

Freeman Roofing (FR) Purlins & Girts

We fabricate heavy duty C section purlins and girts from roll formed galvanised NZ Steel. These are tested and approved by structural engineers for the New Zealand construction industry and are perfect for pre-engineered sheds, garages and workshops.

AUTHORISED SUPPLIER



COLORSTEEL



New Zealand
Steel

 **FREEMAN
ROOFING**

freemanroofing.co.nz





FREEMAN ROOFING (FR) PURLINS & GIRTS

Freeman Roofing FR Purlin & Girts sections are continually roll-formed from zinc-coated high-tensile steel, punched in-line, and cut to length.

These versatile components find their intended use in various building applications. Whether you are constructing residential roofs, commercial buildings, or industrial structures, our FR Purlin & Girts are designed to meet your specific needs. Accessories are zinc-coated and crafted to bespoke sizes or provided as standard components. The optimised dimensions of FR Purlin & Girts and the extensive selection of depths and thicknesses position them as a leading performer among lightweight, cold-formed steel sections.

LIMITATIONS OF USE:

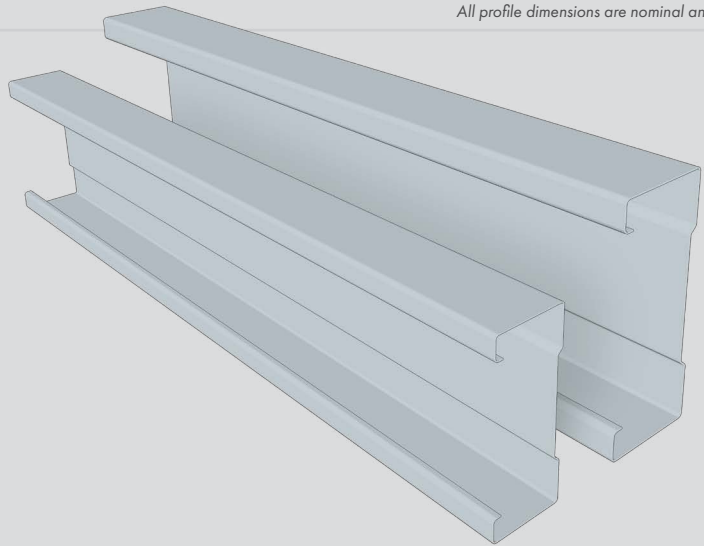
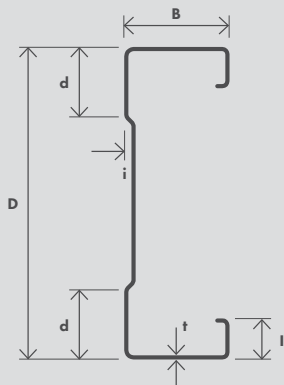
This building product information brochure does not present a comprehensive portrayal of the products, nor does it make any claims regarding appropriateness for specific applications. It serves as a general reference and should not be considered a replacement for expert technical guidance. All literature and design tables provided pertain exclusively to Freeman Roofing's FR Purlins and Girts. Freeman Roofing cannot be held responsible for any misuse of the tables or its FR Purlins and Girts, and disclaims any liability in such cases.

FULL SECTION PROPERTIES

(FR) PURLINS & GIRTS

All profile dimensions are nominal and in mm

Dimensioned Drawing of (FR) Purlins & Girts



Purlin Section	DxB mm	t mm	Mass kg/m	Weight kN/m	Area mm ²	d mm	i mm	b mm	l mm	I _{xx} 10 ⁶ mm ⁴	I _{yy} 10 ⁶ mm ⁴	Z _{xx} 10 ³ mm ³	J mm ⁴	I _w 10 ⁹ mm ⁶
CLR 150/12	150x65	1.15	2.96	0.03	378	54	4	10	23	1.33	0.244	17.73	168	1.44
CLR 150/15	150x65	1.45	3.72	0.04	474	54	4	10	23	1.66	0.301	22.13	334	1.76
CLR 200/12	200x75	1.15	3.68	0.036	468	63	6	12	25	2.845	0.377	28.78	206	3.8
CLR 200/15	200x75	1.45	4.59	0.045	584	63	6	12	25	3.533	0.462	35.85	409	4.5
CLR 200/18	200x75	1.75	5.49	0.054	699	63	6	12	25	4.199	0.539	42.74	713	5.2
CLR 250/13	250x85	1.25	5.00	0.049	638	67	7	12	33	5.99	0.67	48.0	324	9.7
CLR 250/15	250x85	1.45	5.80	0.057	740	67	7	12	33	6.92	0.77	55.4	506	11.2
CLR 250/18	250x85	1.75	7.00	0.069	893	67	7	12	33	8.29	0.92	66.4	890	13.4
CLR 300/15	300x100	1.45	6.82	0.067	870	67	7	12	38	11.86	1.26	79.1	600	26.1
CLR 300/18	300x100	1.75	8.23	0.081	1050	67	7	12	38	14.11	1.49	94.2	1054	31.0
CLR 350/18	350x100	1.75	9.06	0.089	1155	77	7	12	43	20.60	1.64	117.7	1161	46.7
CLR 350/23	350x100	2.25	12.42	0.122	1584	77	7	12	43	27.90	2.19	160.0	2995	63.3

MANUFACTURING BRANCHES

Timaru

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DESIGN CAPACITY CHARTS

ULTIMATE UNIFORMLY DISTRIBUTED LOAD CAPACITY (kN/m) SINGLE SPAN

CLR 150/12						CLR 150/15					
Span (m)	Brace					Span (m)	Brace				
	OB	1B	2B	FR	Ws		OB	1B	2B	FR	Ws
3.0	3.31	5.62	5.71	5.71	4.20	3.0	4.34	7.39	7.50	7.50	5.39
3.5	1.86	3.97	4.19	4.19	2.68	3.5	2.39	5.20	5.51	5.51	3.43
4.0	1.13	2.89	3.16	3.21	1.82	4.0	1.42	3.79	4.15	4.22	2.30
4.5	0.71	2.16	2.42	2.54	1.29	4.5	0.90	2.82	3.18	3.34	1.62
5.0	0.47	1.63	1.90	2.06	0.95	5.0	0.60	2.12	2.48	2.70	1.18
5.5	0.33	1.23	1.51	1.70	0.72	5.5	0.42	1.61	1.97	2.24	0.89
6.0	0.23	0.93	1.21	1.43	0.56	6.0	0.30	1.22	1.58	1.88	0.69
6.5	0.17	0.69	0.98	1.22	0.44	6.5	0.22	0.91	1.27	1.60	0.54
7.0	0.13	0.53	0.79	1.05	0.35	7.0	0.17	0.69	1.03	1.38	0.43
7.5	0.10	0.41	0.64	0.92	0.29	7.5	0.13	0.52	0.84	1.20	0.35
8.0	0.08	0.32	0.52	0.81	0.24	8.0	0.11	0.41	0.68	1.06	0.29

CLR 150/18					
Span (m)	Brace				
	OB	1B	2B	FR	Ws
3.0	4.87	8.53	8.53	8.53	7.51
3.5	2.68	6.27	6.27	6.27	4.73
4.0	1.60	4.50	4.80	4.80	3.17
4.5	1.02	3.25	3.79	3.79	2.22
5.0	0.69	2.36	3.07	3.07	1.62
5.5	0.48	1.70	2.47	2.54	1.22
6.0	0.35	1.22	2.00	2.13	0.94
6.5	0.26	0.89	1.61	1.82	0.74
7.0	0.20	0.67	1.30	1.57	0.59
7.5	0.15	0.51	1.05	1.37	0.48
8.0	0.12	0.40	0.84	1.20	0.40

Full Section Properties														
	DXB mm	t mm	Mass kg/m	Weight kN/m	Area mm ²	d mm	i mm	b mm	l mm	a mm	I _{xx} 10 ⁹ mm ⁴	I _{yy} 10 ⁹ mm ⁴	Z _{xx} 10 ³ mm ³	J mm ⁴
CLR 150/18	150x65	1.75	4.83	0.05	566.7	54	4	10	23	23.9	1.98	0.354	26.40	578

LEGEND

FR = Compression flange fully restrained

WS = Serviceability load capacity for a deflection of span/150

DESIGN CAPACITY CHARTS

CLR 200/12						CLR 200/15					
Span (m)	Brace					Span (m)	Brace				
	OB	1B	2B	FR	Ws		OB	1B	2B	FR	Ws
3.0	6.48	9.19	9.19	9.19	9.08	3.0	8.61	12.41	12.41	12.41	11.97
3.5	3.80	6.61	6.75	6.75	5.82	3.5	4.97	8.91	9.12	9.12	7.66
4.0	2.30	4.88	5.17	5.17	3.95	4.0	3.01	6.58	6.98	6.98	5.19
4.5	1.48	3.70	4.03	4.09	2.81	4.5	1.92	4.98	5.43	5.52	3.68
5.0	1.00	2.85	3.18	3.31	2.07	5.0	1.27	3.83	4.28	4.47	2.71
5.5	0.70	2.22	2.55	2.74	1.57	5.5	0.88	2.98	3.44	3.69	2.05
6.0	0.50	1.74	2.08	2.30	1.22	6.0	0.62	2.32	2.79	3.11	1.59
6.5	0.36	1.36	1.70	1.96	0.97	6.5	0.46	1.81	2.29	2.65	1.26
7.0	0.27	1.07	1.41	1.69	0.78	7.0	0.35	1.40	1.89	2.28	1.01
7.5	0.21	0.83	1.17	1.47	0.64	7.5	0.27	1.09	1.57	1.99	0.83
8.0	0.16	0.65	0.97	1.30	0.53	8.0	0.21	0.85	1.30	1.75	0.68
8.5	0.13	0.52	0.81	1.15	0.45	8.5	0.17	0.68	1.08	1.55	0.57
9.0	0.11	0.42	0.67	1.03	0.38	9.0	0.13	0.55	0.89	1.38	0.48
9.5	0.09	0.34	0.56	0.92	0.32	9.5	0.11	0.45	0.73	1.24	0.41
10.0	0.07	0.28	0.46	0.83	0.28	10.0	0.09	0.37	0.60	1.12	0.35
-	-	-	-	-	-	10.5	0.08	0.30	0.50	1.02	0.30
-	-	-	-	-	-	11.0	0.07	0.25	0.42	0.93	0.27

CLR 200/18						CLR 250/13					
Span (m)	Brace					Span (m)	Brace				
	OB	1B	2B	FR	Ws		OB	1B	2B	FR	Ws
3.0	10.68	15.67	15.67	15.67	14.87	3.0	11.83	14.89	14.89	14.89	18.07
3.5	6.16	11.22	11.52	11.52	9.48	3.5	7.47	10.94	10.94	10.94	11.56
4.0	3.65	8.26	8.82	8.82	6.41	4.0	4.65	8.20	8.38	8.38	7.85
4.5	2.30	6.23	6.84	6.97	4.55	4.5	2.99	6.27	6.62	6.62	5.58
5.0	1.53	4.78	5.39	5.65	3.33	5.0	2.01	4.90	5.32	5.37	4.11
5.5	1.06	3.70	4.31	4.67	2.51	5.5	1.40	3.88	4.30	4.43	3.12
6.0	0.76	2.88	3.49	3.92	1.93	6.0	1.01	3.10	3.52	3.73	2.43
6.5	0.56	2.25	2.86	3.34	1.52	6.5	0.75	2.50	2.92	3.18	1.92
7.0	0.42	1.74	2.35	2.88	1.22	7.0	0.56	2.02	2.44	2.74	1.55
7.5	0.33	1.34	1.94	2.51	0.99	7.5	0.43	1.63	2.06	2.39	1.27
8.0	0.26	1.05	1.61	2.21	0.82	8.0	0.33	1.31	1.74	2.10	1.05
8.5	0.21	0.83	1.33	1.96	0.68	8.5	0.26	1.05	1.48	1.86	0.88
9.0	0.17	0.66	1.10	1.75	0.58	9.0	0.21	0.85	1.26	1.66	0.75
9.5	0.14	0.54	0.90	1.57	0.49	9.5	0.17	0.69	1.07	1.49	0.64
10.0	0.11	0.44	0.75	1.42	0.42	10.0	0.14	0.57	0.91	1.34	0.55
10.5	0.10	0.37	0.62	1.28	0.36	10.5	0.12	0.47	0.77	1.22	0.48
11.0	0.08	0.31	0.51	1.17	0.32	11.0	0.10	0.40	0.65	1.11	0.42
11.5	0.07	0.26	0.43	1.07	0.28	11.5	0.08	0.34	0.55	1.02	0.37
12.0	0.06	0.22	0.37	0.98	0.25	12.0	0.07	0.29	0.47	0.94	0.33
-	-	-	-	-	-	12.5	0.06	0.25	0.40	0.86	0.29

LEGEND

FR = Compression flange fully restrained

WS = Serviceability load capacity for a deflection of span/150

DESIGN CAPACITY CHARTS

CLR 250/15						CLR 250/18					
Span (m)	Brace					Span (m)	Brace				
	OB	1B	2B	FR	Ws		OB	1B	2B	FR	Ws
3.0	10.68	15.67	15.67	15.67	14.87	3.0	17.82	22.84	22.84	22.84	26.90
3.5	6.16	11.22	11.52	11.52	9.48	3.5	11.12	16.78	16.78	16.78	17.21
4.0	3.65	8.26	8.82	8.82	6.41	4.0	6.85	12.54	12.85	12.85	11.66
4.5	2.30	6.23	6.84	6.97	4.55	4.5	4.39	9.59	10.15	10.15	8.27
5.0	1.53	4.78	5.39	5.65	3.33	5.0	2.91	7.46	8.14	8.23	6.07
5.5	1.06	3.70	4.31	4.67	2.51	5.5	2.00	5.89	6.57	6.80	4.60
6.0	0.76	2.88	3.49	3.92	1.93	6.0	1.43	4.69	5.38	5.71	3.56
6.5	0.56	2.25	2.86	3.34	1.52	6.5	1.04	3.76	4.45	4.87	2.82
7.0	0.42	1.74	2.35	2.88	1.22	7.0	0.78	3.02	3.71	4.20	2.27
7.5	0.33	1.34	1.94	2.51	0.99	7.5	0.60	2.42	3.12	3.66	1.86
8.0	0.26	1.05	1.61	2.21	0.82	8.0	0.47	1.93	2.63	3.22	1.54
8.5	0.21	0.83	1.33	1.96	0.68	8.5	0.37	1.54	2.22	2.85	1.28
9.0	0.17	0.66	1.10	1.75	0.58	9.0	0.30	1.24	1.88	2.54	1.08
9.5	0.14	0.54	0.90	1.57	0.49	9.5	0.24	1.01	1.60	2.28	0.92
10.0	0.11	0.44	0.75	1.42	0.42	10.0	0.20	0.84	1.35	2.06	0.79
10.5	0.10	0.37	0.62	1.28	0.36	10.5	0.17	0.69	1.14	1.87	0.68
11.0	0.08	0.31	0.51	1.17	0.32	11.0	0.14	0.58	0.96	1.70	0.60
11.5	0.07	0.26	0.43	1.07	0.28	11.5	0.12	0.48	0.81	1.56	0.52
12.0	0.06	0.22	0.37	0.98	0.25	12.0	0.10	0.41	0.69	1.43	0.46
12.5	-	-	-	-	-	12.5	0.09	0.35	0.59	1.32	0.41
13.0						13.0	0.08	0.30	0.51	1.22	0.36
						13.5	0.07	0.26	0.44	1.13	0.32
						14.0	0.06	0.23	0.38	1.05	0.29

CLR300/15						CLR 300/18					
Span (m)	1B	2B	3B	FR	Ws	Span (m)	1B	2B	3B	FR	Ws
5.0	7.78	7.78	7.78	7.78	9.71	5.0	-	-	-	-	-
5.5	6.43	6.43	6.43	6.43	7.3	5.5	-	-	-	-	-
6.0	5.27	5.4	5.4	5.4	5.62	6.0	-	-	-	-	-
6.5	4.3	4.6	4.6	4.6	4.42	6.5	5.44	5.86	5.86	5.86	5.26
7.0	3.52	3.97	3.97	3.97	3.54	7.0	4.46	5.05	5.05	5.05	4.21
7.5	2.89	3.46	3.46	3.46	2.88	7.5	3.66	4.40	4.40	4.40	3.43
8.0	2.38	3.04	3.04	3.04	2.37	8.0	3.01	3.87	3.87	3.87	2.82
8.5	1.95	2.69	2.69	2.69	1.98	8.5	2.46	3.42	3.42	3.42	2.35
9.0	1.58	2.38	2.4	2.4	1.67	9.0	1.99	3.02	3.06	3.06	1.98
9.5	1.3	2.08	2.15	2.15	1.42	9.5	1.63	2.64	2.74	2.74	1.69
10.0	1.08	1.83	1.94	1.94	1.21	10.0	1.35	2.32	2.47	2.47	1.45
10.5	0.9	1.61	1.76	1.76	1.05	10.5	1.12	2.03	2.24	2.24	1.25
11.0	0.75	1.42	1.61	1.61	0.91	11.0	0.94	1.79	2.05	2.05	1.09
11.5	0.64	1.25	1.47	1.47	0.8	11.5	0.80	1.58	1.87	1.87	0.95
12.0	0.54	1.1	1.35	1.35	0.7	12.0	0.68	1.39	1.72	1.72	0.84
12.5	0.47	0.97	1.24	1.24	0.62	12.5	0.59	1.23	1.58	1.58	0.74
13.0	0.4	0.85	1.15	1.15	0.55	13.0	0.51	1.08	1.45	1.46	0.66
13.5	0.35	0.75	1.04	1.07	0.49	13.5	0.44	0.94	1.32	1.36	0.59
14.0	0.31	0.66	0.95	0.99	0.44	14.0	0.38	0.82	1.21	1.26	0.53
14.5	0.27	0.58	0.87	0.92	0.4	14.5	0.34	0.72	1.1	1.18	0.47
15.0	0.24	0.51	0.8	0.86	0.36	15.0	0.30	0.64	1.01	1.1	0.43
15.5	0.21	0.45	0.73	0.81	0.33	15.5	0.26	0.56	0.92	1.03	0.39
						16.0	0.23	0.5	0.85	0.97	0.35
						16.5	0.2	0.45	0.78	0.91	0.32

LEGEND

FR = Compression flange fully restrained

WS = Serviceability load capacity for a deflection of span/150

DESIGN CAPACITY CHARTS

CLR350/18						CLR 350/24					
Span (m)	1B	2B	3B	FR	Ws	Span (m)	1B	2B	3B	FR	Ws
7.0	5.57	6.21	6.21	6.21	6.14	7.0	8.46	9.56	9.56	9.56	8.33
7.5	4.59	5.41	5.41	5.41	4.99	7.5	6.95	8.32	8.32	8.32	6.77b
8.0	3.78	4.76	4.76	4.76	4.11	8.0	5.70	7.32	7.32	7.32	5.58
8.5	3.11	4.21	4.21	4.21	3.43	8.5	4.67	6.48	6.48	6.48	4.65
9.0	2.54	3.75	3.76	3.76	2.89	9.0	3.80	5.75	5.78	5.78	3.92
9.5	2.08	3.29	3.37	3.37	2.46	9.5	3.11	5.03	5.19	5.19	3.33
10.0	1.72	2.89	3.04	3.04	2.11	10.0	2.56	4.4	4.68	4.68	2.86
10.5	1.43	2.54	2.76	2.76	1.82	10.5	2.14	3.87	4.25	4.25	2.47
11.0	1.21	2.24	2.52	2.52	1.58	11.0	1.79	3.4	3.87	3.87	2.15
11.5	1.02	1.98	2.30	2.30	1.39	11.5	1.51	3.0	3.54	3.54	1.88
12.0	0.87	1.75	2.11	2.11	1.22	12.0	1.27	2.64	3.25	3.25	1.65
12.5	0.75	1.54	1.95	1.95	1.08	12.5	1.08	2.33	3.0	3.0	1.46
13.0	0.64	1.36	1.80	1.80	0.96	13.0	0.93	2.05	2.76	2.77	1.3
13.5	0.56	1.2	1.64	1.67	0.86	13.5	0.80	1.80	2.52	2.57	1.16
14.0	0.49	1.05	1.50	1.55	0.77	14.0	0.70	1.57	2.30	2.39	1.04
14.5	0.43	0.92	1.38	1.45	0.69	14.5	0.61	1.38	2.10	2.23	0.94
15.0	0.38	0.82	1.26	1.35	0.62	15.0	0.53	1.22	1.92	2.08	0.85
15.5	0.33	0.72	1.16	1.27	0.57	15.5	0.47	1.08	1.76	1.95	0.77
16.0	0.29	0.64	1.06	1.19	0.51	16.0	0.41	0.95	1.61	1.83	0.70
16.5	0.26	0.57	0.97	1.12	0.47	16.5	0.37	0.85	1.47	1.72	0.64
17.0	0.23	0.51	0.89	1.05	0.43	17.0	0.33	0.76	1.35	1.62	0.58
17.5	0.21	0.46	0.82	0.99	0.39	17.5	0.29	0.68	1.24	1.53	0.53
18.0	0.18	0.41	0.75	0.94	0.36	18.0	0.26	0.61	1.14	1.45	0.49

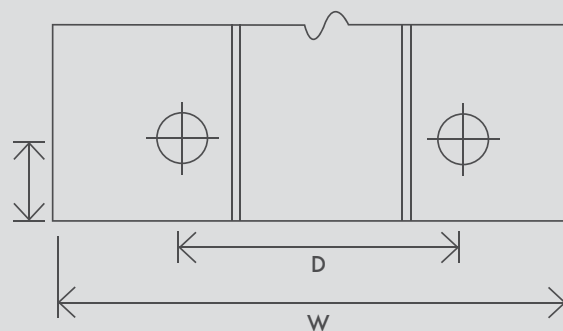
LEGEND

FR = Compression flange fully restrained

WS = Serviceability load capacity for a deflection of span/150

BOLT CENTRE AND EDGE DISTANCE TABLE

HOLE CENTRES	
W	D
150	80
200	120
250	160
300	200
350	240



ADHERENCE TO BUILDING CODE STANDARDS

Freeman Roofing FR Purlins and Girts are designed per AS/NZS 4600 and manufactured from materials that comply with AS 1397. Therefore, they are expected to fulfill the performance criteria specified in the following Building Code Clauses:

The New Zealand Standard regulates the mechanical properties of the coil used to produce FR Purlins and Girts.

B1 STRUCTURE:

Please contact Freeman Roofing Timaru to obtain information regarding design capacity and spans.

B2 DURABILITY:

FR Purlins and Girts adhere to clauses B2.1, B2.2, B2.3.1, B2.3.2 of clause B2 in the NZBC (when employed in accordance with our durability statement).

F2 HAZARDOUS BUILDING MATERIALS:

FR Purlins and Girts comply with clause F2 of the NZBC.

It is the designer's responsibility to ensure the adoption of the relevant version of any standards referenced in this document, depending on the desired compliance pathway. In cases where a new (either in draft form or published) version of a standard has yet to be included in a Verification Method, Steel & Tube recommends that the designer embrace the more demanding design requirements of any conflicting clauses.

DURABILITY

Galvsteel™ material, when used for purlins, girts or framing will have a durability of 50 years when used and maintained as defined below.

1. Specifications

Zinc coating weight;	275g/m ² (Z275) or 450g/m ² (Z450)
Complying with;	AS 1397:2001
Steel Grade;	G250, G300, G450, G500 or 0550
Steel Thickness Range;	1.15-2.25mm
Bend diameter;	G250, G300; 2 2T G450, G500, G550; 2 4T (where T = total coated thickness)

2. Fixing, Handling and Maintenance according to the following publications:

- New Zealand Steel Limited, Specifiers and Builders Guide, and Installers Guide (refer www.nzsteel.co.nz for most current version)
- NZ Metal Roof & Wall Cladding, Code of Practice, Version 2 - Apr. 2008.
- AS/NZS 2312:2002 (Incorporating Amendment No. 1) Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings.
- Instructions and literature published by individual purlin and steel framing manufacturers.

MAINTENANCE

Maintenance is necessary when the galvanised coating ceases to provide sacrificial protection to the steel base, or where the appearance is no longer aesthetically acceptable.

Rust staining or the growth of rust spots usually indicates the breakdown of the galvanised coating. At the first sign of breakdown, the surface should be treated with an appropriate maintenance

coating system. All maintenance should be carried out in accordance with AS/NZS 2312:2002 (Incorporating Amendment No.1) [c] and New Zealand Steelwork Corrosion Coatings Guide (HERA Report R4-133) [d].

Regular inspection and maintenance at the first signs of a problem will extend the durability of the sections.

STATEMENT IN REGARD TO SECTION 26 OF THE BUILDING ACT

Freeman Roofing (FR) Purlins and Girts products are not subject to any warnings or bans under Section 26 of the Building Act.



freemanroofing.co.nz

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