MODULE E - RESIDENTIAL ROOFING ENGINEERING & CONSTRUCTION MANUAL NON CYCLONIC & CYCLONIC REGIONS

Australian Made For An Australian Lifestyle

ENGINEER CERTIFICATION

Residential Roofing, that is installed with documents, pages 1 to 28 inclusive, issued by Delta Panels Pty Ltd are certified to be structurally adequate and accordance to relevant Australian Standards but not limited to, AS 1170.0, AS 1170.1, AS 1170.2, AS 4055, AS 1684.2, AS 1720.1, AS 2870, AS 3600, AS 3700, AS 4100, AS 4600, AS 1562.1, AS 4040.3 and will comply and meet performance requirements in accordance with NCC 2022.

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Signed:

George J S Meija

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PREFACE

The Delta Panels™ Engineering Manual is divided into five (5) separate modules. Each module covers a different product type and the engineering calculations specifically associated with those products.

MODULE A - AWNINGS, PATIOS & CARPORTS

The module covers roofs which are either attached to an existing building primarily a dwelling or to a seperate standalone structure. The engineering calculations encompass both single skin and insulated roofing and is divided into both DeltaSingle™ and DeltaSpan™ span tables.

MODULE B - PRE-ENGINEERED KITS

The Engineering for this series of structures is presented in kit forms covering single and double awnings, patios & carports with various options regarding footing types. This module covers engineering for DeltaSpan™ roofing in both cyclonic and noncyclonic regions. Any other configuration that is not covered by the engineering in this module would require site specific engineering calculations.

MODULE C - GABLES

The Gable Engineering module encompasses two (2) different styles of Gables, namely KingPost and Portal. The engineering tables are presented with various options on roof pitch and the associated post, beam and fixing requirements.

MODULE D - BRACKETS AND FIXINGS

This module lists all of the associated brackets and fixings that have been tested and approved for use. These brackets and fixings are an integral part of the Delta Panels™ Engineering Manual.

MODULE E - RESIDENTIAL ROOFING

The Module E - Residential Roofing module covers the spans and permissible overhangs that Delta Panels insulated roofing products are certified for in both single & multi-span applications. These calculated spans are shown for both non-cyclonic and cyclonic zones.

ENGINEERING NOTES

GENERAL NOTES

The information contained in this Engineering manual relates specifically to products supplied by Delta Panels Pty Ltd™. Any products not approved by Delta Panels Pty Ltd™ will void Engineering Approvals and Warranties expressed or implied.

All assembly, connection and installation procedures must comply with the Delta Panels™ standards as set out in the Engineering & Construction Manual.

SITE SAFETY

It is the Builder/Owner's responsibility to ensure that the structure that the Delta Residential Roofing is to be attached to is build in line with all relevant Building codes.

Prior to any footings being commenced it is the Builder/Owner's responsibility to ensure that the footings will not impact on any existing underground services and facilities.

SERVICEABILITY LOADING

- A serviceability deflection limit of span/150 has been allowed
- The weight of the panel has been allowed for, in addition to an allowance of up to 25kgs/m2 (0,25kP dead load) for light fittings etc.
- Non-trafficable maintenance access, ie a concentrated load, of 140kg/m2 on any span has been allowed for.
- Distributed live load of 0.25kPa (as per AS/NZS 1170.1) has been allowed for.

STEEL COMPONENTS

All steel structural components of the Delta Panels™ Residential Roofing systems are in accordance with these Australian Standards:

Delta Insulated Panel Top Skin	AS 1397-2011
Delta Insulated Panel Bottom Skin	AS 1397-2011

FIXINGS

All fixing components of the Delta Panels™ Residential Roofing systems are in accordance with these Australian Standards

Bolts shall be grade 4.6 or better	AS 1110.1-2015
Fixing Screws shall be class 3	AS 3566-2002

OVERHANGS

The maximum overhang is stated in the enclosed span tables or is 40% of backspan

Overhangs include an allowance for a 1.1kN concentrated load based on strength limit state as a seperate load case.

GLOSSARY

DeltaSpan™	A registed name covering the range of Delta Panels™ insulated roofing products, DeltaTrim™, DeltaOrb™, DeltaCorroCorro™, DeltaTrimTrim™ & DeltaTrimCorro™
DeltaTrim™	A registered name for Delta Panels™ insulated roof product with a trapezoid formed top skin
DeltaOrb™	A registered name for Delta Panels™ insulated roof product with a corrugated formed top skin
DeltaCorroCorro™	A registered name for Delta Panels™ insulated roof product with a corrugated formed top and bottom skin
DeltaTrimTrim™	A registered name for Delta Panels™ insulated roof product with a trapezoid formed top and bottom skin
DeltaTrimCorro™	A registered name for Delta Panels™ insulated roof product with a corrugated formed top and a trapezoid formed bottom skin
EPS-FR	Expanded Polystyrene with a fire retardant additive, used as an insulating core in insulated roofing
TPC	Thermal Phenolic Composite core which has high fire ratings used in insulated roofing
Single Span	The distance between two fixing supports
Multi Span	A continuous length that spans over three (3) or more fixing supports
Roof Span	Being the total span of the roof area with any overhang included
Panel Span	The length that the roof sheet can span between fixing supports
Overhang	The length that the roof sheeting overhangs the last fixing support, forming a cantilevered portion Refer to the Engineering Notes for more details
Cp,n	Net pressure coefficient acting normal to the surface for canopies, freestanding roofs, walls, and the like (as defined in AS/NZS 1170.2:2021)
Roof Slope	The angle of the roof from its peak to its lowest point
Cyclonic Region	refer to Step 1 Wind Speed Determination
NonTrafficable	Not designed for direct foot traffic and requires a temporary walkway for maintenance access. Refer to the Engineering Notes for more details
NonCyclonic Region	Refer to Step 1 Wind Speed Determination

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MODULE - RESIDENTIAL ROOFING

DETERMINING CORRECT WIND SPEED

Whether you are building a stand-alone Carport or adding a Patio extension to your home, determining the correct wind rating is essential when considering the construction design and the materials that will be used.

There are 4 different factors that influence the wind classification, they are:-

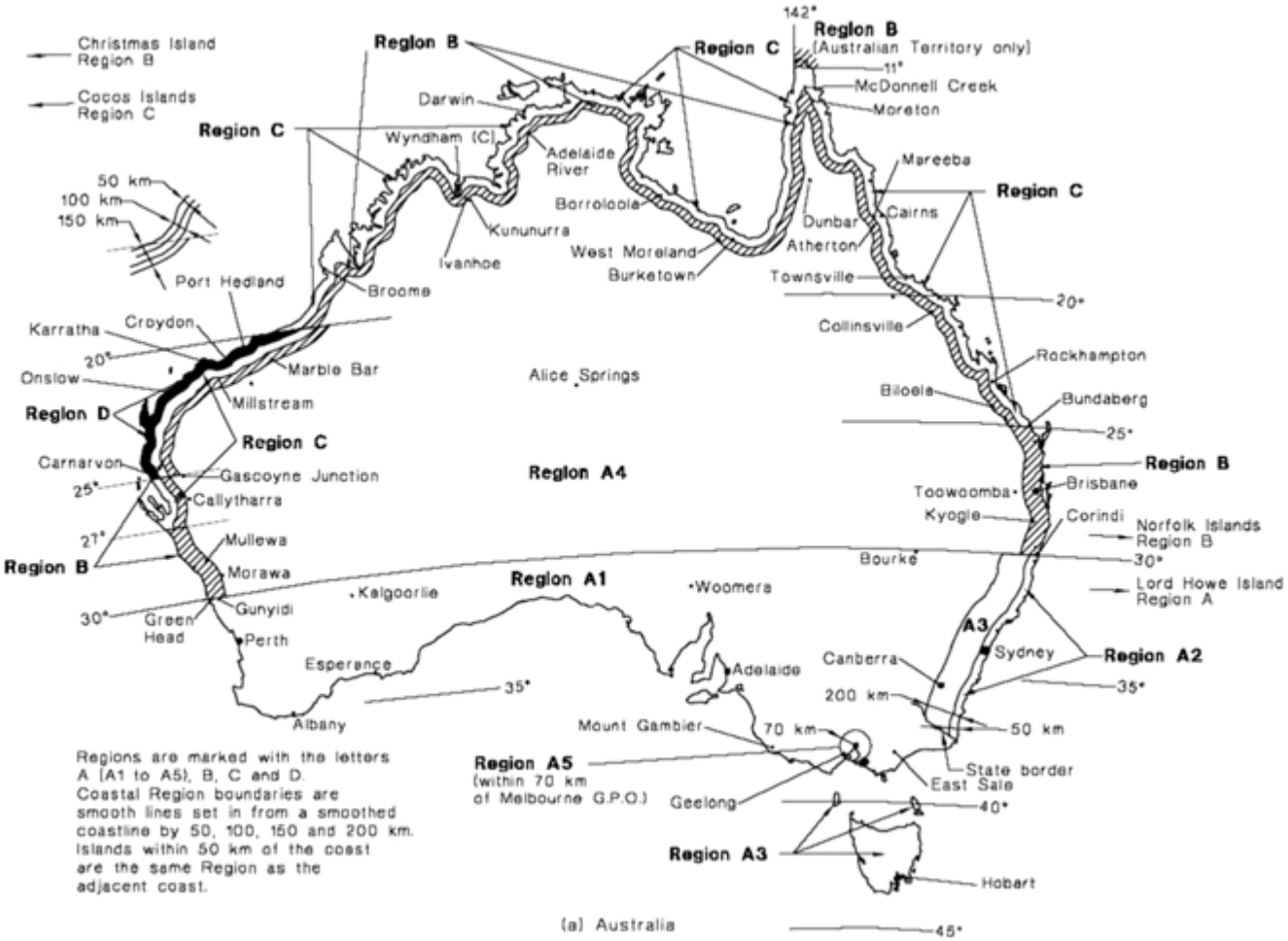
- Region
- Terrain Category
- Shielding Determination
- Topographic Effect

Please remember that this is a guide only, check with your local authority to determine your exact rating.

For a detailed analysis refer to the Australian Standard AS/NZS 1170.2:2021, the approach described here follows the AS 4055:2021 - Residential wind code method.

This approach is only suitable for structures up to 2 storeys high and no wider than 16m and 8.5m high. Outside these limitations, we recommend that you engage a structural engineer to provide advice on the approach suitable to your situation.

Step 1- Region / Select the Region



DETERMINING CORRECT WIND SPEED

Step 2 / Terrain Category

Terrain Category 1:

Exposed terrain for a 10km radius, no trees, other buildings or hills. No limited sized water ways such as, rivers, canals, lakes and enclosed bays.

Terrain Category 1.5:

Located adjacent to shoaling waves from open water ways such as, rivers, canals, lakes and large unenclosed bays on seas and oceans, extending greater than 10km in any wind direction.

Terrain Category 2:

Open terrain with few trees, surrounding buildings such as surrounding buildings such as farmland and cleared subdivisions with trees and uncut grass.

Terrain Category 2.5:

Open terrain, typical of a newly developed outer suburb housing estate, with few established trees or surrounding buildings.

Terrain Category 3:

A suburban backyard environment with numerous closely spaced houses. The minimum density of houses and trees (except in region C & D) shall be the equivalent to 10 house size obstructions per hectare. Where substantial well-established trees shall be considered as obstructions (except in region C & D).

DETERMINING CORRECT WIND SPEED

Step 3 / Shielding Determination

The shielding effect of established trees and established building structures will have an effect on the upward wind pressures. With the exception of regions C & D where trees are not considered a shielding element.

The 3 shielding classifications are:-

Full Shielding
FS

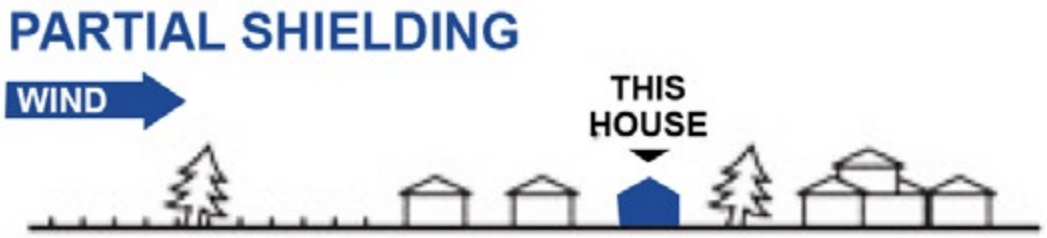
At least 2 rows of housing or similar size permanent structures surround the intended construction site. In Regions A & B, heavily timbered areas provide full shielding as long as they are within 100 metres.

Full shielding is only possible for houses within Topographical Classes T0, T1 and T2. The Full Shielding classification is only applicable to suburban developments with 10 or more houses and or similar sized structures, per hectare. The effects of roads or other open spaces within a distance of 100 metres in any direction are exempt.

Partial Shielding
PS

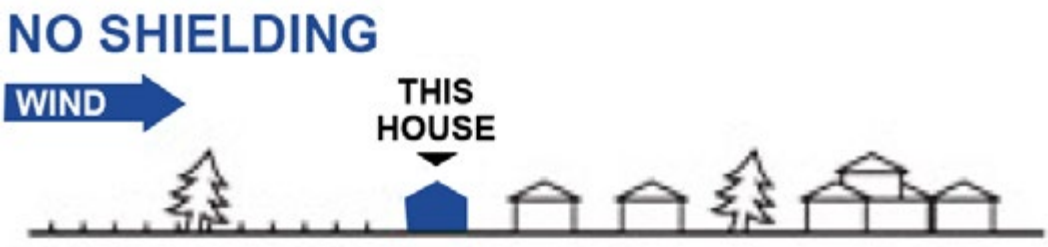
Partial shielding is only possible for houses within Topographical Classes T0, T1,T2 and T3.

To qualify there is a requirement to have at least 2.5 houses per hectare or equivalent structures situated upwind of the intended building location. This is typical of an acreage estate or housing based at the 2nd row from open water, abutting parklands or airfields.



No Shielding
NS

This would be houses located on the edge of housing estates, the side of open water, airports, sporting fields and large open parklands.



Step 4 Topographic Effect

This step measures the effect of wind on a proposed structure based on its site location on a slope, ridge, mountain or escarpment, then the actual height/slope of that particular location. Topographic classifications are divided into zones T0, T1, T2, T3, T4 and T5. Use the following table to determine the applicable topographic classification of a proposed structure. If the slope, ridge, mountain or escarpment exceeds 30 metres please refer to AS 4055:2021.

TOPOGRAPHIC CLASSIFICATION EFFECT

SITE LOCATION ON SLOPE / MOUNTAIN / RIDGE / ESCARPMENT

MAXIMUM SLOPE OF MOUNTAIN / RIDGE / ESCARPMENT	LOWER THIRD	MID THIRD	TOP THIRD			OVER TOP
Less than 1:20 (2.9°)	T0	T0	T0	T0	T0	T0
Greater than & equal to 1:20 to Less than 1:10 (≥ 2.9° to < 5.7°)	T0	T0	T1	T1	T1	T0
Greater than & equal to 1:10 to Less than 1:7.5 (≥ 5.7° to < 7.6°)	T0	T1	T1	T2	T2	T0
Greater than & equal to 1:7.5 to Less than 1:5 (≥ 7.6° to < 11.3°)	T0	T1	T2	T2	T3	T1
Greater than & equal to 1:5 to Less than 1:3 (≥ 11.3° to < 18.4°)	T0	T2	T2	T3	T4	T2
Greater than & equal to 1:3 (18.4°)	T0	T2	T3	T4	T5	T3

DETERMINING CORRECT WIND SPEED

Step 5 / Topographic Classification

By applying the results of the above 4 different factors that influence the wind classification, Region, Terrain Category, Shielding Determination & Topographic Effect to the WIND CLASSIFICATION CHART below a determination on the topographical classification can be made and then applied to the Delta Panels Engineering Charts.

WIND CLASSIFICATION FROM WIND REGION AND SITE CONDITIONS

TOPOGRAPHIC CLASSIFICATION

Region	Terrain Category	T0			T1			T2			T3		T4	T5
		FS	PS	NS	FS	PS	NS	FS	PS	NS	PS	NS	NS	NS
A	3	N1	N1	N1	N1	N2	N2	N2	N2	N2	N3	N3	N3	N4
	2.5	N1	N1	N2	N1	N2	N2	N2	N3	N3	N3	N3	N4	N4
	2	N1	N2	N2	N2	N2	N3	N2	N3	N3	N3	N3	N4	N4
	1.5	N2	N2	N2	N2	N3	N3	N3	N3	N3	N3	N4	N4	N5
	1	N2	N3	N3	N2	N3	N3	N3	N3	N4	N4	N4	N4	N5
B	3	N2	N2	N3	N2	N3	N3	N3	N3	N4	N4	N4	N4	N5
	2.5	N2	N3	N3	N3	N3	N3	N3	N4	N4	N4	N4	N5	N5
	2	N2	N3	N3	N3	N3	N4	N3	N4	N4	N4	N5	N5	N6
	1.5	N3	N3	N4	N3	N4	N4	N4	N4	N4	N5	N5	N5	N6
	1	N3	N4	N4	N4	N4	N4	N4	N5	N5	N5	N5	N6	N6
C	3	C1	C1	C2	C1	C2	C2	C2	C2	C3	C3	C3	C3	C4
	2.5	C1	C2	C2	C2	C2	C2	C2	C3	C3	C3	C3	C4	N/A
	2	C1	C2	C2	C2	C2	C3	C2	C3	C3	C3	C4	C4	N/A
	1.5	C2	C2	C3	C2	C3	C3	C3	C3	C4	C4	C4	N/A	N/A
	1	C2	C3	C3	C3	C3	C3	C3	C4	C4	C4	N/A	N/A	N/A
D	3	C2	C3	C3	C2	C3	C3	C3	C3	C4	C4	C4	N/A	N/A
	2.5	C2	C3	C3	C3	C3	C4	C3	C4	C4	C4	N/A	N/A	N/A
	2	C3	C3	C4	C3	C4	C4	C4	C4	N/A	N/A	N/A	N/A	N/A
	1.5	C3	C4	C4	C4	C4	N/A	C4	N/A	N/A	N/A	N/A	N/A	N/A
	1	C3	C4	C4	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Step 5 / Wind Classification Chart

WIND CLASSIFICATION CONVERSION TABLE

WIND CLASSIFICATION		Serviceability Limit State Gust Wind Speed metres per second	Ultimate Limit State Gust Wind Speed metres per second
Regions A and B	**Regions C and D**		
N1 (Non-Cyclonic)	N/A	W26	W34
N2 (Non-Cyclonic)	N/A	W26	W40
N3 (Non-Cyclonic)	C1 (Cyclonic)	W32	W50
N4 (Non-Cyclonic)	C2 (Cyclonic)	W39	W61
N5 (Non-Cyclonic)	C3 (Cyclonic)	W47	W74
N6 (Non-Cyclonic)	C4 (Cyclonic)	W55	W86

Please Note:

This is to be used as a guide only. Check with your local authority for your exact rating. For a complete analysis of estimating please refer to Australian Standard AS/NZS 1170.2:2021 and AS 4055:2021

Delta Panels will not accept any liability for any loss or damage suffered as a result of any errors in the misinterpretation of any information provided in this guide. It is recommended to seek the services of an independent registered Engineer to confirm any calculations.

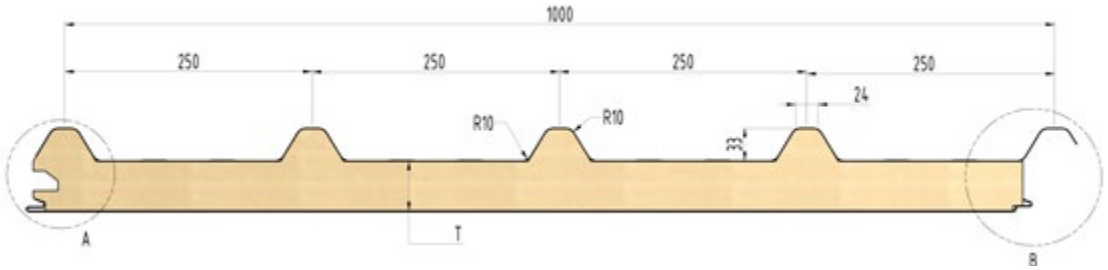
Figure A1 - Roof Dimension Ratios

Figure A1

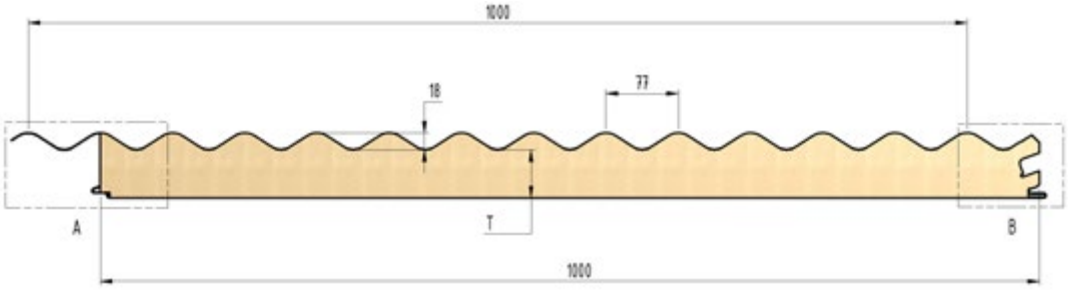
- External Pressure - Ratio of building height(h) to least horizontal dimension(d) on plan, h/d <0.5. Cpe = -0.9
- Internal Pressure - Non-Cyclonic - Building has no dominate openings and more than one permeable wall or is effectively sealed. Cpi = +0.2
- Internal Pressure - Cyclonic - Based on dominate opening pressure. Cpi = +0.7
- Local Pressure - Least horizontal dimension on plan, <20m (a = 4m). Kl = 1.5
- Combination Factor - Kc =0.9
- Non-Cyclonic - Cfig =1.4
- Cyclonic - Cfig =1.85

SELECT THE STYLE OF ROOF SHEETING

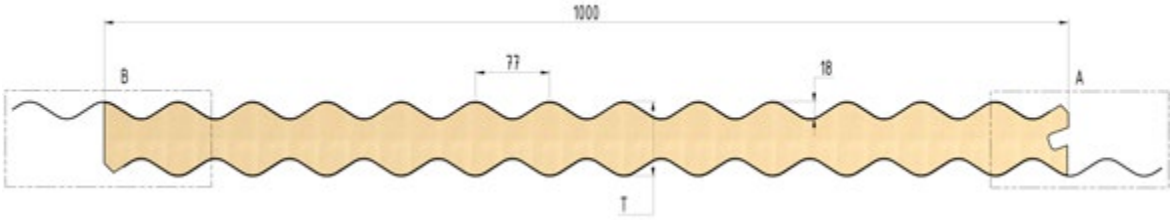
DeltaTrim™



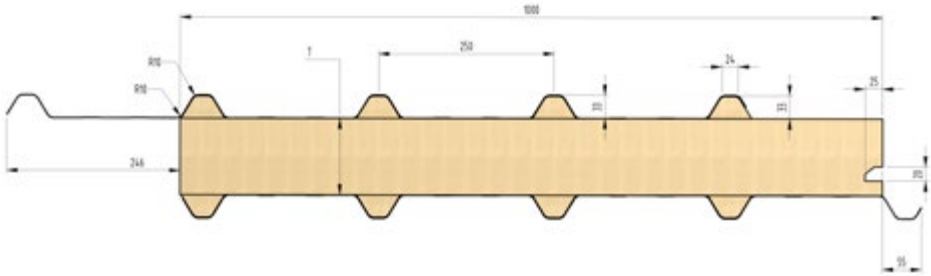
DeltaOrb™



DeltaCorroCorro™



DeltaTrimTrim™



DeltaTrimCorro™

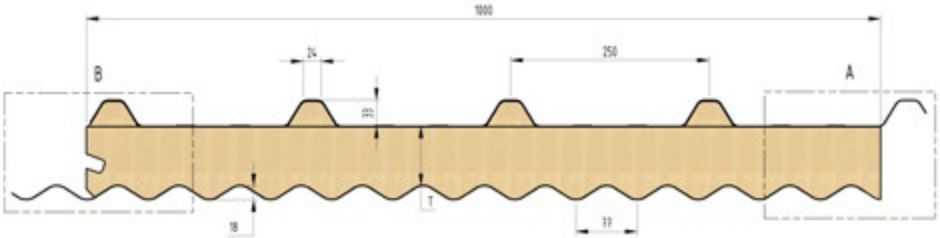


Figure A2

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaTrim™-EPS-FR
DeltaTrim™-TPC

Wind Category	Wind Class	Wind Pressure kPa	50mm Max(mm) Single Span	50mm Max(mm) Multi Span	50mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4300	4700	900
Non-Cyclonic	N2	-1.34	4300	4700	900
Non-Cyclonic	N3	-2.1	3000	3300	900
Non-Cyclonic	N4	-3.13	3000	3300	600
Non-Cyclonic	N5	-4.6	2200	2400	600
Cyclonic	C1	-2.78	3200		900
Cyclonic	C2	-4.13	2500		600
Cyclonic	C3	-6.08	2000		450

Wind Category	Wind Class	Wind Pressure kPa	75mm Max(mm) Single Span	75mm Max(mm) Multi Span	75mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4700	5200	900
Non-Cyclonic	N2	-1.34	4700	5200	900
Non-Cyclonic	N3	-2.1	3700	4100	900
Non-Cyclonic	N4	-3.13	3300	3600	600
Non-Cyclonic	N5	-4.6	2500	2800	600
Cyclonic	C1	-2.78	3700		900
Cyclonic	C2	-4.13	3000		600
Cyclonic	C3	-6.08	2400		450

Wind Category	Wind Class	Wind Pressure kPa	100mm Max(mm) Single Span	100mm Max(mm) Multi Span	100mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	5500	6000	1000
Non-Cyclonic	N2	-1.34	5500	6000	1000
Non-Cyclonic	N3	-2.1	4300	4700	1000
Non-Cyclonic	N4	-3.13	3500	3900	800
Non-Cyclonic	N5	-4.6	3000	3300	600
Cyclonic	C1	-2.78	4400		1000
Cyclonic	C2	-4.13	3400		600
Cyclonic	C3	-6.08	2700		450

Wind Category	Wind Class	Wind Pressure kPa	125mm Max(mm) Single Span	125mm Max(mm) Multi Span	125mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6800	7300	1200
Non-Cyclonic	N2	-1.34	6800	7300	1200
Non-Cyclonic	N3	-2.1	5000	5500	1200
Non-Cyclonic	N4	-3.13	4000	4400	900
Non-Cyclonic	N5	-4.6	3300	3600	600
Cyclonic	C1	-2.78	4900		1200
Cyclonic	C2	-4.13	3900		600
Cyclonic	C3	-6.08	2900		450

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaTrim™-EPS-FR
DeltaTrim™-TPC

Wind Category	Wind Class	Wind Pressure kPa	150mm Max(mm) Single Span	150mm Max(mm) Multi Span	150mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6800	7300	1200
Non-Cyclonic	N2	-1.34	6800	7300	1200
Non-Cyclonic	N3	-2.1	5100	5600	1200
Non-Cyclonic	N4	-3.13	4600	5100	900
Non-Cyclonic	N5	-4.6	3500	3900	600
Cyclonic	C1	-2.78	5400		1200
Cyclonic	C2	-4.13	4400		600
Cyclonic	C3	-6.08	3500		450

Wind Category	Wind Class	Wind Pressure kPa	175mm Max(mm) Single Span	175mm Max(mm) Multi Span	175mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7000	7500	1200
Non-Cyclonic	N2	-1.34	7000	7500	1200
Non-Cyclonic	N3	-2.1	5900	6400	1200
Non-Cyclonic	N4	-3.13	5000	5500	900
Non-Cyclonic	N5	-4.6	4200	4600	600
Cyclonic	C1	-2.78	6000		1200
Cyclonic	C2	-4.13	4900		600
Cyclonic	C3	-6.08	4000		450

Wind Category	Wind Class	Wind Pressure kPa	200mm Max(mm) Single Span	200mm Max(mm) Multi Span	200mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7200	7800	1200
Non-Cyclonic	N2	-1.34	7200	7800	1200
Non-Cyclonic	N3	-2.1	6300	6900	1200
Non-Cyclonic	N4	-3.13	5400	6000	900
Non-Cyclonic	N5	-4.6	4600	5100	600
Cyclonic	C1	-2.78	6500		1200
Cyclonic	C2	-4.13	5200		600
Cyclonic	C3	-6.08	4400		450

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaOrb™-EPS-FR
DeltaOrb™-TPC

Wind Category	Wind Class	Wind Pressure kPa	50mm Max(mm) Single Span	50mm Max(mm) Multi Span	50mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4400	4840	900
Non-Cyclonic	N2	-1.34	4400	4840	900
Non-Cyclonic	N3	-2.1	3600	3960	900
Non-Cyclonic	N4	-3.13	2700	2970	600
Non-Cyclonic	N5	-4.6	2500	2750	600
Cyclonic	C1	-2.78	3000		900
Cyclonic	C2	-4.13	2400		600
Cyclonic	C3	-6.08	1900		450

Wind Category	Wind Class	Wind Pressure kPa	75mm Max(mm) Single Span	75mm Max(mm) Multi Span	75mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	5300	5800	900
Non-Cyclonic	N2	-1.34	5300	5800	900
Non-Cyclonic	N3	-2.1	4200	4620	900
Non-Cyclonic	N4	-3.13	3300	3630	600
Non-Cyclonic	N5	-4.6	3000	3300	600
Cyclonic	C1	-2.78	3600		900
Cyclonic	C2	-4.13	2900		600
Cyclonic	C3	-6.08	2300		450

Wind Category	Wind Class	Wind Pressure kPa	100mm Max(mm) Single Span	100mm Max(mm) Multi Span	100mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6000	6500	1000
Non-Cyclonic	N2	-1.34	6000	6500	1000
Non-Cyclonic	N3	-2.1	4600	5060	1000
Non-Cyclonic	N4	-3.13	3700	4070	800
Non-Cyclonic	N5	-4.6	3200	3520	600
Cyclonic	C1	-2.78	4000		1000
Cyclonic	C2	-4.13	3200		600
Cyclonic	C3	-6.08	2500		450

Wind Category	Wind Class	Wind Pressure kPa	125mm Max(mm) Single Span	125mm Max(mm) Multi Span	125mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6300	6800	1200
Non-Cyclonic	N2	-1.34	6300	6800	1200
Non-Cyclonic	N3	-2.1	5100	5600	1200
Non-Cyclonic	N4	-3.13	4300	4730	900
Non-Cyclonic	N5	-4.6	3400	3740	600
Cyclonic	C1	-2.78	4300		1200
Cyclonic	C2	-4.13	3600		600
Cyclonic	C3	-6.08	2700		450

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SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaOrb™-EPS-FR
DeltaOrb™-TPC

Wind Category	Wind Class	Wind Pressure kPa	150mm Max(mm) Single Span	150mm Max(mm) Multi Span	150mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6500	7000	1200
Non-Cyclonic	N2	-1.34	6500	7000	1200
Non-Cyclonic	N3	-2.1	5200	5700	1200
Non-Cyclonic	N4	-3.13	4400	4840	900
Non-Cyclonic	N5	-4.6	3500	3850	700
Cyclonic	C1	-2.78	4600		1200
Cyclonic	C2	-4.13	3900		600
Cyclonic	C3	-6.08	2900		450

Wind Category	Wind Class	Wind Pressure kPa	175mm Max(mm) Single Span	175mm Max(mm) Multi Span	175mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7900	7400	1200
Non-Cyclonic	N2	-1.34	7900	7400	1200
Non-Cyclonic	N3	-2.1	5500	5900	1200
Non-Cyclonic	N4	-3.13	4600	5100	900
Non-Cyclonic	N5	-4.6	3700	3960	700
Cyclonic	C1	-2.78	4900		1200
Cyclonic	C2	-4.13	4150		600
Cyclonic	C3	-6.08	3100		450

Wind Category	Wind Class	Wind Pressure kPa	200mm Max(mm) Single Span	200mm Max(mm) Multi Span	200mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	8500	7600	1200
Non-Cyclonic	N2	-1.34	8500	7600	1200
Non-Cyclonic	N3	-2.1	5800	6200	1200
Non-Cyclonic	N4	-3.13	5000	5200	900
Non-Cyclonic	N5	-4.6	4000	4050	700
Cyclonic	C1	-2.78	5200		1200
Cyclonic	C2	-4.13	4350		600
Cyclonic	C3	-6.08	3300		450

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaCorroCorro™-EPS-FR
DeltaCorroCorro™-TPC

Wind Category	Wind Class	Wind Pressure kPa	75mm Max(mm) Single Span	75mm Max(mm) Multi Span	75mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4900	5400	1700
Non-Cyclonic	N2	-1.34	4900	5400	1700
Non-Cyclonic	N3	-2.1	4000	4400	1400
Non-Cyclonic	N4	-3.13	3200	3500	1000
Non-Cyclonic	N5	-4.6	2400	2600	600

Wind Category	Wind Class	Wind Pressure kPa	100mm Max(mm) Single Span	100mm Max(mm) Multi Span	100mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6300	7000	2200
Non-Cyclonic	N2	-1.34	6300	7000	2200
Non-Cyclonic	N3	-2.1	5100	5600	1800
Non-Cyclonic	N4	-3.13	4200	4600	1300
Non-Cyclonic	N5	-4.6	3300	3600	800

Wind Category	Wind Class	Wind Pressure kPa	125mm Max(mm) Single Span	125mm Max(mm) Multi Span	125mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7600	8400	2600
Non-Cyclonic	N2	-1.34	7600	8400	2600
Non-Cyclonic	N3	-2.1	6100	6700	2200
Non-Cyclonic	N4	-3.13	5000	5500	1500
Non-Cyclonic	N5	-4.6	4100	4500	1000

Wind Category	Wind Class	Wind Pressure kPa	150mm Max(mm) Single Span	150mm Max(mm) Multi Span	150mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	8200	9000	2900
Non-Cyclonic	N2	-1.34	8200	9000	2900
Non-Cyclonic	N3	-2.1	6800	7500	2400
Non-Cyclonic	N4	-3.13	5500	6100	1700
Non-Cyclonic	N5	-4.6	4500	5000	1100

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaCorroCorro™-EPS-FR
DeltaCorroCorro™-TPC

Wind Category	Wind Class	Wind Pressure kPa	175mm Max(mm) Single Span	175mm Max(mm) Multi Span	175mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	9600	10100	3300
Non-Cyclonic	N2	-1.34	9600	10100	3300
Non-Cyclonic	N3	-2.1	8100	8500	2800
Non-Cyclonic	N4	-3.13	6700	7000	2000
Non-Cyclonic	N5	-4.6	5500	5800	1400

Wind Category	Wind Class	Wind Pressure kPa	200mm Max(mm) Single Span	200mm Max(mm) Multi Span	200mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	10600	11100	3700
Non-Cyclonic	N2	-1.34	10600	11100	3700
Non-Cyclonic	N3	-2.1	8900	9300	3100
Non-Cyclonic	N4	-3.13	7400	7800	2200
Non-Cyclonic	N5	-4.6	6000	6300	1500

Wind Category	Wind Class	Wind Pressure kPa	250mm Max(mm) Single Span	250mm Max(mm) Multi Span	250mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	12000	12600	4200
Non-Cyclonic	N2	-1.34	12000	12600	4200
Non-Cyclonic	N3	-2.1	10000	10500	3500
Non-Cyclonic	N4	-3.13	8400	8800	2300
Non-Cyclonic	N5	-4.6	6000	6300	1800

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaTrimTrim™-EPS-FR
DeltaTrimTrim™-TPC

Wind Category	Wind Class	Wind Pressure kPa	75mm Max(mm) Single Span	75mm Max(mm) Multi Span	75mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4900	5400	1700
Non-Cyclonic	N2	-1.34	4900	5400	1700
Non-Cyclonic	N3	-2.1	4000	4400	1400
Non-Cyclonic	N4	-3.13	3200	3500	1000
Non-Cyclonic	N5	-4.6	2400	2600	600

Wind Category	Wind Class	Wind Pressure kPa	100mm Max(mm) Single Span	100mm Max(mm) Multi Span	100mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6300	7000	2200
Non-Cyclonic	N2	-1.34	6300	7000	2200
Non-Cyclonic	N3	-2.1	5100	5600	1800
Non-Cyclonic	N4	-3.13	4200	4600	1300
Non-Cyclonic	N5	-4.6	3300	3600	800

Wind Category	Wind Class	Wind Pressure kPa	125mm Max(mm) Single Span	125mm Max(mm) Multi Span	125mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7600	8400	2600
Non-Cyclonic	N2	-1.34	7600	8400	2600
Non-Cyclonic	N3	-2.1	6100	6700	2200
Non-Cyclonic	N4	-3.13	5000	5500	1500
Non-Cyclonic	N5	-4.6	4100	4500	1000

Wind Category	Wind Class	Wind Pressure kPa	150mm Max(mm) Single Span	150mm Max(mm) Multi Span	150mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	8200	9000	2900
Non-Cyclonic	N2	-1.34	8200	9000	2900
Non-Cyclonic	N3	-2.1	6800	7500	2400
Non-Cyclonic	N4	-3.13	5500	6100	1700
Non-Cyclonic	N5	-4.6	4500	5000	1100

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaTrimTrim™-EPS-FR
DeltaTrimTrim™-TPC

Wind Category	Wind Class	Wind Pressure kPa	175mm Max(mm) Single Span	175mm Max(mm) Multi Span	175mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	9600	10100	3300
Non-Cyclonic	N2	-1.34	9600	10100	3300
Non-Cyclonic	N3	-2.1	8100	8500	2800
Non-Cyclonic	N4	-3.13	6700	7000	2000
Non-Cyclonic	N5	-4.6	5500	5800	1400

Wind Category	Wind Class	Wind Pressure kPa	200mm Max(mm) Single Span	200mm Max(mm) Multi Span	200mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	10600	11100	3700
Non-Cyclonic	N2	-1.34	10600	11100	3700
Non-Cyclonic	N3	-2.1	8900	9300	3100
Non-Cyclonic	N4	-3.13	7400	7800	2200
Non-Cyclonic	N5	-4.6	6000	6300	1500

SELECT THE STYLE OF ROOF SHEETING

Roof Spans

DeltaTrimCorro™-EPS-FR
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Wind Category	Wind Class	Wind Pressure kPa	75mm Max(mm) Single Span	75mm Max(mm) Multi Span	75mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	4900	5400	1700
Non-Cyclonic	N2	-1.34	4900	5400	1700
Non-Cyclonic	N3	-2.1	4000	4400	1400
Non-Cyclonic	N4	-3.13	3200	3500	1000
Non-Cyclonic	N5	-4.6	2400	2600	600

Wind Category	Wind Class	Wind Pressure kPa	100mm Max(mm) Single Span	100mm Max(mm) Multi Span	100mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	6300	7000	2200
Non-Cyclonic	N2	-1.34	6300	7000	2200
Non-Cyclonic	N3	-2.1	5100	5600	1800
Non-Cyclonic	N4	-3.13	4200	4600	1300
Non-Cyclonic	N5	-4.6	3300	3600	800

Wind Category	Wind Class	Wind Pressure kPa	125mm Max(mm) Single Span	125mm Max(mm) Multi Span	125mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	7600	8400	2600
Non-Cyclonic	N2	-1.34	7600	8400	2600
Non-Cyclonic	N3	-2.1	6100	6700	2200
Non-Cyclonic	N4	-3.13	5000	5500	1500
Non-Cyclonic	N5	-4.6	4100	4500	1000

Wind Category	Wind Class	Wind Pressure kPa	150mm Max(mm) Single Span	150mm Max(mm) Multi Span	150mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	8200	9000	2900
Non-Cyclonic	N2	-1.34	8200	9000	2900
Non-Cyclonic	N3	-2.1	6800	7500	2400
Non-Cyclonic	N4	-3.13	5500	6100	1700
Non-Cyclonic	N5	-4.6	4500	5000	1100

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DeltaTrimCorro™-EPS-FR
DeltaTrimCorro™-TPC

Wind Category	Wind Class mm	Wind Pressure kPa	175mm Max(mm) Single Span	175mm Max(mm) Multi Span	175mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	9600	10100	3300
Non-Cyclonic	N2	-1.34	9600	10100	3300
Non-Cyclonic	N3	-2.1	8100	8500	2800
Non-Cyclonic	N4	-3.13	6700	7000	2000
Non-Cyclonic	N5	-4.6	5500	5800	1400

Wind Category	Wind Class	Wind Pressure kPa	200mm Max(mm) Single Span	200mm Max(mm) Multi Span	200mm Max(mm) Cantilever
Non-Cyclonic	N1	-0.97	10600	11100	3700
Non-Cyclonic	N2	-1.34	10600	11100	3700
Non-Cyclonic	N3	-2.1	8900	9300	3100
Non-Cyclonic	N4	-3.13	7400	7800	2200
Non-Cyclonic	N5	-4.6	6000	6300	1500

Number of Fixings:

DeltaTrim™, DeltaTrimTrim™ & DeltaTrimCorro™	
Uplift on Post	No. of fixings required
< 7.2 kN/M	1 x Screw with Neo Washer & Cyclone Plate per Crest
< 14.4 kN/m	1 x Screw with Neo Washer & Cyclone Plate per Crest + 1 x Screw with Embossed Washer per Pan
< 21.6 kN/m	1 x Screw with Neo Washer & Cyclone Plate per Cres + 2 x Screw with Embossed Washer per Pan

DeltaOrb™	
Uplift on Post	No. of fixings required
< 10.8 kN/m	1 x Screw with Neo Washer & Cyclone Plate per every second (2nd) Crest
<21.6kN/m	1 x Screw with Neo Washer & Cyclone Plate per Crest + 1 x Screw with Embossed Washer per Pan

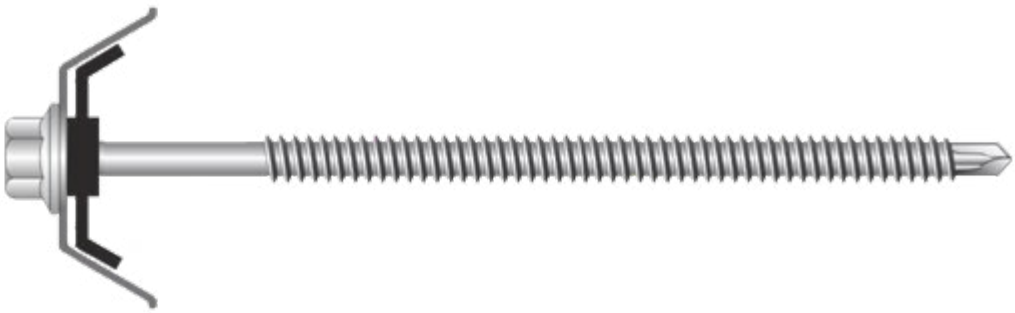
DeltaCorroCorro™	
Uplift on Post	No. of fixings required
< 10.8 kN/m	1 x Screw with Neo Washer & Cyclone Plate per every second (2nd) Crest
<21.6kN/m	1 x Screw with Neo Washer & Cyclone Plate per Cres + 1 x Screw with Embossed Washer per Pan

Screw Types

Main Fasteners with Cyclone Plate and Washer

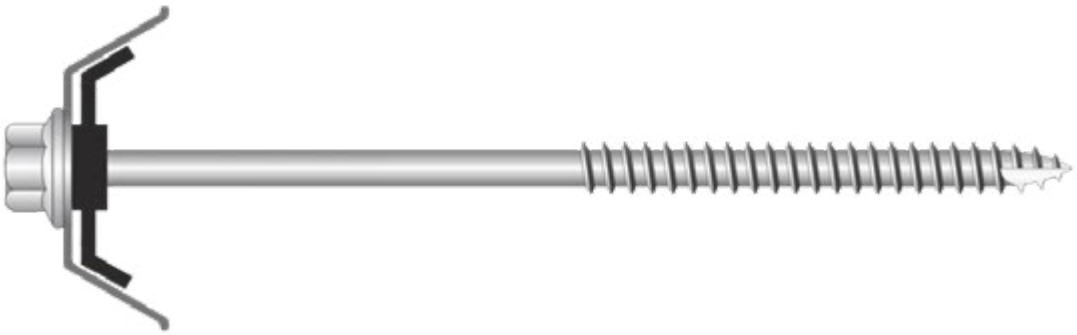
Metal Tek - Fixing | **Fixing into Steel Beams up to 12.5mm**

Figure A3



T17 - Fixing | **Fixing into Timber Beams**

Figure A4



Secondary Fasteners

Tek M13 x 25mm - Fixing

Stitching Screw

Figure A5

Screw Selection Tables

DeltaTrim™					
Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam	Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam
50mm	135mm	125mm	150mm	230mm	230mm
75mm	150mm	150mm	175mm	260mm	265mm
100mm	175mm	175mm	200mm	260mm	300mm
125mm	200mm	200mm			

DeltaOrb™					
Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam	Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam
50mm	115mm	125mm	150mm	200mm	230mm
75mm	135mm	150mm	175mm	230mm	265mm
100mm	150mm	175mm	200mm	260mm	300mm
125mm	175mm	200mm			

DeltaCorroCorro™					
Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam	Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam
75mm	115mm	125mm	175mm	200mm	230mm
100mm	135mm	150mm	200mm	230mm	265mm
125mm	150mm	175mm	225mm	260mm	265mm
150mm	175mm	200mm	250mm	300mm	300mm

DeltaTrimTrim™					
Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam	Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam
75mm	200mm	200mm	150mm	260mm	265mm
100mm	230mm	230mm	175mm	300mm	300mm
125mm	230mm	230mm	200mm	300mm	300mm

DeltaTrimCorro™					
Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam	Minimum Class 3 - must be HEX Head	Steel Beam	Timber Beam
75mm	175mm	175mm	150mm	260mm	265mm
100mm	200mm	200mm	175mm	300mm	300mm
125mm	230mm	230mm	200mm	300mm	300mm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