CORRUGATE

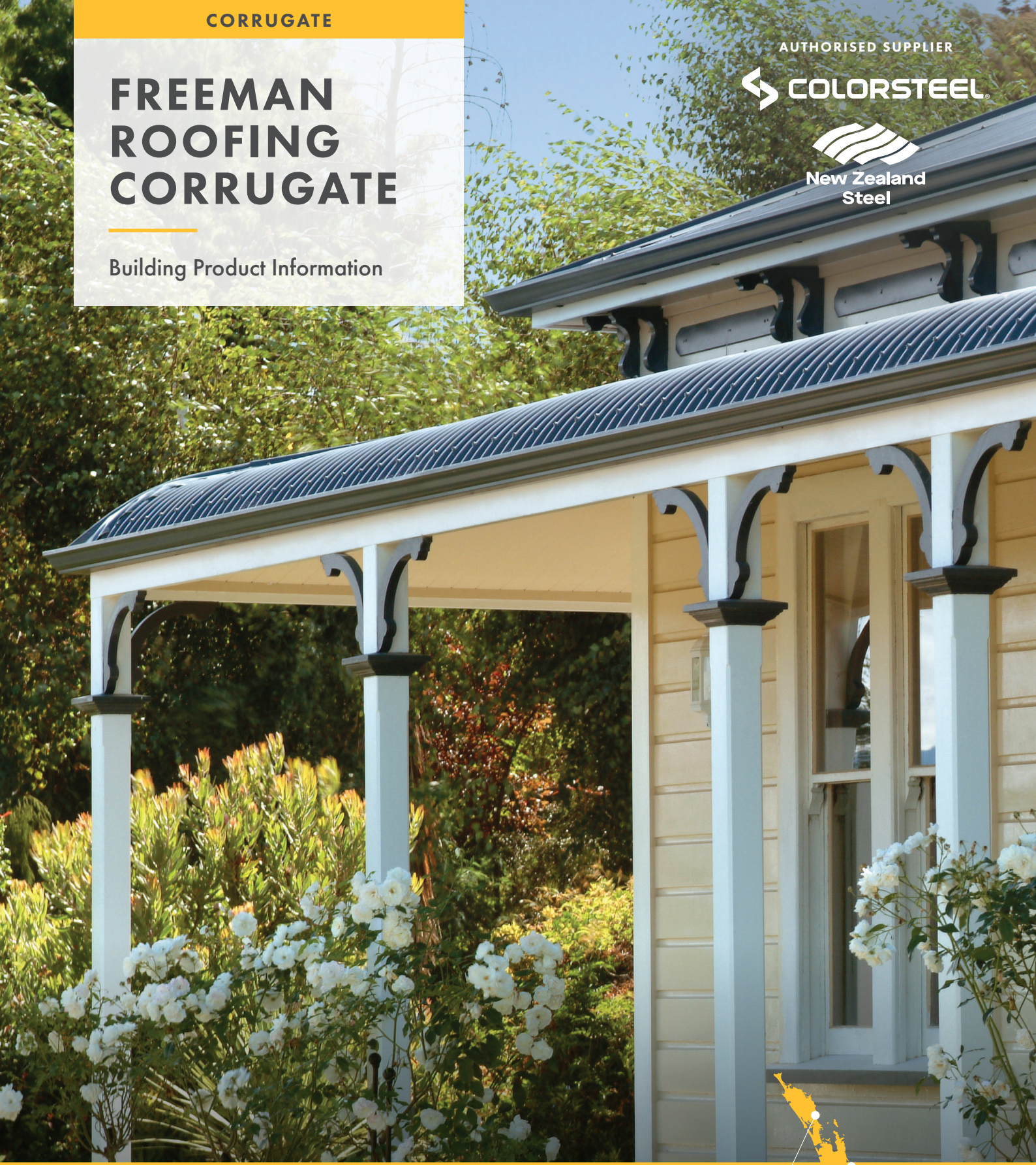
FREEMAN ROOFING CORRUGATE

Building Product Information

AUTHORISED SUPPLIER

COLORSTEEL®

New Zealand Steel



FREEMAN ROOFING

www.freemanroofing.co.nz

Family owned since 1956

FREEMAN ROOFING CORRUGATE

Freeman Roofing Corrugate, a time-honoured metal roofing style, has enjoyed enduring popularity in New Zealand for over a century. Freeman Roofing Corrugate's remarkable strength, adaptability, ease of handling and installation are key attributes. This makes it an exceptionally pragmatic and versatile choice for roofing and walling applications. Its classic design harmonises with modern residences, vintage homes, industrial structures, and sheds. Additionally, Freeman Roofing Corrugate finds widespread use in residential fencing projects. Crafted from high-tensile steel to ensure robustness and impact resistance, it is obtainable in extended lengths and boasts a non-syphoning side lap. This feature curtails the potential for moisture transfer between sheets due to capillary action, thereby mitigating the risk of roof seepage.

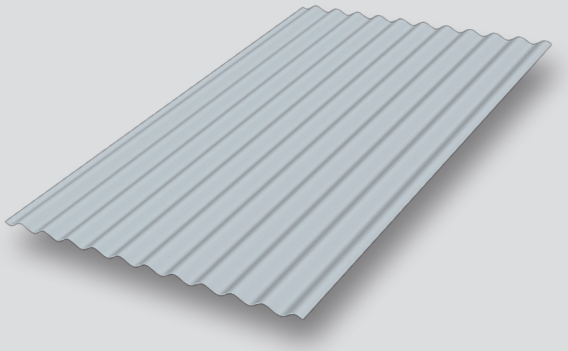
When specifying Freeman Roofing Corrugate into design plans, always cite this product as: *'Freeman Roofing Corrugate'*. This will ensure that the product used on the project is compliant and accurately manufactured using genuine NZ Made Colorsteel®.

SUMMARY OF DESIGN CONSIDERATIONS

- Ensure a minimum roof pitch of 8°.
- Select appropriate material coating based on building location/environment.
- Choose from COLORSTEEL® standard colour ranges, including Matte and Altimate (availability and minimum quantities may apply).
- Use unpainted metallic-coated steel.
- Follow Freeman Roofing guidelines to meet the NZ Building Code, E2/AS1, and NZ Metal Roofing Manufacturers Code of Practice.
- Account for thermal expansion, especially in darker shades. Consider expansion joints at maximum lengths of 24 metres (lighter colours) and 16 metres (darker colours).
- Adhere to Freeman Roofing Corrugate span tables for purlin spacing to avoid exceeding maximum spans.
- For wall cladding, direct fixing is vertical, use drainage cavity batten for horizontal fixing.
- Exercise caution for compatibility when combining Freeman Roofing Corrugate with other metals like copper to prevent rapid corrosion.
- Choose an adequate cover based on the thickness (BMT) of the sheets.

PROFILE TECHNICAL SUMMARY

MINIMUM PITCH



The minimum roof pitch for Corrugate is 8 degrees, and if end lapped, the pitch should be 10 degrees to ensure proper water drainage.

If end-lapping of roof sheets cannot be avoided, both ends of the lap must be continuously sealed to ensure that neither condensation runoff from the under-surface nor rainwater run-off enters the lap.

For longer runs, specific design is required to determine the necessary roof pitch. In cases where rainfall intensity exceeds 100mm/hour, the minimum pitches must be increased by a further 1 degree for every 10 meters of run over 40 meters to prevent water build-up on the roof. The building design pitch may need to be higher to account for any cumulative deflections of the frame, purlin, and roof sheeting or penetrations.

CORRUGATE LAP

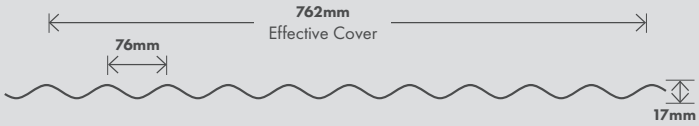
All profile dimensions are nominal and in mm

Standard

CORRUGATE

Roofing and Wall Cladding

Dimensioned Drawing of Corrugate



For curved roofing, the roof cladding should not terminate at a pitch lower than the minimum pitch specified above. Additionally, side laps of curved sheets must be sealed to any areas below the minimum pitches permitted above to ensure proper water drainage. Our team of experts can provide guidance and support to help you determine the appropriate roof pitch and installation requirements for your project based on the specific details of your site and building design.

COMPOSITION OF MATERIALS AND FINISHES

Defining the boundaries of distinct corrosion zones proves challenging due to the numerous factors influencing the corrosiveness of specific sites. Selecting suitable materials for each location is crucial, ensuring they align with the NZ Building Code's durability standards and fulfil customer anticipations.

Zinc/aluminium-coated steel adheres to AS 1397:2011 standards.

Available pre-painted metals offer diverse environmental solutions encompassing multiple metals, metallic coatings, paint systems, and varying paint thicknesses. These paint coatings are manufactured in line with AS/NZS 2728:2013 regulations.

For project-specific environmental zone product selection, please contact Freeman Roofing for further details.

MANUFACTURING BRANCHES

Whangārei
whangarei@freemanroofing.co.nz / 09 430 7570

Tauranga
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Wellington
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Nelson
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Blenheim
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Ashburton
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Timaru
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Dunedin
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Wānaka
Wanaka@freemanroofing.co.nz / 03 443 1250

Queenstown
Queenstown@freemanroofing.co.nz / 03 442 3883

Manufactured custom cut to length subject to transport and site limitations.

As sheet lengths increase higher transportation costs may be applicable.

Sheet lengths in excess of 28 metres require specialised transportation.

Maximum recommended sheet lengths for aluminium is 10-12 metres for dark coloured and 12-15 metres for plain and light coloured. Refer to Roof Expansions Provisions of this summary.

INFORMATION TABLE

Substrate Material	Colorsteel®		Aluminium	
Thickness (BMT)	**.40mm**	**.55mm**	**.70mm**	**.90mm**
Approx weight per lineal metre for Zincalume based material (kg/lm)	3.2	4.27	1.84	2.37
Purlin Spacings - General	Separate section.		Separate section.	
Unsupported Overhang (mm)[1]	150	150	100	150
Drape Curved Roof				
min Radius (m)	12	10	12	10
Purlin Spacings for Curved Roofs				
- Intermediate (mm)	900	1200	800	1200
- End (mm)	600	800	550	800
Precurved Roof				
- min Radius (mm)	N/R[2]	300	300	300
- Recommended Minimum Radius (mm)	N/R[2]	400	400	400

[1]Not suitable for roof access without additional support
[2]N/R - Not recommended [3]N/A - Not Available

This technical data sheet is for Colorsteel® and aluminium based substrates. Depending on the nature and capability of the machine, most if not all of these materials can be roll formed in to our Five Rib profile: Colorsteel®, Aluminium, Zincalume®, Galvsteel®, Dridex®. Unfortunately some machines cannot roll form Aluminium or Galvsteel. Please check with your local Freeman Roofing branch before ordering.

CRITERIA/PRODUCT SELECTION

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 Freeman Roofing.

Further, where a building is outside of the scope of E2/AS1 and the building or parts thereof 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 Freeman Roofing 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 profile or the structural design. It is 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. For a fuller explanation of this refer to the NZ Metal Roof and Wall Cladding Code of Practice. This result should be referenced to the Wind Load Span Design Graphs.

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 and for wall cladding applications, the trafficable limitations may be exceeded providing the design wind loading criteria is met. However this should be done with caution as it may require considerable extra secondary fasteners within the laps.

The designer should always take into account in areas of heavy roof traffic, snow loadings, or where the roofing supports such items as air conditioning units, purlin spacing should be reduced accordingly. Consideration also needs to be given to limitations of purlin spacings for any translucent sheeting.

Reference should be made to the notes in the graphs. It is our recommendation that for commercial and industrial roofing applications that .55mm BMT Colorsteel® or .90mm BMT Aluminium is used as it has more resilience to damage particularly by other trades.

Underlay as per the project specifications should be used. With an aluminium substrate steel netting should not be used where it may be in contact (either directly or through underlay degradation) with the aluminium roofing or cladding. Alternative material such as polypropylene strapping should be used where support is required, or the cladding separated from the underlay by a high density polystyrene batten or Thermakraft Drainage Matt or similar, and the use of an aluminium gutter flashing. This is also applicable to coated metal and zinc roofing in severe marine applications. In all the above cases self supporting paper should be used, including when support is required.

ADHERENCE TO BUILDING CODE STANDARDS

When employed in alignment with Freeman Roofing's installation and maintenance advice, Freeman Roofing Corrugate will aid in fulfilling the subsequent stipulations of the New Zealand building code.

B1 STRUCTURE:

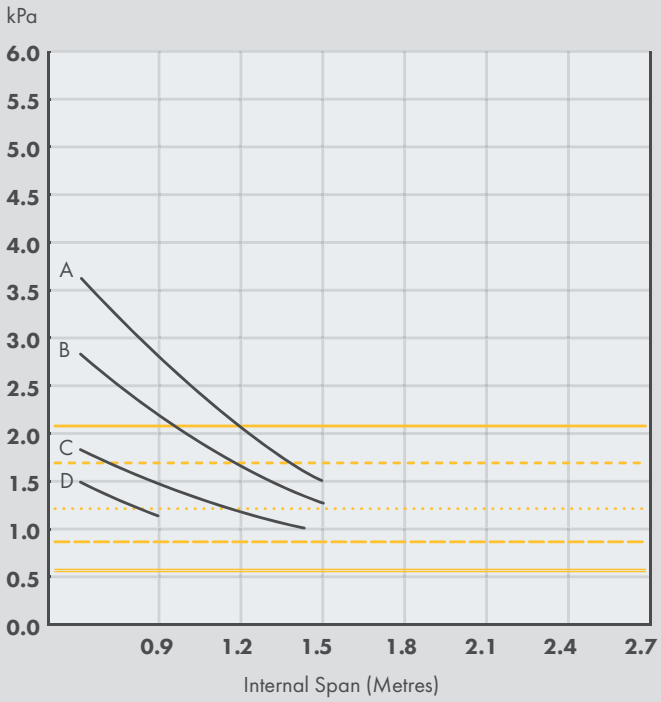
B1.3.1, B1.3.2, B1.3.3 (b, c, f, g, h, j), B1.3.4

The span tables align with AS/NZS 1170.2:2002 standards. They are established using a maximum building height of ten meters and a 500-year design return period for wind load assessment under the strength limit state. The designated roofing spans provision for a snow loading up to 2kPa, following the New Zealand Metal Roof and Wall Cladding Code of Practice guidelines.

WIND & CONCENTRATED LOAD SPAN DESIGN GRAPH

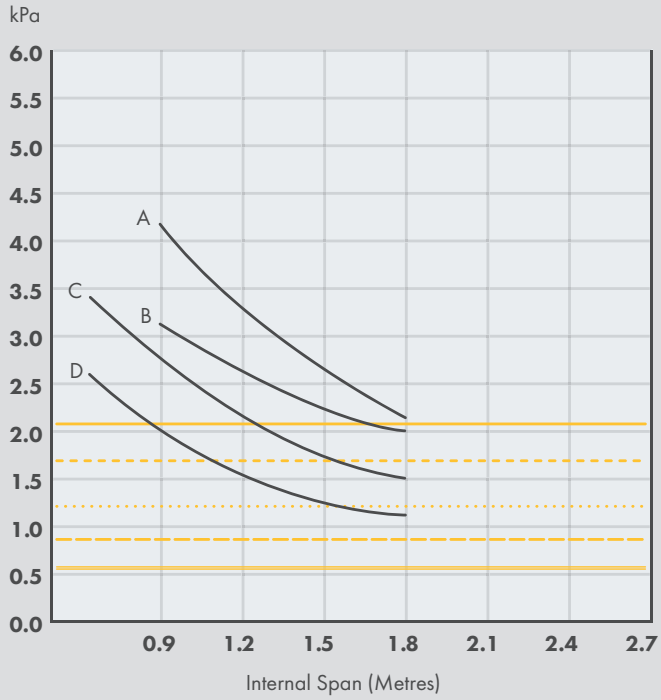
Roofing - ColorSteel® Based Material

.40 Colorsteel® G550 High Strength



Key	Wind Zone	Load
	Extra High	2.09kPa
	Very High	1.72kPa
	High	1.32kPa
	Medium	0.93kPa
	Low	0.6kPa

.55 Colorsteel® G550 High Strength



Key	Wind Zone	Load
	Extra High	2.09kPa
	Very High	1.72kPa
	High	1.32kPa
	Medium	0.93kPa
	Low	0.6kPa

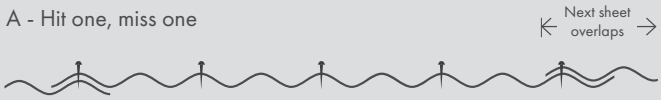
- Intermediate span in metres.
- A, B, C and D represent alternative primary fixing methods

Freeman Roofing Corrugate (Aluminium). Testing, as referenced within the NZ MRM code of practise confirms that .70mm Aluminium has similar results to .40mm Colorsteel® and that .90mm Aluminium has similar results to .55mm Colorsteel® and is adjusted for practical application. Aluminium requires load spreading profile washers and EPDMs at all times.

ADHERENCE TO BUILDING CODE STANDARDS CONT.

CORRUGATE FIXING PATTERNS

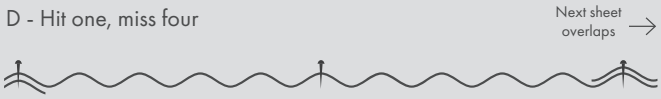
A - Hit one, miss one



B - Hit one, miss two, miss one

C - Hit one, miss two, miss three

D - Hit one, miss four



B2 DURABILITY:

B2.3.1 (b)

Durability in accordance with Table E2/AS1		
Product	**Rain Washed Roofs**	**Walls and Unwashed Areas**
Colorsteel Endura	B, C, D	B, C
Colorsteel Maxx	B, C, D, E	B, C, D
Colorsteel Altimate	B, C, D, E	B, C, D, E

Key	E2/AS1 references atmospheric zones B,C,D,E. Determined, by wind-driven sea-spray. B: Low / C: Medium / D: High / E: Severe marine, such as breaking surf beaches.

C FIRE:

C3.5, C3.6, C3.7

Freeman Roofing products made from Colorsteel® are rated as group 1-S materials when tested in accordance with ISO 5660:2002 part 2.
For more information please refer to: Colorsteel product technical statements v2022.1
https://www.colorsteel.co.nz/resources/downloads-and-brochures/

E1 – SURFACE WATER:

E1.3.2

Freeman Roofing Corrugate carrying capacity.

Minimum Pitch 8°, rainfall intensity 150 mm/hr		
Maximum Run	22m	
Catchment area of spreader	17.65 m^2	10m run, 4 holes in spreader
Catchment behind penetration	1.8 m^2	10m run, discharging each side of penetration

E2 EXTERNAL MOISTURE:

E2.3.1, E2.3.2, E2.3.7

Freeman Roofing Corrugate will match a wide range of details for most applications. Standard design details for Freeman Roofing Corrugate can be found on our website.
https://www.freemanroofing.co.nz/roofing-styles/corrugate/

Other options can conform to the corrugated roofing solutions outlined in E2/AS1.

E3 INTERNAL MOISTURE:

E3.3.1

When utilised alongside a porous and permeable underlay that meets the standards of NZS 2295:2006, the utilisation of Freeman Roofing Corrugate aids in satisfying the requirements of NZBC E3.3.1. Adequate ventilation provisions are necessary for ceiling spaces in sarked roofs, skillion roofs, barrel curved roofs, flat roofs, and roofs in moisture-prone environments.

F2 HAZARDOUS BUILDING MATERIALS:

F2.3.1

Freeman Roofing Corrugate manufactured from Zincalume® Colorsteel® or pre-painted Aluminium such as Altimate® will meet the performance requirement of F 2.3.1.

G12 WATER SUPPLIES:

G12.3.2

Rainwater collected from roofs clad with steel and pre-painted steel products [including Colorsteel®], will comply with the provisions of NZBC G 1 2.3.1, provided the water is not contaminated from other sources (MRM Code of Practise 12.7).

TESTING & SUPPORTIVE EVIDENCE

Supporting evidence provided where requested will apply to the product supplied for the specific project.

Technical documentation and testing evidence pertaining to Colorsteel® and Altimate® can be found here: **https://www.colorsteel.co.nz/resources/downloads-and-brochures/**

Freeman Roofing Corrugate wind capacity and span tables reflect testing undertaken by the New Zealand Metal Roofing Manufacturers Association. More information can be found within the NZ MRM Code of Practice **https://www.metalroofing.org.nz/cop/structure/aluminium-cladding-wind-load-span-graphs**

SERVICEABILITY CATEGORY

		Unrestricted-Access Roof		Restricted-Access Roof				Non-Access Roof or Wall		
G550 Colorsteel® 0.40mm	**End Span**			400	500	700	800	900	1000	
	Internal Span			600	800	1000	1200	1400	1500	
	Serviceability			4.0	3.2	2.5	2.0	1.6	1.4	
G550 Colorsteel® 0.55mm	**End Span**		600	600	700	900	1000	1100	1200	1300
	Internal Span		900	1000	1100	1300	1500	1600	1800	1900
	Serviceability		4.4	4.0	3.7	3.2	2.8	2.6	2.2	2.0
5052 H36 Aluminium 0.70mm	**End Span**		4.100				500	600	800	1000
	Internal Span		2.700				800	900	1200	1500
	Serviceability						1.4	1.3	1.1	0.8
5052 H36 Aluminium 0.90mm	**End Span**		500			600	800	900	1000	1200
	Internal Span		800			900	1200	1300	1500	1800
	Serviceability		3.5			3.2	2.2	2.0	1.7	1.3

1. For all categories, do not use spans above the maximum indicated. The maximum spans for Categories 1 and 2 are based on static point load testing and practical experience of roof performance under dynamic foot traffic loads. Category 3 maximum spans are limited to ensure satisfactory appearance for wall cladding.
2. The given loads are based on 5 screw fasteners per sheet per purlin.
3. The maximum load limit is 4.5 kPa. Contact Freeman Roofing for specific advice if design requirements exceed this limit.
4. End span capacities in the table are based on the end span being 2/3 of the internal span.
5. Design Criteria for Limit State Capacities: a) Serviceability Limit State: There should be no deflection or permanent distortion that could cause unacceptable appearance, side lap leakage, or water ponding due to foot traffic point loads, inward or outward wind loads, or snow loads. b) Ultimate Limit State: There should be no pull-through of fixings or fastener withdrawal resulting in sheet detachment due to wind uplift (outward) loads.
6. System Design: To determine the span capacity of Corrugate, use the Corrugate Limit State Load/Span Capacity Chart appropriate to the grade and type of material and to the serviceability category selected from the three given. Serviceability loads have been derived from tests to the NZMRM testing procedures. For an ultimate limit state load, factor the serviceability load up by 1.4 in line with NZMRM guidelines. The given capacities do not apply to cyclone wind conditions.
7. Serviceability Requirements: Although the categories are intended to guide design to meet the serviceability limit state criteria, foot traffic point load damage may still occur due to careless placement of these point loads.
Service Category Description:

- Unrestricted-Access Roof: Regular foot traffic is expected to access the roof for maintenance work and walk anywhere on the roof. No congregation of foot traffic is expected.
- Restricted-Access Roof: Occasional foot traffic is expected to walk only on the purlin lines, in the profile pans, or carefully across two profile ribs.
- Walkways should be installed where regular traffic is expected, and “Restricted Access” signs should be placed at access points.
- Non-Access Roof or Wall: Walls or roofs where no foot traffic access is possible or permitted. If necessary, “No Roof Access” signs should be used.

8. Wind Pressure Guide: For buildings less than 10m high, the following Serviceability Limit State (S.L.S.) design loads in accordance with the MRM Roofing Code of Practice can be used as a guide for non-specific design. For buildings over 10m high, use AS/NZS 1170.2.Low wind zone = 0.68kPa, Medium wind zone = 0.93kPa, High wind zone = 1.32kPa, Very high wind zone = 1.72kPa, and Extra high wind zone = 2.09kPa.

INSTALLATION ADVICE

Ensure Freeman Roofing Corrugate sheeting packs remain dry and are stored above ground level at the site. In case the sheets become wet, separate, and wipe them, then place them outdoors for drying.

Avoid using black lead pencils on aluminium/zinc, unpainted, or pre-painted steel products. The carbon in the pencil promotes corrosive etching on the material's surface, leaving permanent marks. Non-black pencils, marker pens, or crayons are recommended.

Cut pre-painted steel material solely with shear tools—nibblers or hand shears. Friction blades and high-speed saw blades must not be employed on metal cladding. These blades generate excessive heat, damaging both the metallic coating and pre-painted steel. They also create hot swarf that embeds into the coating.

Clear debris daily to prevent swarf damage. Prevention is easier than repair.

Lay Freeman Roofing Corrugate sheets to overlap neatly with the preceding one. Avoid stretching the width during installation, as it may permit wind and rain infiltration.

Freeman Roofing Corrugate roofing is usually secured through every second rib to top and bottom purlins. Intermediate fasteners must be crest-fixed as per fastener requirements and pattern tables, using load-spreading metal profile washers with 30mm EPDM washers when specified. Pan fixing is suitable only for wall cladding.

For spans beyond 900mm (roofing) or 1200mm (wall cladding), fix side laps at midspan to ensure a weatherproof seal, using self-drilling stitching screws for overlap security.

Install eaves flashings for roof pitches ≤ 10°, soffit widths ≤ 100mm, or in Very High, Extra High, or Specific Engineer Design (SED) wind zones.

At sheet ends in roofing, turn pans upward at the crest and downward into the gutter using a turn up/down tool. For wall cladding, turn up both ends of horizontal sheets and the top of vertical wall cladding. Compressible foam seals might be necessary in detailed areas.

While walking on Freeman Roofing Corrugate roofing, tread over purlins to prevent damage. Wear flat, rubber-soled shoes, distribute weight across corrugations, and tread flat-footed. Employ crawl boards for carport and verandah use to avoid harm during installation and maintenance.

Use cavity battens under horizontal Freeman Roofing Corrugate wall cladding. Vertical cladding can be directly fixed or use cavity battens. If cavity battens go over roof purlins, increase screw length by the cavity batten thickness.

Follow Freeman Roofing design details for flashing installation to comply with NZ Building Code, E2/AS1, and NZMRM Code of Practice. Alternatively, use flashing details that adhere to these codes. Notch flashing turndowns into the pan of Freeman Roofing Corrugate sheets around the rib or apply soft edges for maximum weather tightness.

PRIMARY FIXING CHART

Roofing Crest fixed (To be read in conjunction with Roof Expansion Provisions and Load Span Design Graph)

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	SteelPurlins or girts 4.5-12mm	Washers (when required)
Colorsteel® Based Material	12-11x50 Class 4 Type 17 Timber or universal screws with neo washers or 60mm weatherseal nails	12-14x45 Class 4 steel or universal screws with neo washers	12-14x45 Class 4 steel or universal screws with neo washers	12-24x50 Class 4 Series 500 steel or universal screws with neo washers	Corrugated load spreading profile metal and 30mm EPDM
Aluminium Based Material	14-11x55 Aluminium screws with neo washers with Corrugate load spreading profile. Ali washer and 30mm EPDM	Stainless steel grade 304, 14-14x70 steel or universal screws and bonded washer through a 10mm dia. clearance hole with Corrugate load spreading profile Ali washer and 30mm EPDM	Stainless steel grade 304, 14-14x70 steel or universal screws and bonded washer through a 10mm dia. clearance hole with Corrugate load spreading profile Ali washer and 30mm EPDM	Fabco stainless steel grade 304, 14-14x70 Type B screws and bonded washer through a 10mm dia. clearance hole with Corrugate load spreading profile Ali washer and 30mm EPDM	Corrugate load spreading profile Ali and 30mm EPDM

Wall Cladding Pan fixed

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	Steel Purlins or girts 4.5-12mm	Washers (When required)
Colorsteel® Based Material Direct fixed	12-11x40 Class 4 Type 17 Timber or universal screws with neo washers	12-14x20 Class 4 steel or universal screws with neo washers	12-14x20 Class 4 steel or universal screws with neo washers	12-24x32 Class 4 steel or universal screws with neo washers	-
Colorsteel® Based Material 20mm Cavity	12-11x50 Class 4 Type 17 Timber or universal screws with neo washers	12-14x45 Class 4 steel or universal screws with neo washers	12-14x45 Class 4 steel or universal screws with neo washers	12-24x50 Class 4 steel or universal screws with neo washers	-
Aluminium Based Material Direct Fixed	12-11x35 Aluminium screws with neo washers	Stainless steel grade 304, 14-14x25 steel or universal screws and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x25 steel or universal screws and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Fabco stainless steel grade 304, 4-14x20 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	19mm bonded Ali washer
Aluminium Based Material 20mm Cavity	12-14x55 Aluminium screws with neo washers	Stainless steel grade 304, 14-14x70 steel or universal screws and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x70 steel or universal screws and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Fabco stainless steel grade 304, 14-14x70 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	19mm bonded Ali washer

Note: All primary fasteners to have a minimum embedment into structural timber of 30mm. Adjust fastener length for both timber and steel fixings when necessary for battens etc. When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25mm 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 AS5-3 x 4mm minimum (Residential)
- Aluminium Blind Rivets AS 6-3 x 4.8mm minimum (Commercial)
- Aluminium Bulb-tite Rivets
- 12-11x35 Aluminium screws with neo washers
- 12-11x25 Class 4 Type 17 Timber or Universal screws with neo washers (Steel based material only)

ROOF EXPANSION PROVISIONS

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

Colorsteel® Based Material

E2/AS1 Compliance				
Sheet Lengths	**Up to 8 metres**	**>8-12 metres**	**>12-18 metres**	**>18 metres**
	No special provision	Lower 50 % of the roof should be fixed using oversize holes at fastening points with approved load spreading profile washer, and 36mm EPDM washers		Not Applicable

NZ Metal Roof and Wall Cladding Code of Practice Compliance				
Sheet Lengths	**Up to 15 metres**	**>15-18 metres**	**>18-25 metres**	**>25-30 metres**
Zincalume and light colours	No special provision	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 or approved 25mm Aluminium embossed washer	Solid fix from the ridge down 12 metres & oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM or approved 25mm Aluminium embossed washer used for the entire 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 36mm EPDM washer or approved 25mm Aluminium embossed washers		Not recommended

Aluminium

Sheet Lengths	**Up to 10 metres**	**10-12 metres**	**12-15 metres**	**>15 metres**
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 36mm 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 36mm 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 30mm 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 30mm EPDM washers	Not recommended		

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

Oversize holes should be 3mm greater diameter than the screw or as per the Primary Fixing Chart for stainless steel screws. For further information on the fixing of Corrugate 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.

MAINTENANCE

All roofing and cladding materials are affected by the combined influences of weather, dust, and various deposits. Therefore, the long-term performance and resilience of Freeman Roofing Corrugated roofing and wall cladding rely on proper upkeep. In the case of roofing, the natural action of rain will generally cleanse most gathered environmental particles from the upper surface.

On the other hand, wall cladding necessitates manual cleaning every 3 to 12 months (depending on the local surroundings and paint system) to prevent the accumulation of dirt, debris, or other substances that rain alone can't remove. Regions that lack sufficient rain cleaning (unwashed areas) demand more thorough manual cleaning. These areas encompass soffits, wall cladding beneath eaves, undersides of gutters, fascia's, protected sections of garage doors, unwashed roof segments, and other zones at greater risk, such as around flues, beneath television aerials and solar panels, or in locales prone to mould, lichen, bird droppings, or debris.

Maintenance of roofing and cladding materials should be cleaned manually using either water and a sponge or a gentle nylon-bristled brush. Water blasting can be employed, but the pressure must not exceed 20MPa. Avoid using harsh or solvent-based cleaners like turps, petrol, or kerosene.

Additional information pertaining to New Zealand Steel's maintenance advice for its products can be found here: **https://www.colorsteel.co.nz/assets/Brochures/Maintenance_Recommendations_Brochure_v4.pdf.**

WEIGHTS AND TOLERANCES

Weight		0.40 BMT	0.55 BMT	0.70 Aluminium	0.90 Aluminium
Kg/lineal metre	Painted	3.17	4.26	1.78	2.28
	Unpainted	3.10	4.20		
Kg/square metre	Painted	4.17	5.68	2.34	3.04
	Unpainted	4.08	5.60		

Tolerances: *Sheet width +/- 2mm* *Sheet length +/-5mm*

STATEMENT IN REGARD TO SECTION 26 OF THE BUILDING ACT

Freeman Roofing Corrugated roofing and wall cladding products are not subject to any warnings or bans under Section 26 of the Building Act.

FREEMAN ROOFING

Family owned since 1956

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