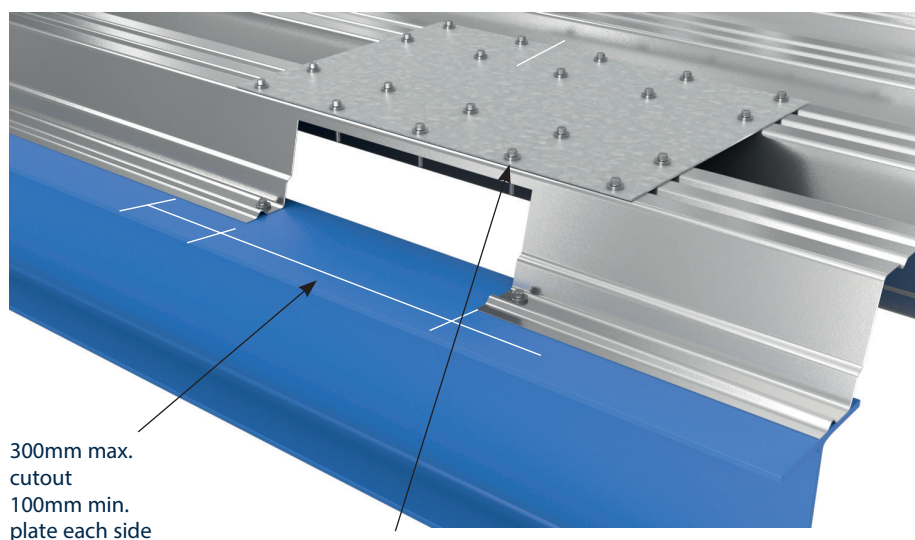
Gaps 200mm -> 300mm.

A 2mm galv steel stiffening plate is required as shown on this detail to extend across 2 deck crowns. The deck is to be fixed to the side support directly on both sides, and generally at 500mm. There must be at least (cutout_dim. x3) mm between cut outs.

Gaps over 300mm.

Full bearing at must be provided by a welded plate, extending the beam flange around the obstruction. Additional flashings will also be needed to connect the deck onto the beam extension.

Detail for gaps 200mm -> 300mm



Fixings through plate into deck. Stitcher type

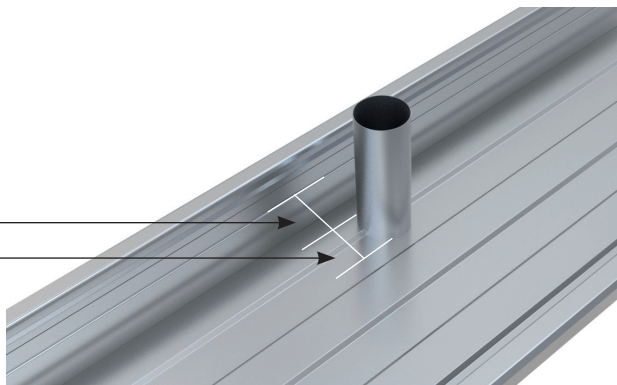
Installation details

3.10 Openings in RoofDek liner tray, partition connection to deck soffit, construction dead loads, beam stays

Circular openings up to 100mm in liner tray

Unstiffened circular openings are permissible, up to 100mm diameter within the tray trough, at least 125mm from the upstand. Small openings must be spaced at a minimum of 1.2m c/c

Min.edge distance 125mm
100mm dia. maximum

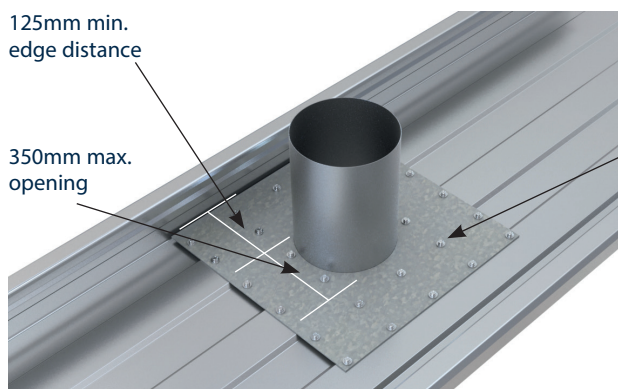


Medium openings in liner tray up to 350mm

Stiffened circular or rectangular openings are permissible up to 350mm diameter at least 125mm from the upstand, as shown here. The maximum length of a rectangular opening is its width.

Small and medium openings must be spaced at a minimum of 1.2m centres. The vapour control layer, preventing the ingress of moisture from inside the building to the roof void, must be fully and effectively maintained.

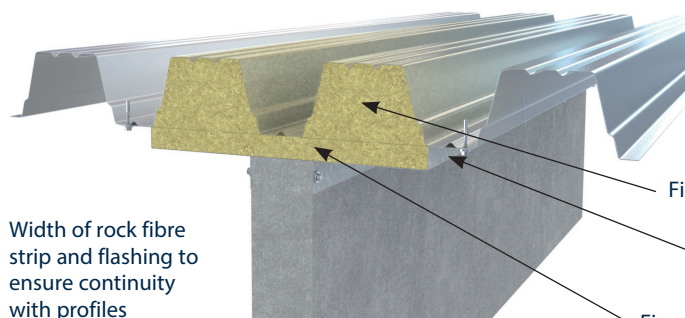
Larger openings must be framed back to the structure.



Distribution plate. 2mm thick galv. steel Plate to be sufficient size to allow for the opening plus at least 125mm between the opening and the edge of the plate, in every direction

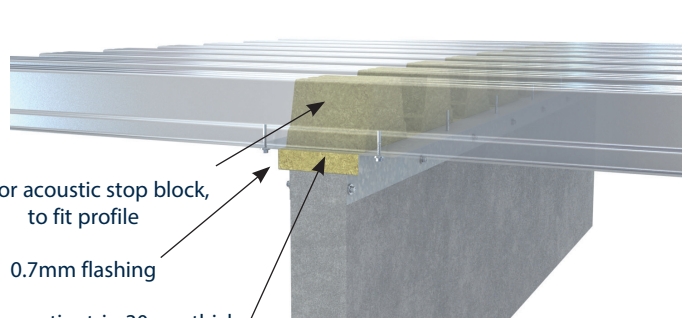
Fixing specification.
Fixed to trough of liner tray, 2 rows above and below opening and to the side, as shown. Fixings into tray to be stitchers. (see RoofDek fixing specification)

RoofDek with non supporting separating wall underneath. Running parallel to deck



Width of rock fibre strip and flashing to ensure continuity with profiles

RoofDek with non supporting separating wall underneath. Running perpendicular to deck



Fire or acoustic stop block, to fit profile

0.7mm flashing

Fire or acoustic strip 30mm thick

Width of rock fibre strip to suit fire or acoustic rating.

Installation details

3.11 Placement of construction stage dead loads, beam stay attachment

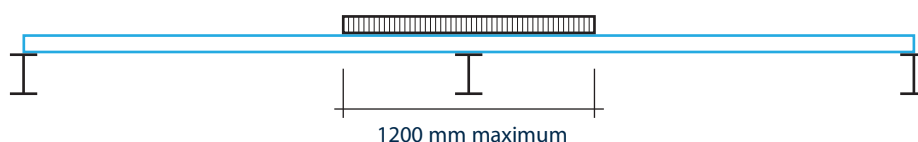
Placement of construction stage dead loads

Construction stage dead loads placed on decking should be carefully considered and follow the following rules:

1. Do not put concentrated loads directly on to the deck.
2. Place all loads directly over support beams. The load width should not exceed 1.2m, but the load length along the beam is unrestricted.
3. Roofing materials should be in solid well distributed packs or placed on to strong pallets that evenly distribute the load over as many profiles as possible.
4. Consult our Technical Department for any loading outside these parameters.

Permissible weight over an area 2.4m x 1.2m

Roofdek specification		Plain web	Perforated web
Steel	0.7mm	800 kg	600 kg
Steel	0.9mm	1000 kg	800 kg
Steel	1.2mm	1200 kg	1000 kg
Aluminium	0.9mm	600 kg	400 kg
Aluminium	1.2mm	800 kg	600 kg



Beam stay attachment

ANGLE BRACKET Steel min. 3mm thick, either HD Galv or painted with primer and topcoat.

4 stitcher* fixings per bracket

Beam stay at 45° or less to horizontal. Beam stay and bolted connection to Engineer's design. (depicted here as 45x45x2mm galv angle with 12mm bolt and nut)



SAFE AXIAL LOAD - (see safety note)

- 1.2kN for 0.7mm Colorcoat deck
- 1.6kN for 0.7mm metallic/interior steel liner deck
- 2.3kN for 0.9mm metallic/interior steel liner deck
- 3.2kN for 1.2+mm metallic/interior steel liner deck
- 1.2kN for 0.9mm Aluminium deck
- 1.8kN for 1.2+mm Aluminium deck.

LOAD SAFETY NOTE - The deck capacity must also be checked for the restraint load applied.

* See RoofDek accessory specification

Installation details

3.12 Accessory specification

For the current list of recommended suppliers of RoofDek accessories, contact our Technical Department on 01244 892199 or email: technical.structuralproducts@tatasteel.eu

Main fixing (fixing to support)

To hot rolled steel, minimum flange thickness 6mm

- Either: 5.5mm stainless steel drill screw
- Or: 5.5mm carbon steel drill screw
- Or: Heavy duty shot fired pin

To cold formed steel purlin, minimum flange thickness 1.5mm

- Either: 5.5mm stainless steel drill screw
- Or: 5.5mm carbon steel drill screw

To timber and glulam timber, minimum penetration 40mm:
6.5mm stainless steel drill screw

Stitcher fixing (see sheet to sheet)

- Either: 5.5mm stainless steel stitching screw
- Or: 4.8mm carbon steel stitching screw
- Or: 4.8mm stainless steel rivet

Alternative fixings must be tested to ECCS No.124 or have EC compliant data and be approved by us.

Stainless steel fixings are necessary for use with timber, aluminium deck or exposed or aggressive environments.

Sealant

Sealant Type:

Inside joint strip sealant: 4mm diameter bead butyl mastic strip sealant (minimum 25 year guarantee)

Over joint tape sealant: 50 mm x 1 mm butyl mastic strip sealant (minimum 25 year guarantee) with plastic backing strip.

For the current list of recommended suppliers of RoofDek accessories, please contact our Technical Department on 01244 892199

Profile fillers

Profile fillers (not fire rated)

Provide profiled filler blocks 25mm thick to fit open flutes of deck profile, seal filler blocks top and bottom in continuous strip sealant. Filler blocks to be EPDM, MP or Superseal.

Profile fillers (fire or acoustic rated)

Provide rock fibre filler blocks to fit the open flutes of deck profile to thickness required for fire or acoustic rating.

For the current list of recommended suppliers of RoofDek Accessories, contact our Technical Department on 01244 892199 or email: technical.structuralproducts@tatasteel.eu



Resorts World, Birmingham UK

Steelwork Contractor: Severfield

Roof decking installer: Briggs Roofing

Section 4

Load/span tables

Technical information

Notes to the load/span tables

- Black figures are stress limited, the load shown is the ultimate load divided by 1.5.
- Blue figures are deflection limited.
- Red figures show deck length exceeds 12m, these spans need extended end laps.
- Calculations are to Eurocode, however additional checks such as fixings are required.
- A construction line load of 1.5 kN/m has been allowed for.
- Deck self weight has been allowed for, so does not have to be included in applied loads.

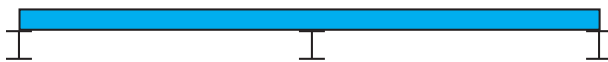
Span types

Single span



Single span – one length of deck with a support at each end.

Double span



Double span – one length of deck with a support at each end plus a support in the middle.

Multi span



Multi span – The length of deck extends over more than 3 supports.

Where the deck end laps, it must be lapped over by at least 65mm. This does not provide continuity – extended end laps are required for continuity, please see Installation details. Section 3.7.

All steel based span tables are calculated using S280 grade steel, unless otherwise stated. Our Aluminum span tables have been calculated using a minimum yield strength of 165 MPa to ensure all eventualities of supply are covered.

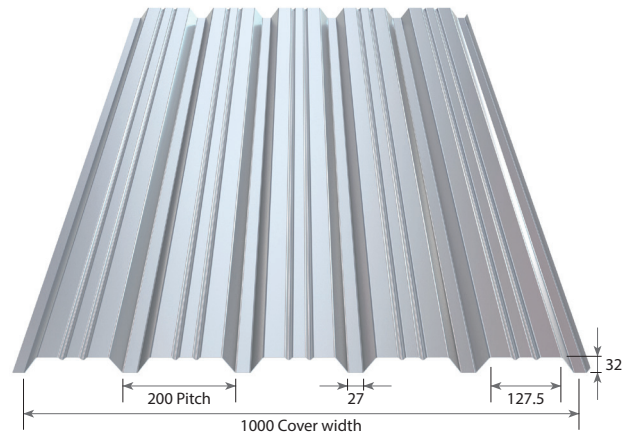
Where Colorcoat HPS200 Ultra® or Colorcoat Prisma® are specified, please contact our technical department for the relevant span tables, as these may differ due to the lower steel grade.

RoofDek D32S

0.70mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm S280 Interior Colorcoat® PE15 liner or metallic coating

1.20mm S280 Interior Colorcoat® PE15 liner or metallic coating



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		65mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.70mm Steel S280	0.66	6.82	1.59	11.12	1.24	10.08	10.98	5.49	42.08
0.90mm Steel S280	0.86	8.77	2.32	14.38	1.78	13.14	18.14	9.07	54.84
1.20mm Steel S280	1.16	11.71	3.89	18.66	2.40	17.71	31.93	15.96	73.96

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

		Span condition	Span (metres)															
		0.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	
0.70mm Steel S280	Imposed	Single	8.09	7.28	6.61	5.12	4.01	3.20	2.59	2.12	1.76	1.47	1.24	–	–	–	–	–
		Double	5.17	4.47	3.91	3.45	3.07	2.75	2.48	2.25	2.05	1.87	1.72	1.59	1.47	1.36	1.26	1.18
		Multi	6.08	5.27	4.62	4.08	3.64	3.27	2.96	2.68	2.45	2.25	2.07	1.91	1.76	1.52	1.32	1.16
	Suction	Single	8.18	6.63	5.49	4.62	3.94	3.41	2.97	2.62	2.27	1.93	1.65	–	–	–	–	–
		Double	10.51	8.52	7.05	5.93	5.06	4.37	3.81	3.35	2.98	2.66	2.39	2.16	1.97	1.80	1.65	1.52
		Multi	12.75	10.34	8.55	7.19	6.13	5.30	4.62	4.06	3.61	3.22	2.90	2.62	2.28	1.99	1.75	1.55
0.90mm Steel S280	Imposed	Single	13.38	11.51	8.63	6.63	5.19	4.14	3.35	2.75	2.27	1.90	1.60	1.36	1.17	–	–	–
		Double	8.13	7.00	6.11	5.38	4.77	4.27	3.84	3.47	3.16	2.89	2.65	2.44	2.25	2.08	1.94	1.80
		Multi	9.59	8.28	7.24	6.39	5.68	5.09	4.59	4.16	3.79	3.47	3.10	2.65	2.28	1.97	1.71	1.50
	Suction	Single	11.79	9.56	7.91	6.66	5.68	4.91	4.27	3.53	2.96	2.51	2.15	1.85	1.61	–	–	–
		Double	15.31	12.41	10.27	8.64	7.37	6.36	5.55	4.88	4.33	3.87	3.48	3.15	2.86	2.61	2.39	2.20
		Multi	18.39	14.91	12.33	10.37	8.84	7.63	6.66	5.86	5.20	4.64	3.97	3.42	2.96	2.59	2.28	2.01
1.20mm Steel S280	Imposed	Single	20.53	14.94	11.19	8.60	6.74	5.37	4.34	3.56	2.95	2.47	2.08	1.77	1.51	1.30	1.12	0.97
		Double	12.79	10.95	9.49	8.30	7.33	6.53	5.85	5.27	4.77	4.34	3.97	3.64	3.35	3.10	2.87	2.51
		Multi	15.18	13.03	11.31	9.93	8.78	7.83	7.03	6.35	5.67	4.75	4.03	3.44	2.95	2.55	2.22	1.94
	Suction	Single	15.89	12.89	10.66	8.97	7.66	6.61	5.76	4.76	3.99	3.38	2.89	2.50	2.17	1.90	1.68	1.49
		Double	25.71	20.84	17.24	14.50	12.36	10.67	9.30	8.19	7.26	6.48	5.83	5.27	4.78	4.37	3.89	3.44
		Multi	24.79	20.09	16.62	13.98	11.92	10.29	8.97	7.90	7.00	6.25	5.35	4.61	4.00	3.49	3.07	2.71

RoofDek D35

0.70mm S280 Interior Colorcoat® PE15 liner or metallic coating

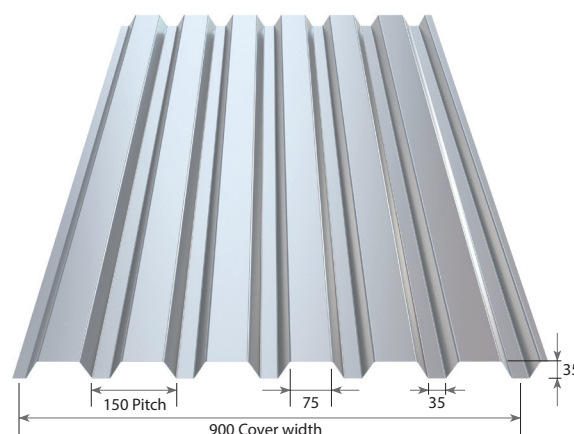
0.90mm S280 Interior Colorcoat® PE15 liner or metallic coating

1.20mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm R_{p0,2} 165 aluminium*

1.20mm R_{p0,2} 165 aluminium*

*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		65mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.70mm Steel S280	0.66	7.08	1.92	12.90	1.96	16.07	15.07	7.53	57.61
0.90mm Steel S280	0.86	9.11	2.71	18.63	2.81	22.15	24.89	12.44	75.07
1.20mm Steel S280	1.16	12.16	4.39	27.91	3.94	29.85	43.81	21.90	101.25
0.90mm Alu 0.2% 165*	0.90	3.16	1.47	20.46	1.51	21.46	10.93	5.46	42.09
1.20mm Alu 0.2% 165*	1.20	4.21	2.20	27.70	2.21	29.69	18.82	9.41	56.11

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

		Span (metres)																
		Span condition	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80
0.70mm Steel S280	Imposed	Single	4.67	3.72	3.01	2.47	2.05	1.71	1.45	1.23	–	–	–	–	–	–	–	–
		Double	4.50	4.04	3.66	3.33	3.04	2.79	2.57	2.37	2.20	2.04	1.90	1.75	1.54	1.36	1.21	1.07
		Multi	5.32	4.79	4.34	3.95	3.62	3.30	2.79	2.38	2.05	1.77	1.54	1.35	1.19	1.05	0.93	–
	Suction	Single	6.23	5.37	4.69	4.13	3.59	3.03	2.59	2.23	–	–	–	–	–	–	–	–
		Double	6.10	5.27	4.60	4.04	3.59	3.21	2.88	2.60	2.37	2.16	1.98	1.82	1.68	1.56	1.45	1.35
		Multi	7.62	6.57	5.73	5.04	4.47	3.99	3.59	3.24	2.95	2.69	2.46	2.27	2.09	1.92	1.73	–
0.90mm Steel S280	Imposed	Single	6.75	5.38	4.36	3.58	2.97	2.49	2.10	1.79	1.53	1.32	1.15	1.00	–	–	–	–
		Double	7.00	6.28	5.67	5.14	4.69	4.29	3.95	3.64	3.37	3.13	2.89	2.53	2.23	1.97	1.75	1.56
		Multi	8.30	7.46	6.75	6.13	5.60	4.77	4.04	3.45	2.97	2.52	2.24	1.96	1.72	1.52	1.35	1.20
	Suction	Single	8.91	7.69	6.71	5.90	4.94	4.17	3.56	3.07	2.66	2.33	2.05	1.81	–	–	–	–
		Double	8.62	7.44	6.49	5.71	5.06	4.52	4.07	3.68	3.34	3.05	2.79	2.57	2.37	2.20	2.04	1.90
		Multi	10.76	9.28	8.10	7.12	6.32	5.64	5.07	4.58	4.16	3.80	3.48	3.20	2.95	2.65	2.37	2.14
1.20mm Steel S280	Imposed	Single	10.13	8.08	6.55	5.38	4.46	3.74	3.16	2.69	2.31	1.99	1.73	1.51	1.32	1.16	1.02	0.91
		Double	11.09	9.90	8.90	8.05	7.32	6.68	6.12	5.63	5.20	4.82	4.34	3.81	3.35	2.97	2.64	2.35
		Multi	13.22	11.83	10.65	9.65	8.53	7.16	6.07	5.19	4.47	3.87	3.37	2.95	2.60	2.30	2.04	1.82
	Suction	Single	12.52	10.80	9.42	7.96	6.65	5.62	4.80	4.13	3.59	3.13	2.76	2.44	2.17	1.95	1.75	1.58
		Double	13.92	12.01	10.48	9.22	8.17	7.30	6.56	5.93	5.58	4.91	4.50	4.14	3.82	3.54	3.29	3.06
		Multi	17.38	15.00	13.08	11.50	10.20	9.10	8.18	7.39	6.66	5.81	5.10	4.50	4.00	3.57	3.20	2.88
0.90mm Alu 0.2% 165*	Imposed	Single	2.47	1.97	1.60	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	3.35	3.02	2.74	2.49	2.28	2.09	1.90	1.63	1.40	1.21	–	–	–	–	–	–
		Multi	3.96	3.57	3.04	2.50	2.08	1.75	1.48	1.27	1.09	0.94	–	–	–	–	–	–
	Suction	Single	3.53	2.83	2.31	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	4.67	4.03	3.51	3.09	2.74	2.44	2.20	1.98	1.80	1.64	–	–	–	–	–	–
		Multi	5.83	5.03	4.33	3.57	2.99	2.52	2.15	1.85	1.60	1.39	–	–	–	–	–	–
1.20mm Alu 0.2% 165*	Imposed	Single	3.35	2.67	2.16	1.78	1.47	–	–	–	–	–	–	–	–	–	–	–
		Double	5.41	4.86	4.39	3.98	3.61	3.04	2.58	2.20	1.90	1.64	1.43	1.26	1.11	0.98	–	–
		Multi	6.35	5.08	4.12	3.39	2.82	2.37	2.01	1.71	1.48	1.28	1.11	0.98	–	–	–	–
	Suction	Single	4.88	3.92	3.19	2.64	2.21	–	–	–	–	–	–	–	–	–	–	–
		Double	6.97	6.02	5.24	4.61	4.09	3.65	3.28	2.96	2.69	2.45	2.15	1.90	1.68	1.50	–	–
		Multi	8.71	7.36	5.99	4.94	4.13	3.48	2.97	2.55	2.21	1.93	1.69	1.49	–	–	–	–

RoofDek D46

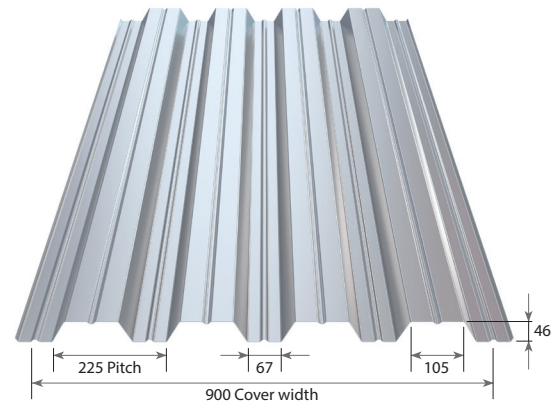
0.70mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm S280 Interior Colorcoat® PE15 liner or metallic coating

1.20mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm Rp_{0,2} 165 aluminium

1.20mm Rp_{0,2} 165 aluminium



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
0.70mm Steel S280	0.66	7.20	2.89	28.04	3.12	30.73	Internal Rw kN/m	End Rw kN/m	41.73
0.90mm Steel S280	0.86	9.26	4.13	39.17	4.28	40.04	34.17	8.29	65.91
1.20mm Steel S280	1.16	12.37	6.62	53.98	5.80	53.98	57.79	14.59	88.90
0.90mm Alu 0.2% 165*	0.90	3.21	1.98	36.98	2.13	38.52	14.92	3.64	31.26
1.20mm Alu 0.2% 165*	1.20	4.28	3.02	50.07	3.10	52.87	24.71	6.27	49.27

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

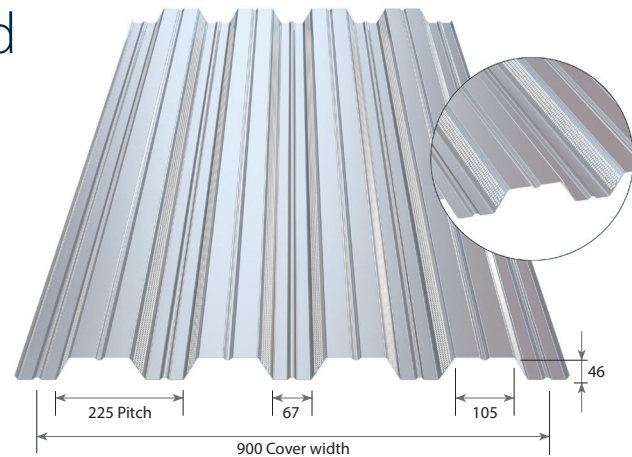
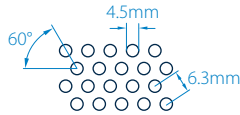
		Span (metres)																
		Span condition	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00
0.70mm Steel S280	Imposed	Single	6.64	5.53	4.73	4.13	3.67	2.76	2.05	1.57	1.22	0.96	–	–	–	–	–	–
		Double	8.87	7.39	6.05	5.00	4.21	3.59	3.11	2.72	2.39	2.13	1.90	1.59	1.32	1.10	0.92	–
		Multi	8.31	6.92	5.93	5.18	4.60	4.13	3.71	3.02	2.36	1.87	1.51	1.23	1.02	–	–	–
	Suction	Single	16.70	11.61	8.54	6.55	5.19	4.20	3.17	2.46	1.95	1.58	–	–	–	–	–	–
		Double	15.45	10.74	7.91	6.06	4.80	3.90	3.23	2.72	2.33	2.01	1.76	1.55	1.38	1.24	1.11	–
		Multi	19.30	13.42	9.87	7.57	5.99	4.86	4.03	3.39	2.90	2.50	2.19	1.93	1.66	–	–	–
0.90mm Steel S280	Imposed	Single	10.99	9.15	7.83	6.85	5.33	3.86	2.88	2.19	1.71	1.35	1.08	–	–	–	–	–
		Double	14.56	11.30	9.07	7.46	6.25	5.32	4.59	3.99	3.51	3.11	2.73	2.23	1.85	1.54	1.30	1.10
		Multi	13.75	11.45	9.81	8.57	7.45	6.36	5.50	4.22	3.30	2.62	2.12	1.73	1.43	1.19	1.00	–
	Suction	Single	22.90	15.92	11.71	8.98	7.11	5.47	4.13	3.20	2.54	2.05	1.69	–	–	–	–	–
		Double	22.11	15.37	11.31	8.67	6.87	5.57	4.62	3.89	3.32	2.87	2.51	2.21	1.97	1.76	1.59	1.44
		Multi	27.62	19.20	14.12	10.83	8.57	6.95	5.75	4.85	4.14	3.58	3.10	2.57	2.16	1.83	1.57	–
1.20mm Steel S280	Imposed	Single	19.37	16.13	13.81	10.51	7.34	5.32	3.97	3.03	2.36	1.86	1.49	1.21	0.99	–	–	–
		Double	22.61	17.39	13.84	11.29	9.40	7.96	6.83	5.92	5.18	4.58	3.77	3.08	2.55	2.13	1.79	1.52
		Multi	24.23	20.18	16.48	13.50	11.27	9.57	7.59	5.82	4.55	3.62	2.92	2.39	1.97	1.64	1.38	1.16
	Suction	Single	30.99	21.54	15.85	12.15	9.62	7.38	5.57	4.32	3.42	2.77	2.27	1.89	1.60	–	–	–
		Double	35.41	24.61	18.11	13.88	10.98	8.91	7.38	6.21	5.31	4.59	4.01	3.53	3.14	2.81	2.53	2.29
		Multi	44.24	30.75	22.61	17.33	13.71	11.12	9.20	7.75	6.35	5.11	4.18	3.46	2.91	2.47	2.12	1.83
0.90mm Alu 0.2% 165*	Imposed	Single	4.83	4.02	3.44	2.40	1.67	1.21	–	–	–	–	–	–	–	–	–	–
		Double	6.45	5.20	4.19	3.46	2.91	2.49	2.15	1.70	1.33	1.06	–	–	–	–	–	–
		Multi	6.04	5.03	4.31	3.77	3.18	2.31	1.73	1.33	1.04	–	–	–	–	–	–	–
	Suction	Single	11.38	7.91	5.06	3.40	2.40	1.76	–	–	–	–	–	–	–	–	–	–
		Double	10.60	7.37	5.42	4.15	3.29	2.66	2.21	1.86	1.59	1.37	–	–	–	–	–	–
		Multi	13.24	9.20	6.77	5.19	4.10	3.29	2.48	1.92	1.51	–	–	–	–	–	–	–
1.20mm Alu 0.2% 165*	Imposed	Single	8.33	6.93	4.86	3.24	2.27	1.64	1.22	–	–	–	–	–	–	–	–	–
		Double	10.54	8.19	6.58	5.41	4.54	3.86	3.01	2.31	1.80	1.44	1.16	0.95	–	–	–	–
		Multi	10.41	8.67	7.43	6.16	4.31	3.13	2.34	1.80	1.40	1.11	–	–	–	–	–	–
	Suction	Single	16.56	11.01	6.95	4.67	3.29	2.41	1.82	–	–	–	–	–	–	–	–	–
		Double	16.13	11.21	8.25	6.32	5.00	4.05	3.36	2.82	2.41	2.08	1.73	1.44	–	–	–	–
		Multi	20.16	14.01	10.30	7.89	6.17	4.51	3.40	2.63	2.08	1.67	–	–	–	–	–	–

RoofDek D46 - web perforated

Perforating pattern 4546 (46%).

4.5mm ø holes at 6.3mm triangular centres.

Open area is 9.94% of exposed soffit (11.05% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
0.70mm Steel S280	0.66	6.49	2.73	26.84	2.91	29.40	Internal Rw kN/m	End Rw kN/m	11.27
0.90mm Steel S280	0.86	8.35	3.93	37.59	4.04	38.31	12.94	2.93	23.75
1.20mm Steel S280	1.16	11.15	6.41	51.68	5.48	51.68	22.08	5.19	43.21
0.90mm Alu 0.2% 165*	0.90	2.89	1.84	35.42	1.92	36.48	5.66	1.29	8.66
1.20mm Alu 0.2% 165*	1.20	3.86	2.85	47.94	2.89	50.43	9.45	2.23	18.63

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

		Span (metres)																
		Span condition	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00
0.70mm Steel S280	Imposed	Single	2.30	1.91	1.63	1.42	1.26	1.13	1.02	0.93	–	–	–	–	–	–	–	–
		Double	3.08	2.56	2.19	1.91	1.69	1.52	1.38	1.26	1.16	1.07	1.00	0.93	–	–	–	–
		Multi	2.89	2.40	2.05	1.79	1.59	1.42	1.29	1.18	1.08	1.00	0.93	–	–	–	–	–
	Suction	Single	15.57	10.82	7.96	6.11	4.83	3.92	3.03	2.36	–	–	–	–	–	–	–	–
		Double	14.60	10.15	7.47	5.73	4.53	3.68	3.05	2.57	2.20	1.90	1.66	1.46	–	–	–	–
		Multi	18.24	12.68	9.32	7.15	5.66	4.59	3.80	3.20	2.73	2.36	2.06	–	–	–	–	–
0.90mm Steel S280	Imposed	Single	3.85	3.20	2.74	2.39	2.12	1.90	1.72	1.57	1.45	1.30	1.04	–	–	–	–	–
		Double	5.15	4.29	3.67	3.20	2.84	2.55	2.31	2.12	1.95	1.81	1.67	1.52	1.39	1.27	1.17	1.06
		Multi	4.83	4.01	3.43	3.00	2.66	2.39	2.17	1.98	1.82	1.69	1.57	1.47	1.37	1.14	0.96	–
	Suction	Single	21.61	15.02	11.05	8.48	6.71	5.23	3.95	3.06	2.43	1.96	1.61	–	–	–	–	–
		Double	21.01	14.61	10.75	8.24	6.52	5.29	4.39	3.69	3.16	2.73	2.38	2.10	1.87	1.67	1.51	1.36
		Multi	26.25	18.25	13.42	10.29	8.14	6.60	5.47	4.60	3.93	3.40	2.96	2.45	2.06	1.75	1.50	–
1.20mm Steel S280	Imposed	Single	6.84	5.69	4.87	4.25	3.77	3.38	3.07	2.81	2.26	1.79	1.43	1.16	0.96	–	–	–
		Double	9.15	7.61	6.51	5.69	5.05	4.54	4.05	3.58	3.19	2.86	2.58	2.34	2.14	1.95	1.72	1.46
		Multi	8.57	7.13	6.10	5.33	4.73	4.25	3.68	3.53	3.25	3.01	2.80	2.29	1.89	1.58	1.32	1.12
	Suction	Single	29.27	20.35	14.97	11.48	9.09	7.06	5.33	4.13	3.27	2.64	2.17	1.81	1.52	–	–	–
		Double	34.28	23.82	17.52	13.43	10.63	8.62	7.14	6.01	5.13	4.44	3.87	3.41	3.03	2.71	2.44	2.20
		Multi	42.83	29.76	21.89	16.77	13.27	10.76	8.91	7.50	6.08	4.89	3.99	3.31	2.78	2.36	2.02	1.75
0.90mm Alu 0.2% 165*	Imposed	Single	1.70	1.41	1.21	1.05	0.94	–	–	–	–	–	–	–	–	–	–	–
		Double	2.27	1.89	1.62	1.41	1.25	1.13	1.02	0.94	–	–	–	–	–	–	–	–
		Multi	2.13	1.77	1.51	1.32	1.17	1.05	0.96	–	–	–	–	–	–	–	–	–
	Suction	Single	10.26	7.13	4.79	3.22	2.27	–	–	–	–	–	–	–	–	–	–	–
		Double	9.83	6.83	5.03	3.85	3.05	2.47	2.05	1.72	–	–	–	–	–	–	–	–
		Multi	12.29	8.54	6.28	4.81	3.80	3.09	2.35	–	–	–	–	–	–	–	–	–
1.20mm Alu 0.2% 165*	Imposed	Single	2.95	2.45	2.10	1.83	1.63	1.46	1.17	–	–	–	–	–	–	–	–	–
		Double	3.94	3.28	2.80	2.45	2.18	1.96	1.78	1.63	1.49	1.35	1.11	0.91	–	–	–	–
		Multi	3.69	3.07	2.63	2.30	2.04	1.83	1.66	1.52	1.35	1.07	–	–	–	–	–	–
	Suction	Single	15.44	10.50	6.62	4.45	3.14	2.30	1.74	–	–	–	–	–	–	–	–	–
		Double	15.23	10.58	7.78	5.96	4.72	3.83	3.17	2.66	2.27	19.6	1.65	1.37	–	–	–	–
		Multi	19.03	13.22	9.72	7.45	5.89	4.30	3.24	2.50	1.98	1.59	–	–	–	–	–	–

RoofDek D60

0.70mm S280 Interior Colorcoat® PE15 liner or metallic coating

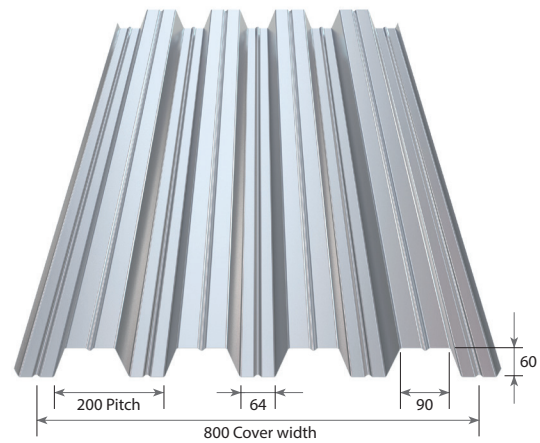
0.90mm S280 Interior Colorcoat® PE15 liner or metallic coating

1.20mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm R_{p0,2} 165 aluminium*

1.20mm R_{p0,2} 165 aluminium*

*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.70mm Steel S280	0.66	8.34	4.42	54.13	4.65	57.35	25.29	5.93	47.11
0.90mm Steel S280	0.86	10.73	6.22	74.69	6.34	74.69	40.38	9.79	79.99
1.20mm Steel S280	1.16	14.32	9.60	100.68	8.62	100.68	68.28	17.23	121.05
0.90mm Alu 0.2% 165*	0.90	3.72	3.06	69.55	3.22	72.26	17.62	4.30	35.30
1.20mm Alu 0.2% 165*	1.20	4.96	4.57	94.57	4.64	98.93	29.20	7.40	62.75

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

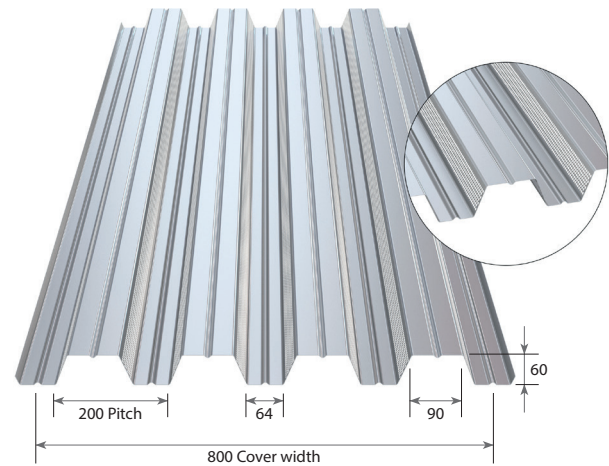
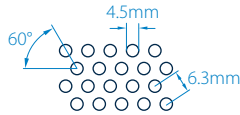
		Span (metres)																
		Span condition	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00
0.70mm Steel S280	Imposed	Single	3.90	3.54	3.08	2.40	1.91	1.54	1.25	1.03	—	—	—	—	—	—	—	—
		Double	4.73	4.12	3.62	3.20	2.86	2.57	2.32	2.11	1.92	1.76	1.56	1.34	1.15	1.00	—	—
		Multi	4.89	4.44	4.06	3.75	3.42	2.97	2.43	2.01	1.68	1.42	1.21	1.03	—	—	—	—
	Suction	Single	6.25	5.18	4.36	3.59	2.89	2.37	1.96	1.65	—	—	—	—	—	—	—	—
		Double	5.95	4.92	4.15	3.54	3.06	2.67	2.36	2.09	1.87	1.69	1.53	1.39	1.27	1.17	—	—
		Multi	7.42	6.14	5.17	4.41	3.81	3.33	2.93	2.60	2.33	2.09	1.90	1.65	—	—	—	—
0.90mm Steel S280	Imposed	Single	6.46	5.55	4.25	3.32	2.64	2.13	1.73	1.43	1.19	0.99	—	—	—	—	—	—
		Double	7.04	6.11	5.35	4.72	4.21	3.77	3.40	3.08	2.80	2.54	2.16	1.86	1.60	1.39	1.21	1.06
		Multi	8.09	7.28	6.39	5.66	5.05	4.10	3.36	2.79	2.33	1.97	1.67	1.43	1.23	1.06	0.92	—
	Suction	Single	8.52	7.06	5.92	4.67	3.76	3.08	2.56	2.15	1.83	1.57	—	—	—	—	—	—
		Double	8.36	6.92	5.82	4.79	4.30	3.75	3.31	2.94	2.63	2.37	2.14	1.95	1.78	1.64	1.51	1.40
		Multi	10.43	8.63	7.26	6.20	5.36	4.67	4.12	3.65	3.27	2.87	2.47	2.15	1.88	1.66	1.48	—
1.20mm Steel S280	Imposed	Single	10.01	7.48	5.73	4.48	3.56	2.87	2.34	1.93	1.60	1.34	1.13	0.96	—	—	—	—
		Double	10.70	9.22	8.04	7.07	6.27	5.60	5.03	4.55	4.06	3.43	2.92	2.50	2.16	1.87	1.63	1.43
		Multi	12.78	11.05	9.66	8.51	6.84	5.53	4.54	3.76	3.14	2.65	2.25	1.93	1.66	1.43	1.24	1.09
	Suction	Single	11.58	9.59	7.97	6.30	5.07	4.15	3.44	2.89	2.46	2.11	1.83	1.60	—	—	—	—
		Double	12.89	10.67	8.98	7.67	6.62	5.78	5.09	4.52	4.04	3.64	3.29	3.00	2.74	2.51	2.32	2.14
		Multi	16.09	13.31	11.20	9.56	8.26	7.20	6.34	5.34	4.52	3.86	3.33	2.90	2.54	2.24	1.99	1.77
0.90mm Alu 0.2% 165*	Imposed	Single	2.30	1.72	1.32	1.03	—	—	—	—	—	—	—	—	—	—	—	—
		Double	3.30	2.87	2.52	2.24	2.00	1.63	1.34	1.11	0.93	—	—	—	—	—	—	—
		Multi	3.56	3.23	2.52	1.97	1.57	1.27	1.04	—	—	—	—	—	—	—	—	—
	Suction	Single	3.27	2.47	1.91	1.51	—	—	—	—	—	—	—	—	—	—	—	—
		Double	4.10	3.39	2.86	2.44	2.10	1.84	1.62	1.44	1.28	—	—	—	—	—	—	—
		Multi	5.12	4.24	3.56	2.82	2.26	1.85	1.53	—	—	—	—	—	—	—	—	—
1.20mm Alu 0.2% 165*	Imposed	Single	3.13	2.34	1.79	1.40	1.11	—	—	—	—	—	—	—	—	—	—	—
		Double	5.14	4.46	3.91	3.44	2.74	2.22	1.82	1.51	1.27	1.07	0.91	—	—	—	—	—
		Multi	5.95	4.46	3.42	2.68	2.14	1.73	1.42	1.17	0.98	—	—	—	—	—	—	—
	Suction	Single	4.48	3.38	2.61	2.07	1.66	—	—	—	—	—	—	—	—	—	—	—
		Double	6.13	5.07	4.27	3.64	3.14	2.74	2.41	2.14	1.88	1.61	1.38	—	—	—	—	—
		Multi	7.66	6.33	4.89	3.86	3.10	2.53	2.09	1.75	1.48	—	—	—	—	—	—	—

RoofDek D60 - web perforated

Perforating pattern 4546 (46%).

4.5mm ø holes at 6.3mm triangular centres.

Open area is 13.17% of exposed soffit (16.46% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal Rw kN/m	End Rw kN/m	
0.70mm Steel S280	0.66	7.25	4.06	51.31	4.15	54.32	8.27	1.80	8.46
0.90mm Steel S280	0.86	9.33	5.85	70.83	5.94	70.83	13.40	3.01	18.73
1.20mm Steel S280	1.16	12.45	9.19	95.52	8.08	95.52	22.90	5.33	42.12
0.90mm Alu 0.2% 165*	0.90	3.23	2.77	65.79	2.83	67.57	5.86	1.32	6.50
1.20mm Alu 0.2% 165*	1.20	4.31	4.27	89.60	4.29	93.45	9.80	2.29	15.42

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

		Span condition	Span (metres)															
		1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	
0.70mm Steel S280	Imposed	Single	2.35	1.95	1.67	1.45	1.29	1.15	1.04	0.95	–	–	–	–	–	–	–	–
		Double	3.15	2.62	2.24	1.95	1.73	1.55	1.41	1.29	1.18	1.10	1.02	0.95	–	–	–	–
		Multi	2.95	2.45	2.10	1.83	1.62	1.45	1.32	1.20	1.11	1.02	0.95	–	–	–	–	–
	Suction	Single	22.15	15.40	11.33	8.68	6.87	5.57	4.61	3.89	–	–	–	–	–	–	–	–
		Double	21.72	15.10	11.10	8.51	6.74	5.46	4.52	3.81	3.25	2.81	2.46	2.16	–	–	–	–
		Multi	27.13	18.86	13.87	10.63	8.41	6.82	5.64	4.75	4.05	3.50	3.06	–	–	–	–	–
0.90mm Steel S280	Imposed	Single	3.95	3.28	2.80	2.44	2.17	1.94	1.76	1.61	1.48	1.37	1.28	1.19	1.12	1.05	0.95	–
		Double	5.28	4.39	3.76	3.28	2.91	2.61	2.37	2.17	1.99	1.85	1.72	1.61	1.51	1.42	1.35	1.28
		Multi	4.95	4.11	3.52	3.07	2.72	2.44	2.22	2.03	1.87	1.73	1.61	1.50	1.41	1.33	1.26	1.19
	Suction	Single	31.73	22.05	16.22	12.43	9.83	7.98	6.60	5.56	4.42	3.56	2.91	2.42	2.03	1.72	1.48	–
		Double	31.27	21.74	15.98	12.25	9.69	7.86	6.51	5.48	4.68	4.04	3.53	3.11	2.76	2.47	2.22	2.01
		Multi	39.07	27.15	19.97	15.30	12.10	9.81	8.12	6.83	5.83	5.04	4.40	3.87	3.44	3.07	2.71	2.34
1.20mm Steel S280	Imposed	Single	7.02	5.84	4.99	4.36	3.87	3.47	3.15	2.88	2.65	2.46	2.29	2.14	1.84	1.53	1.28	1.08
		Double	9.39	7.81	6.69	5.84	5.18	4.66	4.23	3.87	3.56	3.30	3.08	2.84	2.60	2.39	2.21	2.05
		Multi	8.80	7.32	6.26	5.47	4.85	4.36	3.96	3.62	3.33	3.09	2.88	2.69	2.53	2.39	2.26	2.14
	Suction	Single	43.18	30.01	22.07	16.92	13.38	10.86	8.99	7.55	5.97	4.80	3.93	3.26	2.74	2.32	1.99	1.73
		Double	49.10	34.12	25.09	19.23	15.21	12.34	10.21	8.59	7.33	6.33	5.53	4.87	4.32	3.86	3.48	3.15
		Multi	61.35	42.63	31.34	24.02	18.99	15.40	12.74	10.72	9.15	7.90	6.89	6.04	5.05	4.28	3.65	3.15
0.90mm Alu 0.2% 165*	Imposed	Single	1.74	1.45	1.24	1.08	0.96	–	–	–	–	–	–	–	–	–	–	–
		Double	2.33	1.94	1.66	1.45	1.28	1.15	1.05	0.96	–	–	–	–	–	–	–	–
		Multi	2.18	1.81	1.55	1.36	1.20	1.08	0.98	–	–	–	–	–	–	–	–	–
	Suction	Single	15.10	10.50	7.72	5.91	4.18	–	–	–	–	–	–	–	–	–	–	–
		Double	14.78	10.27	7.55	5.79	4.58	3.71	3.07	2.58	–	–	–	–	–	–	–	–
		Multi	18.47	12.83	9.43	7.23	5.71	4.63	3.83	–	–	–	–	–	–	–	–	–
1.20mm Alu 0.2% 165*	Imposed	Single	3.03	2.52	2.15	1.88	1.67	1.50	1.36	1.24	1.15	1.05	–	–	–	–	–	–
		Double	4.04	3.36	2.88	2.52	2.23	2.01	1.82	1.67	1.54	1.43	1.33	1.24	1.17	1.10	1.02	–
		Multi	3.79	3.15	2.70	2.36	2.09	1.88	1.71	1.56	1.44	1.34	1.24	1.16	1.09	0.93	–	–
	Suction	Single	22.89	15.91	11.69	8.22	5.79	4.23	3.19	2.47	1.95	1.57	–	–	–	–	–	–
		Double	22.82	15.86	11.66	8.93	7.06	5.73	4.74	3.99	3.40	2.94	2.56	2.25	2.00	1.77	1.51	–
		Multi	28.52	19.82	14.57	11.16	8.82	7.15	5.92	4.61	3.64	2.92	2.38	1.97	1.65	1.40	–	–

RoofDek D100

0.70mm S280 Interior Colorcoat® PE15 liner or metallic coating

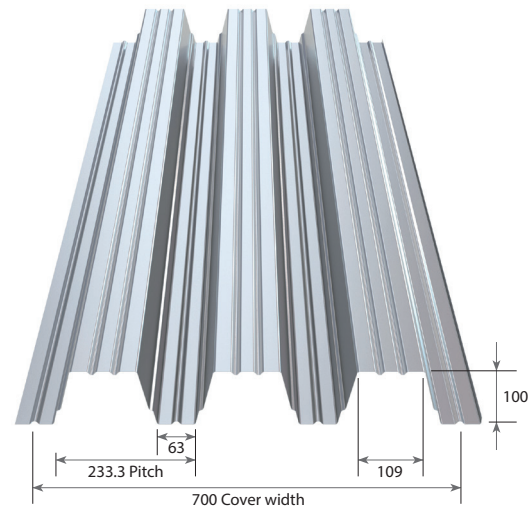
0.90mm S280 Interior Colorcoat® PE15 liner or metallic coating

1.20mm S280 Interior Colorcoat® PE15 liner or metallic coating

0.90mm R_{p0,2} 165 aluminium*

1.20mm R_{p0,2} 165 aluminium*

*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.70mm Steel S280	0.66	9.64	8.08	169.49	8.16	169.49	25.77	6.04	50.19
0.90mm Steel S280	0.86	12.41	11.93	220.74	11.01	220.74	43.75	10.61	82.37
1.20mm Steel S280	1.16	16.57	16.98	297.51	14.94	297.51	77.76	19.63	144.85
0.90mm Alu 0.2% 165*	0.90	4.30	5.65	205.80	5.30	210.83	19.26	4.70	35.94
1.20mm Alu 0.2% 165*	1.20	5.74	8.42	279.58	7.76	288.99	33.40	8.47	62.77

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

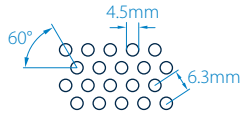
		Span (metres)																
		Span condition	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00
0.70mm Steel S280	Imposed	Single	2.62	2.45	2.31	2.17	2.06	1.95	1.75	1.51	1.31	1.14	1.00	—	—	—	—	—
		Double	3.38	3.08	2.82	2.59	2.39	2.22	2.06	1.92	1.79	1.67	1.57	1.47	1.39	1.31	1.23	1.17
		Multi	3.29	3.08	2.90	2.73	2.59	2.45	2.33	2.23	2.13	2.01	1.88	1.74	1.54	1.37	1.23	1.10
	Suction	Single	4.90	4.31	3.83	3.42	3.08	2.78	2.53	2.23	1.97	1.74	1.55	—	—	—	—	—
		Double	4.85	4.27	3.79	3.39	3.05	2.76	2.50	2.29	2.10	1.93	1.79	1.66	1.54	1.44	1.34	1.26
		Multi	6.05	5.32	4.72	4.22	3.79	3.43	3.12	2.84	2.61	2.40	2.22	2.05	1.91	1.78	1.66	1.56
0.90mm Steel S280	Imposed	Single	4.64	4.34	4.08	3.69	3.12	2.66	2.28	1.97	1.71	1.49	1.30	1.14	1.01	—	—	—
		Double	5.22	4.74	4.33	3.97	3.65	3.37	3.12	2.90	2.70	2.52	2.36	2.21	2.08	1.95	1.84	1.74
		Multi	5.81	5.45	5.12	4.74	4.37	4.04	3.75	3.48	3.25	2.92	2.57	2.27	2.01	1.79	1.60	1.43
	Suction	Single	6.60	5.81	5.16	4.61	4.15	3.75	3.33	2.91	2.56	2.27	2.02	1.81	1.63	—	—	—
		Double	7.15	6.29	5.58	4.99	4.49	4.06	3.69	3.37	3.09	2.84	2.63	2.43	2.26	2.11	1.97	1.85
		Multi	8.92	7.85	6.96	6.22	5.59	5.05	4.59	4.19	3.84	3.53	3.26	3.02	2.81	2.62	2.42	2.20
1.20mm Steel S280	Imposed	Single	8.61	7.16	5.94	4.98	4.21	3.59	3.08	2.65	2.30	2.01	1.76	1.54	1.36	1.20	1.07	0.95
		Double	8.15	7.37	6.70	6.12	5.61	5.17	4.77	4.42	4.10	3.82	3.57	3.34	3.13	2.94	2.76	2.52
		Multi	9.74	8.83	8.04	7.36	6.75	6.23	5.76	5.15	4.49	3.93	3.46	3.06	2.71	2.42	2.16	1.93
	Suction	Single	8.96	7.89	7.00	6.26	5.63	5.09	4.48	3.92	3.45	3.06	2.72	2.44	2.19	1.98	1.80	1.64
		Double	10.17	8.95	7.94	7.10	6.38	5.77	5.24	4.79	4.39	4.04	3.73	3.46	3.21	3.00	2.80	2.62
		Multi	12.69	11.17	9.90	8.84	7.95	7.19	6.53	5.96	5.46	5.02	4.64	4.30	3.99	3.60	3.26	2.96
0.90mm Alu 0.2% 165*	Imposed	Single	2.01	1.65	1.37	1.14	0.97	—	—	—	—	—	—	—	—	—	—	—
		Double	2.40	2.18	2.00	1.83	1.69	1.56	1.45	1.35	1.26	1.16	1.02	0.91	—	—	—	—
		Multi	2.58	2.42	2.28	2.15	1.86	1.59	1.37	1.18	1.03	0.90	—	—	—	—	—	—
	Suction	Single	2.84	2.35	1.96	1.66	1.42	—	—	—	—	—	—	—	—	—	—	—
		Double	3.37	2.97	2.63	2.35	2.11	1.91	1.74	1.58	1.45	1.34	1.23	1.14	—	—	—	—
		Multi	4.21	3.70	3.28	2.93	2.63	2.27	1.97	1.72	1.51	1.33	—	—	—	—	—	—
1.20mm Alu 0.2% 165*	Imposed	Single	2.73	2.24	1.86	1.55	1.31	1.12	0.96	—	—	—	—	—	—	—	—	—
		Double	3.86	3.50	3.20	2.93	2.69	2.49	2.30	2.07	1.81	1.58	1.39	1.23	1.09	0.98	—	—
		Multi	4.59	4.18	3.55	2.98	2.53	2.16	1.86	1.61	1.40	1.23	1.08	0.95	—	—	—	—
	Suction	Single	3.89	3.22	2.69	2.28	1.94	1.67	1.45	—	—	—	—	—	—	—	—	—
		Double	5.03	4.42	3.92	3.50	3.15	2.84	2.58	2.36	2.16	1.99	1.83	1.70	1.58	1.47	—	—
		Multi	6.27	5.52	4.89	4.25	3.62	3.11	2.69	2.35	2.06	1.82	1.62	1.45	—	—	—	—

RoofDek D100 - web perforated

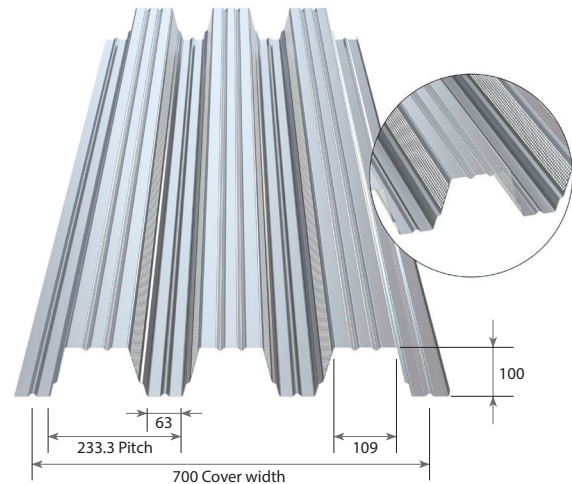
Perforating pattern 4546 (46%).

4.5mm ø holes at 6.3mm triangular centres.

Open area is 12.0% of exposed soffit (17.15% of cover area)



*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
0.90mm Steel S280	0.86	10.92	10.63	214.03	10.26	214.03	Internal R _w kN/m	End R _w kN/m	35.53
1.20mm Steel S280	1.16	14.58	16.17	288.52	14.46	288.52	32.19	7.65	61.98
0.90mm Alu 0.2% 165*	0.90	3.79	4.80	197.50	4.73	200.74	7.70	1.77	15.12
1.20mm Alu 0.2% 165*	1.20	5.05	7.52	268.67	7.22	276.15	13.88	3.31	26.33

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

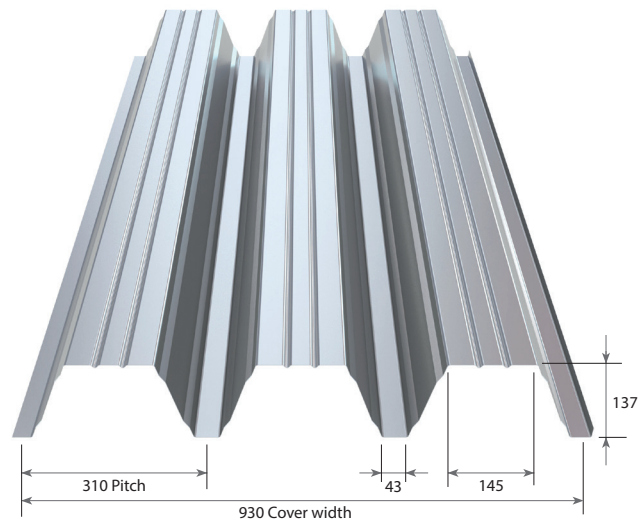
		Span (metres)																
		Span condition	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00
0.90mm Steel S280	Imposed	Single	2.28	2.05	1.85	1.69	1.56	1.44	1.34	1.25	1.17	1.11	1.04	0.99	0.94	–	–	–
		Double	3.07	2.75	2.50	2.28	2.10	1.95	1.81	1.69	1.59	1.50	1.41	1.34	1.27	1.20	1.13	1.06
		Multi	2.87	2.58	2.34	2.13	1.96	1.82	1.69	1.58	1.49	1.40	1.32	1.25	1.19	1.13	1.08	1.03
	Suction	Single	10.88	8.83	7.31	6.15	5.25	4.54	3.96	3.49	3.10	2.63	2.25	1.95	1.70	–	–	–
		Double	11.27	9.14	7.57	6.37	5.44	4.70	4.10	3.62	3.21	2.87	2.58	2.34	2.13	1.95	1.79	1.65
		Multi	14.07	11.41	9.44	7.95	6.78	5.86	5.11	4.50	4.00	3.57	3.21	2.91	2.64	2.41	2.22	2.04
1.20mm Steel S280	Imposed	Single	4.44	3.99	3.62	3.31	3.04	2.82	2.63	2.46	2.31	2.17	2.03	1.72	1.46	1.26	1.08	0.93
		Double	5.95	5.35	4.85	4.44	4.09	3.79	3.52	3.21	2.94	2.71	2.50	2.32	2.15	2.01	1.87	1.75
		Multi	5.57	5.01	4.54	4.16	3.83	3.55	3.31	3.09	2.91	2.74	2.59	2.46	2.33	2.22	2.12	1.89
	Suction	Single	15.33	12.44	10.30	8.67	7.40	6.39	5.58	4.92	4.18	3.55	3.04	2.62	2.29	2.01	1.77	1.58
		Double	17.13	13.90	11.50	9.68	8.26	7.14	6.23	5.49	4.87	4.35	3.92	3.55	3.22	2.95	2.70	2.49
		Multi	21.39	17.35	14.35	12.08	10.30	8.90	7.76	6.83	6.06	5.42	4.87	4.41	4.01	3.66	3.22	2.85
0.90mm Alu 0.2% 165*	Imposed	Single	1.03	0.92	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	1.38	1.24	1.12	1.03	0.94	–	–	–	–	–	–	–	–	–	–	–
		Multi	1.29	1.16	1.05	0.96	–	–	–	–	–	–	–	–	–	–	–	–
	Suction	Single	5.01	4.06	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	5.08	4.12	3.41	2.87	2.45	–	–	–	–	–	–	–	–	–	–	–
		Multi	6.35	5.15	4.26	3.58	–	–	–	–	–	–	–	–	–	–	–	–
1.20mm Alu 0.2% 165*	Imposed	Single	1.93	1.73	1.57	1.44	1.33	1.23	1.15	1.07	–	–	–	–	–	–	–	–
		Double	2.59	2.32	2.11	1.93	1.78	1.65	1.54	1.44	1.35	1.25	1.16	1.07	1.00	0.93	–	–
		Multi	2.42	2.18	1.98	1.81	1.67	1.55	1.44	1.35	1.27	1.19	1.13	1.04	–	–	–	–
	Suction	Single	7.64	6.19	4.81	3.72	2.93	2.36	1.93	1.60	–	–	–	–	–	–	–	–
		Double	7.96	6.45	5.34	4.49	3.83	3.31	2.89	2.54	2.25	2.01	1.81	1.64	1.49	1.36	–	–
		Multi	9.94	8.06	6.66	5.61	4.78	4.13	3.59	2.97	2.48	2.10	1.79	1.54	–	–	–	–

RoofDek D137

1.25mm S320 Interior Colorcoat® PE15 liner

1.20mm R_{p0,2} 165 aluminium*

*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
1.25mm Steel S320	1.20	5.23	7.91	424.24	7.04	431.40	24.10	6.11	47.91
1.20mm Alu 0.2% 165*	1.20	5.23	7.91	424.24	7.04	431.40	24.10	6.11	47.91

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

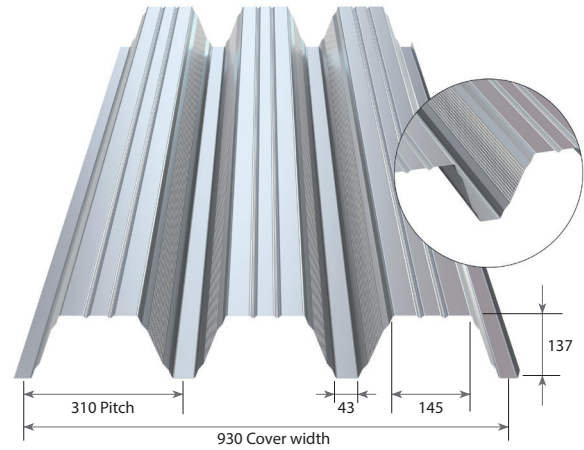
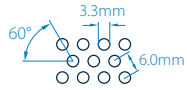
		Span (metres)																
Span condition		2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	
1.25mm Steel S320	Imposed	Single	6.66	6.18	5.76	5.39	4.92	4.12	3.48	2.96	2.54	2.19	1.90	1.65	1.44	1.26	1.11	0.98
		Double	6.92	6.19	5.57	5.04	4.58	4.19	3.84	3.53	3.26	3.02	2.81	2.61	2.44	2.28	2.14	2.01
		Multi	8.23	7.38	6.66	6.03	5.50	5.03	4.62	4.26	3.94	3.65	3.40	3.17	2.86	2.52	2.24	1.99
	Suction	Single	8.42	7.27	6.35	5.59	4.96	4.44	3.99	3.62	3.29	3.01	2.76	2.54	2.29	2.06	1.85	1.68
		Double	9.80	8.46	7.38	6.50	5.77	5.16	4.64	4.20	3.82	3.49	3.20	2.95	2.72	2.53	2.35	2.19
		Multi	12.22	10.55	9.20	8.10	7.19	6.42	5.77	5.22	4.75	4.33	3.97	3.66	3.38	3.13	2.91	2.71
1.20mm Alu 0.2% 165*	Imposed	Single	2.47	2.29	2.11	1.73	1.43	1.20	1.01	-	-	-	-	-	-	-	-	-
		Double	2.74	2.46	2.22	2.02	1.84	1.68	1.55	1.43	1.32	1.23	1.14	1.06	0.99	0.93	-	-
		Multi	3.10	2.88	2.65	2.40	2.20	2.01	1.85	1.67	1.44	1.24	1.08	0.94	-	-	-	-
	Suction	Single	3.59	3.10	2.70	2.38	2.07	1.75	1.49	-	-	-	-	-	-	-	-	-
		Double	4.03	3.48	3.04	2.67	2.37	2.12	1.90	1.72	1.57	1.43	1.31	1.21	1.11	1.03	-	-
		Multi	5.03	4.34	3.79	3.33	2.95	2.64	2.37	2.14	1.95	1.78	1.59	1.40	-	-	-	-

RoofDek D137 - web perforated

Perforating pattern 3327 (27%).

3.3mm $\varnothing$ holes at 6.0mm triangular centres.

Open area is 6.52% of exposed soffit (9.32% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		Shear capacity kN/m
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Internal R _w kN/m	End R _w kN/m	
1.25mm Steel S320	1.20	4.88	7.84	418.81	6.33	418.45	16.27	4.01	31.73
1.20mm Alu 0.2% 165*	1.20	4.88	7.84	418.81	6.33	418.45	16.27	4.01	31.73

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

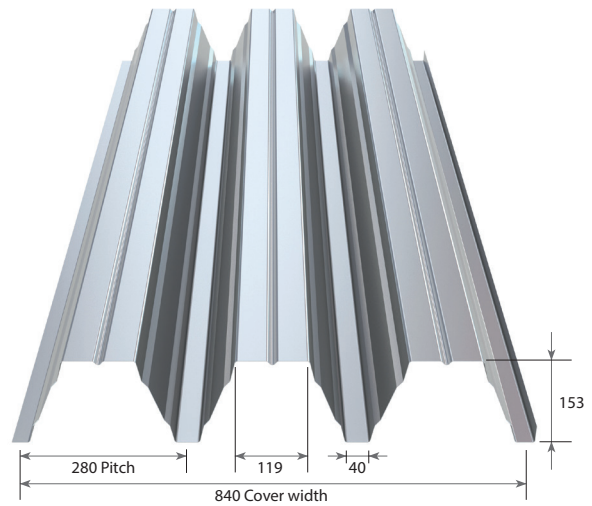
		Span (metres)																
		Span condition	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50
1.25mm Steel S320	Imposed	Single	5.15	4.72	4.35	4.03	3.75	3.51	3.30	3.11	2.94	2.79	2.50	2.16	1.87	1.63	1.43	1.25
		Double	6.71	5.94	5.31	4.77	4.32	3.92	3.58	3.29	3.03	2.79	2.59	2.40	2.24	2.09	1.96	1.83
		Multi	6.47	5.92	5.46	5.06	4.72	4.42	4.15	3.91	3.62	3.35	3.11	2.89	2.70	2.52	2.36	2.22
	Suction	Single	10.67	8.99	7.67	6.63	5.78	5.10	4.53	4.05	3.64	3.30	3.00	2.74	2.52	2.32	2.14	1.99
		Double	13.56	11.41	9.74	8.41	7.34	6.46	5.73	5.12	4.61	4.17	3.79	3.46	3.18	2.92	2.70	2.51
		Multi	16.63	13.99	11.93	10.30	8.99	7.91	7.02	6.27	5.64	5.10	4.63	4.23	3.88	3.57	3.30	3.05
1.20mm Alu 0.2% 165*	Imposed	Single	1.91	1.75	1.61	1.50	1.39	1.31	1.23	1.16	1.00	-	-	-	-	-	-	-
		Double	2.56	2.32	2.07	1.87	1.70	1.54	1.41	1.30	1.20	1.11	1.03	0.96	-	-	-	-
		Multi	2.40	2.20	2.03	1.88	1.75	1.64	1.54	1.45	1.38	1.31	1.23	1.15	1.07	0.94	-	-
	Suction	Single	4.50	3.78	3.23	2.79	2.43	2.14	1.90	1.69	1.45	-	-	-	-	-	-	-
		Double	5.56	4.68	3.99	3.44	3.00	2.64	2.35	2.10	1.88	1.70	1.55	1.41	-	-	-	-
		Multi	9.94	5.84	4.98	4.30	3.75	3.30	2.92	2.61	2.35	2.12	1.93	1.75	1.54	1.36	-	-

RoofDek D153

0.75mm S320 steel. Interior liner finish

0.88mm S320 steel. Interior liner finish

1.25mm S320 steel. Interior liner finish



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.75mm Steel S320	0.71	10.50	12.08	345.96	9.66	356.17	24.20	5.72	52.89
0.88mm Steel S320	0.84	12.33	15.57	422.62	12.43	430.37	34.40	8.32	72.20
1.25mm Steel S320	1.21	17.54	25.61	634.09	20.58	634.09	71.20	18.07	142.59

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

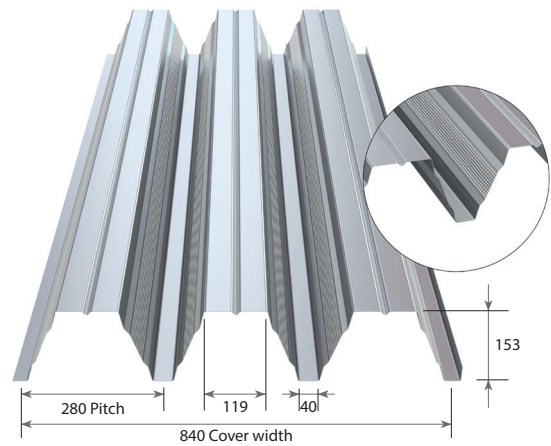
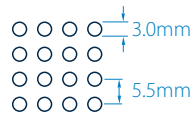
		Span (metres)																
		Span condition	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00	8.20
0.75mm Steel S320	Imposed	Single	1.40	1.34	1.29	1.25	1.19	1.07	0.96	–	–	–	–	–	–	–	–	–
		Double	1.55	1.47	1.38	1.31	1.24	1.18	1.12	1.06	1.01	0.97	0.92	–	–	–	–	–
		Multi	1.77	1.70	1.64	1.57	1.49	1.42	1.35	1.28	1.22	1.17	1.12	1.07	1.02	0.98	0.93	–
	Suction	Single	1.97	1.84	1.71	1.60	1.50	1.41	1.33	–	–	–	–	–	–	–	–	–
		Double	2.45	2.28	2.12	1.98	1.86	1.74	1.64	1.55	1.46	1.38	1.31	–	–	–	–	–
		Multi	3.05	2.83	2.64	2.46	2.30	2.16	2.03	1.92	1.81	1.71	1.62	1.54	1.46	1.39	1.33	–
0.88mm Steel S320	Imposed	Single	2.05	1.97	1.82	1.63	1.46	1.31	1.18	1.06	0.96	–	–	–	–	–	–	–
		Double	2.12	2.00	1.88	1.78	1.69	1.60	1.52	1.44	1.37	1.31	1.25	1.19	1.14	1.09	1.04	1.00
		Multi	2.54	2.39	2.26	2.14	2.03	1.93	1.83	1.75	1.66	1.59	1.52	1.45	1.34	1.23	1.14	1.05
	Suction	Single	2.53	2.35	2.19	2.05	1.92	1.81	1.70	1.60	1.51	–	–	–	–	–	–	–
		Double	3.15	2.93	2.73	2.55	2.39	2.24	2.11	1.99	1.88	1.77	1.68	1.60	1.52	1.45	1.38	1.32
		Multi	3.91	3.63	3.38	3.16	2.96	2.78	2.61	2.46	2.32	2.19	2.08	1.97	1.87	1.78	1.70	1.62
1.25mm Steel S320	Imposed	Single	3.46	3.08	2.74	2.45	2.20	1.97	1.78	1.61	1.45	1.32	1.20	1.09	0.99	0.91	–	–
		Double	3.93	3.69	3.48	3.29	3.11	2.95	2.79	2.65	2.52	2.40	2.29	2.18	2.08	1.99	1.91	1.82
		Multi	4.72	4.45	4.20	3.97	3.76	3.56	3.38	3.18	2.90	2.64	2.41	2.21	2.03	1.86	1.71	1.58
	Suction	Single	4.17	3.88	3.61	3.38	3.16	2.97	2.77	2.54	2.34	2.16	2.00	1.85	1.73	1.61	–	–
		Double	5.17	4.80	4.47	4.18	3.91	3.67	3.45	3.25	3.07	2.90	2.75	2.61	2.48	2.36	2.25	2.15
		Multi	6.43	5.97	5.56	5.19	4.86	4.56	4.28	4.03	3.81	3.60	3.41	3.23	3.07	2.88	2.68	2.51

RoofDek D153 - web perforated

Perforating pattern P3L-5 (23.5%).

3.0mm holes at 5.5mm square centres.

Open area is 6.2% of exposed soffit (11% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.75mm Steel S320	0.71	9.86	11.92	343.56	9.03	352.29	16.36	3.78	37.95
0.88mm Steel S320	0.84	11.58	15.41	419.56	11.94	425.95	23.64	5.58	51.72
1.25mm Steel S320	1.21	16.46	25.55	628.00	19.06	628.00	50.08	12.41	101.82

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

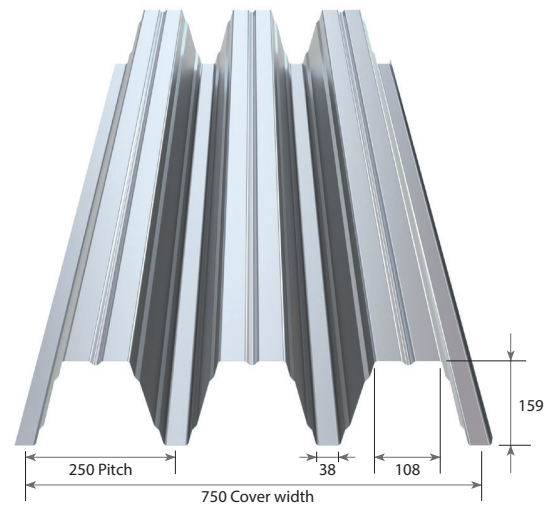
		Span (metres)																
		Span condition	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80
0.75mm Steel S320	Imposed	Single	1.26	1.20	1.14	1.08	1.03	0.99	0.94	0.91	–	–	–	–	–	–	–	–
		Double	1.71	1.62	1.54	1.46	1.40	1.34	1.27	1.20	1.13	1.07	1.02	0.97	0.92	–	–	–
		Multi	1.59	1.51	1.44	1.37	1.31	1.25	1.20	1.15	1.10	1.06	1.02	0.99	0.95	0.92	–	–
	Suction	Single	3.40	3.07	2.79	2.55	2.34	2.15	1.99	1.84	–	–	–	–	–	–	–	–
		Double	4.47	4.04	3.67	3.35	3.07	2.82	2.61	2.42	2.24	2.09	1.95	1.83	1.72	–	–	–
		Multi	5.27	4.77	4.33	3.95	3.62	3.33	3.07	2.85	2.64	2.46	2.30	2.15	2.02	1.90	–	–
0.88mm Steel S320	Imposed	Single	1.88	1.79	1.70	1.62	1.54	1.48	1.41	1.36	1.30	1.25	1.21	1.17	1.13	1.09	1.05	0.96
		Double	2.54	2.41	2.26	2.12	1.98	1.87	1.76	1.66	1.57	1.48	1.40	1.33	1.27	1.21	1.15	1.10
		Multi	2.37	2.25	2.14	2.04	1.95	1.86	1.79	1.71	1.65	1.59	1.53	1.48	1.43	1.38	1.33	1.29
	Suction	Single	4.32	3.91	3.55	3.24	2.97	2.74	2.53	2.34	2.18	2.03	1.90	1.78	1.67	1.57	1.48	1.40
		Double	5.77	5.21	4.74	4.32	3.96	3.64	3.36	3.12	2.89	2.70	2.52	2.36	2.21	2.08	1.96	1.85
		Multi	6.71	6.06	5.50	5.02	4.60	4.23	3.91	3.62	3.36	3.13	2.92	2.74	2.57	2.41	2.27	2.15
1.25mm Steel S320	Imposed	Single	4.25	4.03	3.83	3.65	3.49	3.34	3.20	3.07	2.96	2.72	2.43	2.18	1.96	1.77	1.60	1.45
		Double	5.06	4.70	4.38	4.09	3.82	3.59	3.37	3.17	2.99	2.83	2.68	2.54	2.41	2.29	2.18	2.07
		Multi	5.34	5.06	4.82	4.59	4.39	4.20	4.02	3.79	3.58	3.39	3.21	3.05	2.90	2.76	2.62	2.50
	Suction	Single	7.15	6.46	5.87	5.36	4.91	4.52	4.17	3.87	3.59	3.35	3.13	2.93	2.75	2.59	2.44	2.31
		Double	9.54	8.62	7.83	7.15	6.55	6.02	5.56	5.15	4.78	4.45	4.16	3.89	3.65	3.43	3.24	3.05
		Multi	11.10	10.03	9.11	8.31	7.61	7.00	6.46	5.98	5.55	5.17	4.83	4.52	4.24	3.98	3.75	3.54

RoofDek D159

1.25mm S320 Interior Colorcoat® PE15 liner

1.50mm R_{p0,2} 165 aluminium*

*Available in various coatings and finishes, please enquire.



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
1.25mm Steel S320	1.21	19.19	30.14	749.55	22.37	749.55	82.62	20.97	158.95
1.50mm Alu 0.2% 165*	1.50	7.97	15.49	846.31	13.66	859.19	46.52	12.16	91.08

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

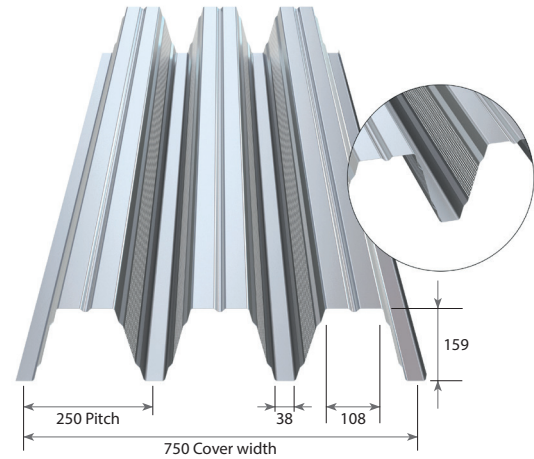
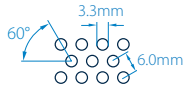
		Span (metres)																
		Span Condition	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00	8.20	8.40	8.60	8.80	9.00
1.25mm Steel S320	Imposed	Single	2.61	2.35	2.12	1.91	1.73	1.57	1.43	1.30	1.19	1.09	0.99	0.91	–	–	–	–
		Double	3.47	3.29	3.12	2.96	2.81	2.68	2.55	2.43	2.32	2.22	2.12	2.03	1.94	1.86	1.79	1.71
		Multi	4.20	3.98	3.78	3.59	3.42	3.14	2.87	2.63	2.41	2.22	2.04	1.88	1.74	1.61	1.49	1.38
	Suction	Single	3.44	3.23	3.04	2.86	2.71	2.54	2.35	2.18	2.02	1.89	1.76	1.65	–	–	–	–
		Double	4.59	4.31	4.05	3.82	3.60	3.41	3.23	3.06	2.91	2.77	2.64	2.52	2.40	2.30	2.20	2.11
		Multi	5.30	4.98	4.68	4.41	4.16	3.93	3.72	3.53	3.35	3.19	3.04	2.90	2.75	2.58	2.42	2.27
1.50mm Alu 0.2% 165*	Imposed	Single	0.98	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	2.07	1.97	1.87	1.77	1.67	1.52	1.39	1.28	1.17	1.08	0.99	0.92	–	–	–	–
		Multi	1.91	1.72	1.56	1.42	1.29	1.17	1.07	0.98	–	–	–	–	–	–	–	–
	Suction	Single	1.50	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	2.35	2.20	2.07	1.95	1.84	1.74	1.65	1.56	1.48	1.41	1.34	1.28	–	–	–	–
		Multi	2.77	2.52	2.29	2.10	1.93	1.77	1.64	1.51	–	–	–	–	–	–	–	–

RoofDek D159 - web perforated

Perforating pattern 3327 (27%).

3.3mm ø holes at 6.0mm triangular centres.

Open area is 7.22% of exposed soffit (9.63% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
1.25mm Steel S320	1.21	17.80	29.34	738.35	20.53	738.35	57.59	14.25	110.94
1.50mm Alu 0.2% 165*	1.50	7.40	15.18	832.88	12.84	837.75	32.63	8.31	62.86

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

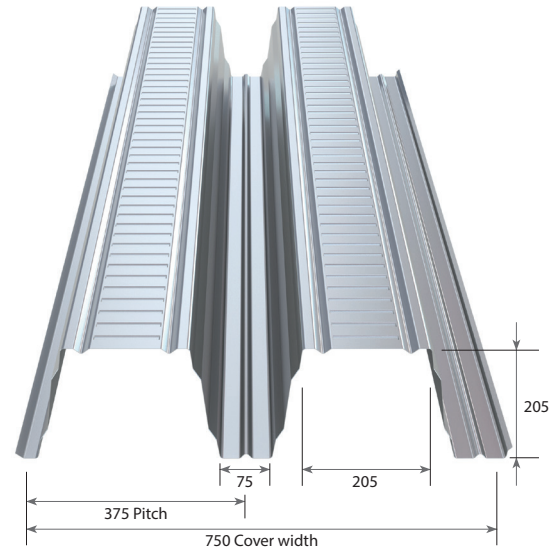
		Span (metres)																
		Span condition	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00
1.25mm Steel S320	Imposed	Single	3.68	3.54	3.40	3.22	2.88	2.58	2.32	2.10	1.90	1.72	1.56	1.42	1.29	1.18	1.08	0.99
		Double	3.76	3.54	3.33	3.15	2.98	2.82	2.68	2.54	2.42	2.30	2.19	2.09	2.00	1.91	1.83	1.75
		Multi	4.49	4.23	4.00	3.78	3.58	3.39	3.22	3.07	2.92	2.78	2.65	2.53	2.42	2.32	2.19	2.02
	Suction	Single	4.50	4.17	3.87	3.61	3.37	3.16	2.96	2.79	2.63	2.48	2.35	2.23	2.12	1.98	1.85	1.73
		Double	6.38	5.90	5.48	5.11	4.77	4.46	4.19	3.94	3.71	3.50	3.31	3.14	2.97	2.83	2.69	2.56
		Multi	6.96	6.44	5.98	5.57	5.20	4.87	4.57	4.29	4.04	3.82	3.61	3.42	3.24	3.08	2.93	2.79
1.50mm Alu 0.2% 165*	Imposed	Single	1.72	1.52	1.35	1.20	1.07	0.96	–	–	–	–	–	–	–	–	–	–
		Double	2.25	2.12	2.01	1.90	1.80	1.71	1.62	1.54	1.47	1.40	1.34	1.28	1.22	1.16	1.06	0.98
		Multi	2.69	2.53	2.40	2.27	2.09	1.88	1.70	1.54	1.40	1.27	1.16	1.06	0.97	–	–	–
	Suction	Single	2.47	2.21	1.98	1.78	1.61	1.46	–	–	–	–	–	–	–	–	–	–
		Double	3.29	3.04	2.82	2.63	2.46	2.30	2.15	2.02	1.91	1.80	1.70	1.61	1.53	1.45	1.38	1.31
		Multi	4.10	3.79	3.52	3.28	2.98	2.70	2.45	2.23	2.04	1.87	1.72	1.59	1.47	–	–	–

RoofDek D200

0.88mm S320 steel. Interior liner finish

1.25mm S320 steel. Interior liner finish

1.50mm S320 steel. Interior liner finish



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.88mm Steel S320	0.84	13.81	21.24	830.30	20.23	960.89	26.52	6.41	58.54
1.25mm Steel S320	1.21	19.65	35.37	1245.21	32.14	1385.43	54.55	13.85	114.89
1.50mm Steel S320	1.46	23.59	45.53	1537.57	40.33	1670.84	78.13	20.35	163.00

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

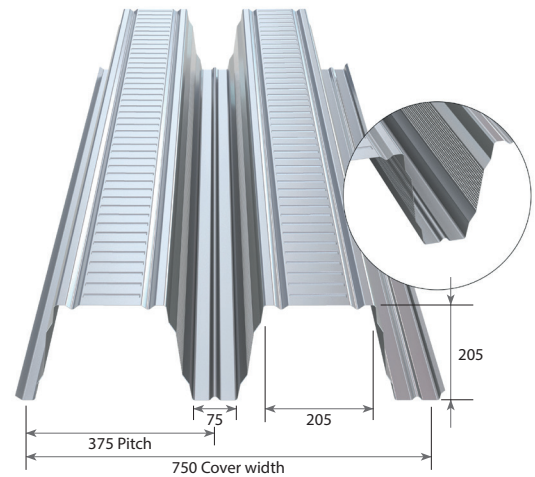
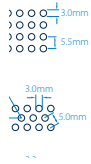
		Span condition	Span (metres)															
		7.00	7.20	7.40	7.60	7.80	8.00	8.20	8.40	8.60	8.80	9.00	9.20	9.40	9.60	9.80	10.00	
0.88mm Steel S320	Imposed	Single	1.13	1.10	1.06	1.03	1.01	0.98	0.95	0.93	0.90	–	–	–	–	–	–	–
		Double	1.45	1.39	1.33	1.28	1.23	1.18	1.14	1.10	1.06	1.02	0.99	0.95	0.92	–	–	–
		Multi	1.44	1.39	1.35	1.32	1.28	1.25	1.21	1.18	1.15	1.12	1.10	1.07	1.05	1.02	1.00	0.98
	Suction	Single	2.29	2.17	2.06	1.96	1.86	1.78	1.69	1.62	1.55	–	–	–	–	–	–	–
		Double	2.40	2.28	2.16	2.05	1.95	1.86	1.77	1.70	1.62	1.55	1.49	1.43	1.37	–	–	–
		Multi	2.98	2.82	2.68	2.54	2.42	2.30	2.20	2.10	2.00	1.92	1.84	1.76	1.69	1.63	1.56	1.51
1.25mm Steel S320	Imposed	Single	2.51	2.44	2.29	2.09	1.92	1.77	1.63	1.50	1.39	1.28	1.18	1.10	1.02	0.94	–	–
		Double	2.71	2.59	2.49	2.39	2.29	2.20	2.12	2.04	1.96	1.89	1.82	1.76	1.70	1.64	1.59	1.53
		Multi	3.17	3.08	2.98	2.86	2.75	2.64	2.54	2.45	2.36	2.28	2.20	2.12	2.05	1.95	1.82	1.70
	Suction	Single	3.63	3.43	3.26	3.10	2.95	2.81	2.68	2.56	2.45	2.34	2.24	2.11	1.99	1.88	–	–
		Double	3.98	3.77	3.57	3.39	3.23	3.08	2.93	2.80	2.68	2.56	2.46	2.36	2.26	2.18	2.09	2.02
		Multi	4.94	4.68	4.44	4.21	4.00	3.81	3.64	3.47	3.32	3.17	3.04	2.91	2.80	2.69	2.58	2.49
1.50mm Steel S320	Imposed	Single	3.38	3.09	2.83	2.59	2.38	2.19	2.02	1.86	1.72	1.59	1.47	1.36	1.26	1.17	1.09	1.01
		Double	3.66	3.51	3.36	3.22	3.09	2.97	2.85	2.74	2.64	2.54	2.45	2.36	2.28	2.20	2.13	2.06
		Multi	4.38	4.20	4.03	3.87	3.71	3.57	3.44	3.31	3.19	3.07	2.96	2.77	2.59	2.41	2.25	2.11
	Suction	Single	4.54	4.30	4.08	3.88	3.69	3.51	3.35	3.20	3.06	2.87	2.70	2.54	2.39	2.26	2.14	2.03
		Double	5.11	4.84	4.59	4.36	4.15	3.95	3.77	3.60	3.44	3.29	3.15	3.02	2.90	2.79	2.68	2.58
		Multi	6.35	6.01	5.70	5.41	5.14	4.90	4.67	4.46	4.26	4.07	3.90	3.74	3.59	3.45	3.31	3.19

RoofDek D200 - web perforated

Perforating pattern P3L-5 (23.5%).

3.0mm holes at 5.5mm square centres.

Open area is 5% of exposed soffit (10% of cover area)



Ultimate section properties to Eurocode

Material specification	Design thickness mm	Weight kg/m ²	Broad flange in compression		Narrow flange in compression		100mm bearing on purlin		
			Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Moment capacity kNm/m	Moment of inertia cm ⁴ /m	Transverse resistance		Shear capacity kN/m
							Internal R _w kN/m	End R _w kN/m	
0.88mm Steel S320	0.84	13.13	19.86	824.21	17.67	951.55	17.09	4.02	39.72
1.25mm Steel S320	1.21	18.67	34.24	1236.08	28.79	1372.41	36.04	8.89	77.62
1.50mm Steel S320	1.46	22.41	44.56	1526.18	36.65	1655.14	52.07	13.17	109.89

Safe loads (kN/m²)

Imposed load - deflection limit span / 200 Wind suction load - deflection limit span / 150

		Span (metres)																
		Span condition	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00
0.88mm Steel S320	Imposed	Single	0.99	0.94	0.91	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	1.34	1.29	1.24	1.19	1.15	1.11	1.07	1.03	1.00	0.97	0.94	0.91	–	–	–	–
		Multi	1.25	1.20	1.15	1.11	1.07	1.03	0.99	0.96	0.93	–	–	–	–	–	–	–
	Suction	Single	3.86	3.57	3.32	–	–	–	–	–	–	–	–	–	–	–	–	–
		Double	4.32	4.00	3.72	3.46	3.24	3.03	2.84	2.67	2.52	2.38	2.25	2.13	–	–	–	–
		Multi	5.38	4.98	4.63	4.31	4.02	3.76	3.53	3.32	3.13	–	–	–	–	–	–	–
1.25mm Steel S320	Imposed	Single	2.25	2.16	2.07	2.00	1.92	1.85	1.79	1.73	1.67	1.62	1.57	1.52	1.48	1.44	1.40	1.36
		Double	3.04	2.92	2.81	2.70	2.60	2.50	2.39	2.28	2.18	2.09	2.01	1.92	1.85	1.78	1.71	1.64
		Multi	2.84	2.73	2.62	2.52	2.43	2.35	2.27	2.19	2.12	2.06	2.00	1.94	1.88	1.83	1.78	1.73
	Suction	Single	6.26	5.80	5.39	5.02	4.69	4.39	4.12	3.87	3.65	3.44	3.26	3.08	2.93	2.78	2.65	2.52
		Double	7.43	6.88	6.39	5.95	5.55	5.20	4.87	4.58	4.31	4.07	3.85	3.65	3.46	3.28	3.12	2.98
		Multi	9.25	8.56	7.95	7.40	6.91	6.46	6.06	5.70	5.36	5.06	4.78	4.53	4.29	4.07	3.87	3.69
1.50mm Steel S320	Imposed	Single	3.37	3.23	3.11	2.99	2.88	2.78	2.69	2.60	2.51	2.44	2.36	2.29	2.23	2.16	2.11	2.05
		Double	4.49	4.25	4.04	3.83	3.65	3.48	3.32	3.17	3.03	2.90	2.78	2.66	2.56	2.45	2.36	2.27
		Multi	4.24	4.08	3.92	3.77	3.64	3.51	3.39	3.28	3.18	3.08	2.99	2.90	2.82	2.74	2.67	2.60
	Suction	Single	7.97	7.38	6.85	6.38	5.96	5.58	5.23	4.92	4.63	4.37	4.14	3.92	3.72	3.53	3.36	3.20
		Double	9.65	8.94	8.30	7.72	7.21	6.75	6.33	5.95	5.60	5.29	5.00	4.73	4.49	4.26	4.05	3.86
		Multi	12.03	11.13	10.33	9.62	8.98	8.40	7.87	7.40	6.97	6.57	6.21	5.88	5.57	5.29	5.03	4.79





Section 5

Transport, handling and storage

Transport

Transport

Profiled sheets can be manufactured up to 12000 mm in length. The profile size, gauge, and length of sheets will determine the quantity of sheets that can be stacked in a pack, up to 1500kg maximum weight.

UK manufactured RoofDek profiles

Profile	Gauge (mm)	Cover width (mm)	Maximum sheets/pack
RoofDek D32S	0.7, 0.9, 1.2	1000	60
RoofDek D35	0.7, 0.9, 1.2	900	50
RoofDek D46	0.7, 0.9, 1.2	900	50
RoofDek D60	0.7, 0.9, 1.2	800	50
RoofDek D100	0.7, 0.9, 1.2	700	40
RoofDek D137	1.25	930	30
RoofDek D159	1.25	750	25

Standard pack weight 1500kg maximum.

Non UK manufactured RoofDek profiles

Profile	
RoofDek D153	Profiles max 3000kg per pack.
RoofDek D200	
Liner tray	Liner trays are limited by volume only.
RoofDek HLT90/600	Minimum quantity per pack is 3 sheets or 2 Trays.
RoofDek HLT130/600	

If you require further information please contact the Building Systems UK Technical Department, email: technical.envelopeproducts@tatasteleurope.com

Receipt of materials on-site

All materials arriving on-site must be checked promptly before off-loading. Checks should be made against the relevant delivery notes to ensure that the correct quantities and specifications have been delivered and to determine any possible transportation damage. Any discrepancies or damage observed should be recorded immediately on the proof of delivery paperwork, and a written report should be submitted within 21 days. Please note that off-loading is the customer's responsibility.

Handling

Unloading on-site

When loading packs onto roofs, a check must be made to ensure that the steelwork is suitable to support the concentrated pack load, especially where decks are installed over purlins.

Under the terms and conditions of supply, unloading of vehicles is the responsibility of the Consignee.

Wherever possible, the profile packs should be off loaded directly from the vehicle to the area where they will be used to reduce the risk of on-site damage. Offloading is to be undertaken as per Tata Steel recommendations. If product is not to be installed shortly after its off load, the profile packs must be stored on level ground (in accordance with storage instructions below).

There are two recommended methods for off-loading:

Crane

Where slings or grabs are used, precautions should be taken to prevent edge damage and to avoid pressure across the profile width, which may cause distortion (chains should not be used). When lifting packs over 8m long, a spreader bar with sufficient hoisting belts to spread the load should be used. If required, temporary edge protection can be installed to prevent local damage.

Forklift or telehandler (on-site plant)

These can be used when offloading profile packs less than 7m long. Care must be taken not to tip or damage the pack when driving on uneven ground. Only one pack at a time should be unloaded. Open forks fully before lifting.

Unloading by vehicle mounted crane or forklift (when supplied)

Tata Steel can offer an off loading service either by vehicle mounted Hiab crane or Moffatt forklift, if requested at the time of order. The consignee must ensure, to comply with the Health & Safety at Work Act, that there are a minimum of two competent operatives to assist the Tata Steel driver when unloading. Furthermore, ground conditions at the unloading site must be firm, with sufficient space for unloading operations, otherwise our vehicle mounted crane or forklift cannot be used.

Banding

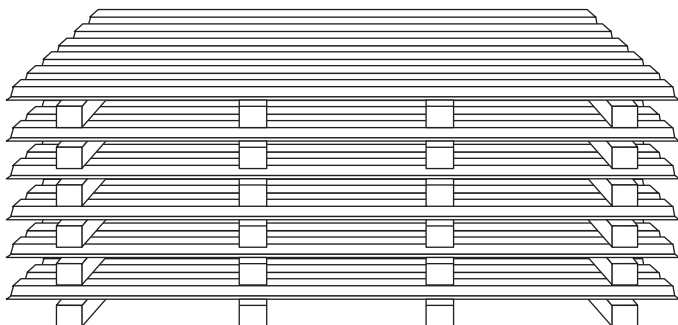
It should be noted that the banding around sheet bundles and pallets must under no circumstances be used as slings in lifting, lowering or moving of the package. Such banding is not designed or intended for that purpose and it would be dangerous to use such banding for moving or lifting packs. Due to the nature of the banding, safety procedures where applicable and protective equipment should be used when it is released or cut, (ie protective gloves and safety glasses).



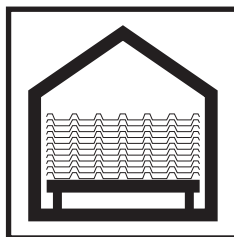
Storage

Stacking of packs

To separate packs on the lorry, bearers are used and these can be utilised when stacking packs on site. To prevent damage to sheets during storage, packs should be stacked with bearers at approximately 1250 mm, evenly spaced.

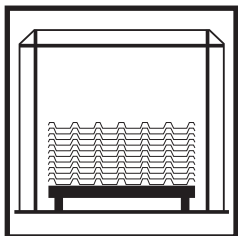


Do not store sheets where people will walk across them.



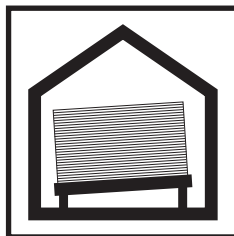
Do not stand uncovered stacks lying in the open.

Store under cover and away from open doorways.



If stacks cannot be stored under cover, erect a simple scaffolding around them and cover with a waterproof sheet, tarpaulin or polythene.

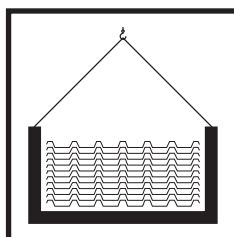
Leave space between the cover and sheets to allow air to circulate.



Store stacks off the ground and on a slope, so that should rain penetrate the cover, the water will drain away.



Inspect the storage site regularly to ensure that moisture, despite the above precautions has not penetrated the stack.



Lift sheets on to a roof by mechanical means if possible.

If they have to be hoisted into position, protect the edges and ensure that the pressure across the sheet does not cause distortion.

Use flat slings, not chains for hoisting.



Never drag sheets from pile.

Remove by “turning” off the stack.

Lift sheets on to a roof and do not drag over the eaves and purlins unless they are protected.

Stacks of galvanised sheets stored improperly permitting the ingress of moisture between the sheets will produce an oxidation commonly known as “White Rust”. The unsightly and at times voluminous appearance of this product is generated by a minimal loss of zinc, which should not significantly reduce the degree of protection afforded by the zinc coating. However, if the material is stored continuously in this condition, it will lead to eventual breakdown of the zinc coating, with subsequent corrosive attack to the substrate. Whilst the external coating of colour coated galvanised steel is unaffected by moisture, prolonged storage in unfavorable conditions could produce a white deposit on the backing coat. When in stack this can become transposed on to the internal coating as a temporary marking, which will disperse under natural weathering.

Aluminium stored in the above conditions produces “black stains” due to water ingress. Water staining on aluminium also occurs due to the effects of moisture, which normally happens whilst the material is in stack. Whilst unsightly it is not specifically detrimental to the products structural performance. To minimise these possibilities, storage procedures as outlined above should be followed.

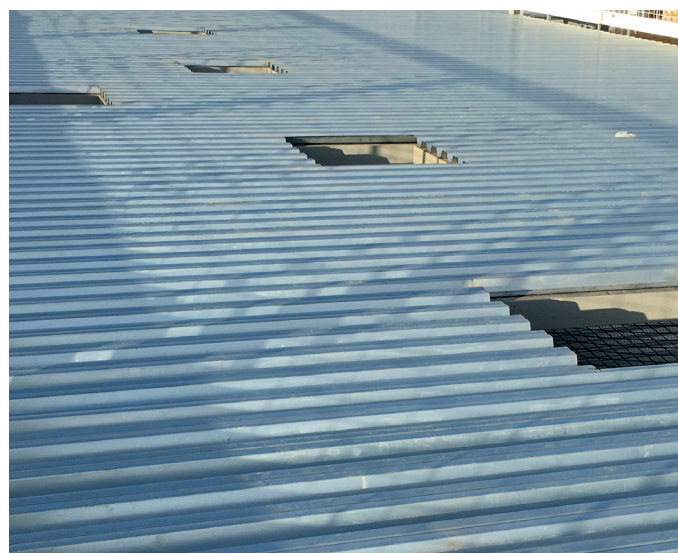


Unpacking

When lifting individual profiles from the pack they should be lifted vertically without sliding, to avoid the risk of surface scratching to profiles, especially where RoofDek with Interior Liner or other Colorcoat finish is being used.

Strippable film

If strippable film has been applied at manufacture, it must be removed on-site as soon as possible, as per film suppliers recommendations. Strippable film should not be exposed to sunlight for any significant duration.



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