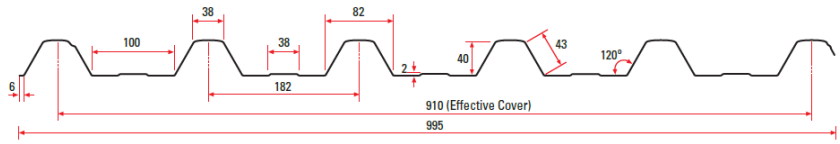
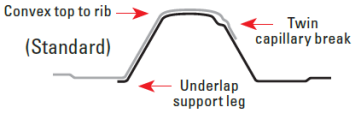
RL TOPDECK T
FOR ULTRATHERM MSR ROOFING SYSTEMS

DESCRIPTION

TOPDECK-T LAP-DIMENSIONED DRAWING



TOPDECK-T LAP



Topdeck T installed on a Rooflogic MSR System.

MINIMUM PITCH

The minimum roof pitch for RL Topdeck T is 3 degrees (approx1:20). Any variation from the above should be referred to RoofLogic.
When a combination of sheets provide a run of in excess of 40 m and up to 60 m the roof pitch should be increased by 1 degree. Longer lengths require specific design.
When rainfall intensity exceeds 100 mm/hour the minimum pitches need to be increased by a further 1 degree for every 10 m of run over 40 m.
The building design pitch may need to be higher to take into account any cumulative deflections of the frame, purlin and roof sheeting or penetrations.
With curved roofing the roof cladding must not terminate at a pitch lower than permitted above.
Side laps of curved sheets must be sealed to any areas below the minimum pitches permitted above.

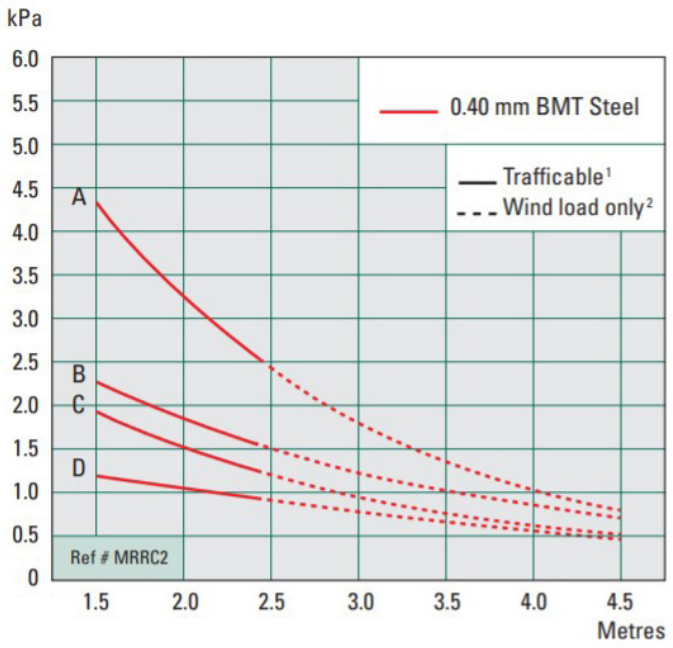
BUILDING DESIGN

During the design of buildings, it is necessary for the designer to take into account a number of issues to ensure that the most appropriate roofing and cladding product is chosen.
Whilst aesthetics and product availability do play a part, the chosen profile must meet certain performance criteria. These are centred around the profile's ability to shed water from the roof and the ability of the product to span purlin and girt spacings and meet design criteria.
The minimum pitch for this profile is outlined elsewhere within this literature.
In terms of purlin spans and girt spacing it is necessary to follow due process. If a building is being designed and constructed in full accordance with E2/AS1 and roofing and cladding products as covered by that document are chosen, then it is necessary for the design spans and fixing methodology to comply with those of E2/AS1. However E2/ AS1 states that the use of the manufacturers information may provide a more optimum spacing of fixings, and this is recommended by RoofLogic.
Further, where a building is outside of the scope of E2/ AS1 and the building or parts there of are of specific design, then it is necessary for the roofing and cladding to be suitable for the design and vice versa.
Loadings referred to in RoofLogic graphs are the result of testing to a serviceability limit state which is more conservative than an ultimate limit state as quoted by some manufacturers.Our Design Graphs are presented in a form to allow the designer to select suitable products and purlin spacings.For most roof installations the purlin spacings will be limited by the trafficable limitations of the RL Liner Deck which is used as a trafficable deck for installation of the roof system. It it then necessary for the designer to calculate the design wind load for the roofing and cladding in accordance with generally acceptable practice, by reference to AS/NZS 1170.2: 2011, and/or NZS 3604: 2011 as appropriate.
The purlin spacings should be limited to the lower of the trafficable limitations and design wind load with the capacity of the structure being greater than the design load for the application. However, for roofs that are not able to be walked on the trafficable limitations may be exceeded providing the design wind loading criteria is met. This should be done with caution as it may require considerable extra secondary fasteners within the laps.
When a roof is subject to extensive foot traffic, exposed to snow loads or used to support mechanical plant, purlin spacing should be reduced accordingly. Consideration also needs to be given to limitations of purlin spacings for any translucent sheeting.

WIND & CONCENTRATED LOAD SPAN DESIGN GRAPH

Steel Based Material

0.40 STEEL G550 HIGH STRENGTH



- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- A, B, C and D represent alternative primary fixing methods. (refer page 5)

[1])The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile. Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

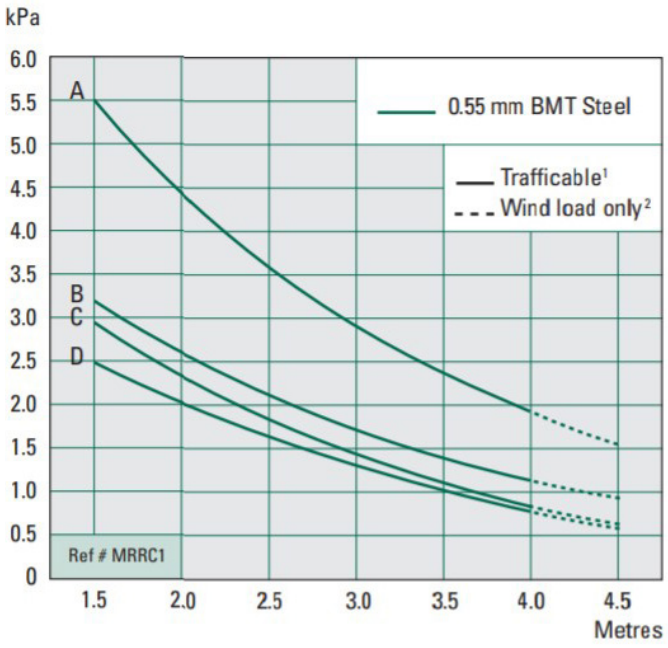
MAXIMUM SPANS	0.40 BMT
INTERMEDIATE	2.4 m
END	1.6 m
TYPE 2B RESTRICTED ACCESS CLASSIFICATION	

[2]) The broken line represents untrafficable roof areas and is wind loading only and has a Type 3 Classification.In areas of heavy roof traffic, snow loadings or containing items such as air conditioning units purlin spacing should be reduced accordingly.

[3]) Use of RL Liner Deck Standard (0.55BMT) allows purlin spacing to a maximum of 2.60 m.

[4]) Use of RL Liner Deck Standard HD (0.75BMT) allows purlin spacing to a maximum of 3.20 m.

0.55 STEEL G550 HIGH STRENGTH



- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- A, B, C and D represent alternative primary fixing methods. (refer page 5)

[1])The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile. Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

MAXIMUM SPANS	0.55 BMT
INTERMEDIATE	4.0 m
END	2.7 m
TYPE 2B RESTRICTED ACCESS CLASSIFICATION	

[2]) The broken line represents intrafficable roof areas and is wind loading only and has a Type 3 Classification.

[3]) Use of RL Liner Deck Standard (0.55BMT) allows purlin spacing to a maximum of 2.60 m.

[4]) Use of RL Liner Deck Standard HD (0.75BMT) allows purlin spacing to a maximum of 3.20 m.

WIND & CONCENTRATED LOAD SPAN DESIGN SUMMARY CHART FOR ROOFING SPANS IN STEEL

INCORPORATING WIND AND CONCENTRATED LOAD SPAN DESIGN, PRIMARY FIXING METHODS AND FOOT TRAFFIC

0.40 BMT STEEL–WIND DESIGN LOADINGS–kPa														
PURLIN SPACING (m)		FIXING METHOD A			FIXING METHOD B			FIXING METHOD C			FIXING METHOD D			FOOT TRAFFIC
INTERMEDIATE	END	INT.	END	INT (P)	INT.	END	INT (P)	INT.	END	INT (P)	INT.	END	INT (P)	
1.2	0.8	4.5	4.7	4.5	2.3	2.4	4.5	1.9	2.2	2.8	1.2	1.3	2.6	UNRESTRICTED
1.5	1.0	4.3	4.5	4.3	2.2	2.3	4.3	1.8	2.1	2.7	1.2	1.2	2.5	RESTRICTED ACCESS WALK WITHIN 300MM OF PURLINS OR IN PAN OF ROOF
1.75	1.17	3.7	4.5	3.7	2.0	2.3	3.7	1.7	2.1	2.4	1.1	1.2	2.25	
2.00	1.33	3.2	4.4	3.2	1.8	2.2	3.2	1.5	2.1	2.2	1.0	1.2	2.0	
2.25	1.5	2.7	4.3	2.7	1.6	2.2	2.7	1.4	1.9	2.0	0.9	1.2	1.8	
2.4	1.6	2.5	4.0	2.5	1.55	2.1	2.5	1.3	1.8	1.8	0.9	1.2	1.7	
2.5	1.67	2.4	3.8	2.4	1.5	2.1	2.4	1.2	1.8	1.8	0.9	1.1	1.6	NON ACCESSIBLE
2.75	1.83	2.0	3.4	2.0	1.3	1.95	2.0	1.1	1.7	1.5	0.8	1.1	1.4	
2.9	1.9	1.8	3.3	1.8	1.2	1.9	1.8	1.0	1.6	1.4	0.8	1.00	1.25	

0.55 BMT STEEL–WIND DESIGN LOADINGS–kPa														
PURLIN SPACING (m)		FIXING METHOD A			FIXING METHOD B			FIXING METHOD C			FIXING METHOD D			FOOT TRAFFIC
INTERMEDIATE	END	INT.	END	INT (P)	INT.	END	INT (P)	INT.	END	INT (P)	INT.	END	INT (P)	
1.2	0.8	6.0	6.0	6.0	3.5	3.5	6.0	3.3	3.3	5.5	2.7	2.7	5.0	UNRESTRICTED
1.5	1.0	5.5	6.0	5.5	3.2	3.2	5.5	2.9	3.3	5.0	2.5	2.7	4.6	
1.75	1.17	4.9	5.9	4.9	2.8	2.8	4.9	2.65	3.2	4.4	2.25	2.6	4.0	
2.00	1.33	4.4	5.7	4.4	2.6	2.6	4.4	2.3	3.1	3.7	2.0	2.5	3.4	
2.25	1.5	4.0	5.5	4.0	2.3	2.3	4.0	2.1	2.9	3.3	1.8	2.5	3.0	
2.4	1.6	3.6	5.3	3.6	2.15	2.15	3.6	1.9	2.8	2.9	1.65	2.4	2.7	
2.5	1.67	3.5	5.1	3.5	2.1	2.1	3.5	1.8	2.7	2.8	1.6	2.3	2.6	RESTRICTED ACCESS WALK WITHIN 300mm OF PURLIN OR IN PAN OF ROOF
2.75	1.83	3.3	4.7	3.3	1.8	1.8	3.3	1.6	2.5	2.4	1.45	2.2	2.2	
2.9	1.9	3.0	4.6	3.0	1.75	1.75	3.0	1.5	2.4	2.2	1.4	2.1	2.0	
3.0	2.0	2.9	4.4	2.9	1.70	1.70	2.9	1.4	2.3	2.1	1.3	2.0	1.9	
3.25	2.16	2.6	4.3	2.6	1.50	1.50	2.6	1.2	2.2	1.8	1.25	1.9	1.65	
3.5	2.33	2.3	3.8	2.3	1.35	1.35	2.3	1.1	2.0	1.5	1.0	1.75	1.4	
3.75	2.5	2.2	3.5	2.2	1.25	1.25	2.2	0.95	1.8	0.9	0.8	1.6	0.8	
4.0	2.70	1.90	3.2	1.9	1.1	1.8	1.9	0.8	1.7	0.8	0.75	1.4	0.75	
4.1	2.70	1.8	3.2	1.8	1.1	1.8	1.8	0.8	1.7	0.75	0.7	1.4	0.7	NON ACCESSIBLE

Int (P) = Intermediate Periphery Loadings other than end spans (eg gable ends)

INFORMATION TABLE

SUBSTRATE MATERIAL	STEEL		ALUMINIUM	
THICKNESS	.40 BMT	0.55 BMT	0.70 BMT	0.90 BMT
APPROX WEIGHT PER LINEAL METRE FOR ZINC ALUMINIUM BASE MATERIAL (kg/lm)	4.05	5.48	2.39	3.07
UNSUPPORTED OVERHANG (mm)	250	350	200	300
DRAPE CURVED ROOF –MINIMUM RADIUS (m)	NOT RECCOMENDED	85	NOT RECCOMENDED	85
PURLIN SPACINGS FOR CURVED ROOFS –INTERMEDIATE (mm) –END (mm)		2400 1600		2400 1600

PRIMARY FIXING CHART

	WOOD PURLINS	STEEL PURLINS OR GIRTS UP TO 1.5 mm	STEEL PURLINS OR GIRTS 1.5–4.5 mm	STEEL PURLINS OR GIRTS 4.5–12 mm	WASHERS (WHEN REQUIRED)
Steel Based Material	14-10 Class 5 Type 17 Timbertites with neos size will vary	12-14 Class 5 Steeltites with neos	12-14x175 Class 5 Steeltites with neos	12-24x 175 Class 5 Series 500 Steeltites with neos	RL Topdeck load spreading profile Steel and 36 mm EPDM
Aluminium Based Material	14-11 Alutite with bonded washer with Top-deck T load spreading pro-file 1.2 mm Ali washers and 36mm EPDM, or Stainless steel grade 316, 14-10x100 Type 17 with neos through a 10 mm dia. clearance hole with RL Topdeck load spreading profile 1.2 mm Ali washer & 36 mm EPDM	Stainless steel grade 304, 14-14 Steeltites and bonded washer through a 10 mm dia. clearance hole with RL Topdeck T load spreading profile 1.2 mm Ali washer & 36 mm EPDM	Stainless steel grade 304, 14-14 Steeltites and bonded washer through a 10 mm dia. clearance hole with Topeck T load spreading profile 1.2 mm Ali washer & 36 mm EPDM	Fabco stainless steel grade 304, 14-14 Type B screw and bonded washer through a 10 mm dia. clearance hole with Topdeck T load spreading profile 1.2 mm Ali washer & 36 mm EPDM	Topdeck T load spreading profile 1.20 mm Ali and 36 mm EPDM

Note: Length will vary depending on assembly depth. All primary fasteners to have a minimum embedment into structural timber of 30 mm. Adjust fastener length for both timber and steel fixings when necessary for battens etc. When using load spreading profile washers or 25 mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25 mm Aluminium embossed washer and appropriate screw.

Secondary Fasteners:

(To be used in accordance with the NZ Metal Roof and Wall Cladding Code of Practice.)

These should be:

- Aluminium Blind Rivets AS 6-3 x 4.8 mm minimum (Commercial)
- Aluminium Bulb-tite Rivets
- 12-11x35 Alutites
- 12-11x25 Class 5 Type 17 Timbertites (Steel based material only)

PRIMARY FIXING METHODS

A - Fixed every purlin, every rib with approved screws, load spreading profiled metal washers and EPDM washers.

B- Fixed every purlin with the same pattern, (hit-miss-hit-hitmiss-hit) with approved screws and neos, load spreading profiled metal washers and EPDM washers. End purlins and periphery of roof to be fixed every rib.

C- Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos and 25mm Aluminium embossed washers. End purlins and periphery of roof to be fixed every rib.

D - Fixed every purlin with the same pattern, (hit-misshit-hit-miss-hit) with approved screws and neos without washers. End purlins and periphery of roof to be fixed every rib.

SNOW LOADS

When the possibility of snow exists it is necessary to allow for the extra imposed snow loads by increasing the strength of the structure, and/or minimising the build up of snow, and this is generally achieved by increasing the roof pitch by allowing easier shedding of the snow or otherwise as the designer determines.

The objective is to simplify rather complicate loading patterns while remaining adequately cautious. The design loads should take account of drifting snow due to wind, but wind loads are not required to be combined with snow loads.

As snow loads are uniformly distributed loads they are similar to wind loads.

Snow loadings are not required to be taken into account for the North Island of New Zealand north of a line drawn from Opotiki to Turangi and New Plymouth.

However for other areas snow loadings may need to be taken into account dependent on the area and altitude of the proposed project. A fuller reference including a map and chart is available from the NZ Metal Roofing Roof and Wall Cladding Code of Practice Section 3.5.

ROOF EXPANSION PROVISIONS

Fix with recommended fasteners and systems from the Primary Fixing Chart and additionally allow for the following where applicable.

STEEL BASE MATERIAL				
NZ METAL ROOF AND WALL CLADDING CODE OF PRACTICE COMPLIANCE				
SHEET LENGTHS	UP TO 15 m	>15–18 m	>18–25 m	>25–30 m
Zinc Aluminium and light colours	No special provision.		Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM	Solid fix the middle third of the roof and over-size holes should be used for the remainder of the sheet.
Dark Colours	No special provision.	Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36 mm EPDM washer.		Not recommended

ALUMINIUM				
SHEET LENGTHS	UP TO 10 m	10–12 m	12–15 m	>15 m
Plain Aluminium & lighter colours in Favourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36 mm EPDM washers			Not recommended
Dark Coloured Aluminium in Favourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36 mm EPDM washers		Not recommended	
Plain Aluminium & lighter colours in Unfavourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30 mm EPDM washers		Not recommended	
Dark Coloured Aluminium in Unfavourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30 mm EPDM washers.	Not recommended		

For sheet lengths in excess of the above a step joint or other special provision for expansion is required. Refer to RoofLogic. When using load spreading profile washers or 25 mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25 mm Aluminium embossed washer and appropriate screw.

Oversize holes should be 3 mm greater diameter than the screw or as per the Primary Fixing Chart for stainless steel screws.For further information on the fixing of Topdeck T refer to E2/AS1 of the NZ Building Code and NZ Metal Roof and Wall Cladding Code of Practice, www.metalroofing.org.nz. These publications along with the foregoing technical data should form the basis of the design and installation of metal roofing and cladding.

Also refer to our suite of detail drawings, and to NZ Steel Ltd and Pacific Coilcoaters literature.