DELTA PANELS & ROOFING

MODULE A - AWNINGS, PATIOS & CARPORTS ENGINEERING & CONSTRUCTION MANUAL NON CYCLONIC & CYCLONIC REGIONS

Australian Made For An Australian Lifestyle

ENGINEER CERTIFICATION

Awnings, Patios and Carports, that are installed in accordance with these documents, pages 1 to 68 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 2019.

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Signed:

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QUALITY SYSTEMS APPROVED

JAS-ANZ

PREFACE

The Delta Panels ™ Engineering Manual is divided into four (4) 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.

ENGINEERING NOTES

GENERAL NOTES

The information contained in this Engineering & Construction Manual is specifically designed to suit the range of freestanding and attached Delta Patio™ and Carports which have been engineered with an option of either Single Skin or Insulated Roofs.

A Patio/Carport is considered to be a freestanding structure unless it's attached to an existing structure for at least 50% of its shortest side.

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 any existing structure that the Delta Patio/Carport is to be attached to, is adequately reinforced to accommodate all additional loads created by the new Delta Patio/Carport.

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.

CONCRETE/FOOTINGS

For any connections to an existing concrete slab, it is the Builder/Owner's responsibility to ensure that the slab is structurally adequate to support the additional load.

- Concrete strength must be a minimum of N25 in accordance with AS 1379-2007.
- The slab must cover the full width of the roof and reinforced with F62 mesh or greater
- For footings with depth deeper than 500mm, reinforce the footings with 4 x Y12 Vertical rods - ties with R6 LIGS500 centres.
- Hold down capacities apply to piers with an undercut into cohesive clay soils. They are not applicable in sandy soils which must be referred to an Engineer.

STEEL COMPONENTS

All steel structural components of the Delta Panels™ Patio & Carport systems are in accordance with these Australian Standards:

DeltaSingle™ Steel Skin	AS 1397-2011
Delta Insulated Panel Top Skin	AS 1397-2011
Delta Insulated Panel Bottom Skin	AS 1397-2011
Delta Beams™	AS 1397-2011
Posts (Square Hollow Sections)	AS 1163-2016

FIXINGS

All fixing components of the Delta Panels™ Patio & Carport 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

GLOSSARY

DeltaSpan™	A registed name covering the range of Delta Panels™ insulated roofing products, DeltaTrim™, DeltaOrb™, DeltaCorroCorro™, DeltaTrimTrim™ & DeltaTrimCorro™
DeltaSingle™	A registered name for Delta Panels™ single skin roofing sheet
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
Insulated Roofing	Covers all the products listed in DeltaSpan™
Single Skin Roofing	Referrers to DeltaSingle ™
EPS-FR	Expanded Polystyrene with a fire retardant additive, used as an insulating core in insulated roofing
PIR	Polyisocyanurate core which has high fire ratings used in insulated roofing
TPC	Thermal Phenolic Composite core which has high fire ratings used in insulated roofing
MW	Mineral Wool is a noncombustible core with very 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

GLOSSARY

Cp,n	Net pressure coefficient acting normal to the surface for canopies, freestanding roofs, walls, and the like (as defined in AS/NZS 1170.2-2011)
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.
NonCyclonic Region	Refer to Step 1 Wind Speed Determination
Beam Load Widths	Is the (uplift) load on the beam. For simple awnings it is 50% of the roof sheeting span plus the overhang
Uplift Loads on the Beam	Is determined by a combination of the following factors, Beam Load Width, Awning Style and the Wind Category
Post Load Widths	The width of roof which is considered to act in loading the post. For simple awnings this is 50% of the roof sheeting plus any adjacent overhang that loads the beams connecting to the post
Uplift Loads on the Post	Is a force that consists of a combination of uplift force on the beam and the load width of the post
Hold Down Capacity	The maximum uplift capacity that the foundation can resist
SHS Post	Is a commonly used term for a Square Hollow Section steel post
C-section Beam	Is a commonly used term for a rollformed cold formed C section steel beam
DeltaBeam™	A registered name for Delta Panels™ two (2) piece roll-formed beam (RFB)
Receiver Channel	A roll formed channel that is attached to an existing structure into which the roofing sheet is then fixed
Flyover Bracket	Brackets attached to an existing structure that a beam is then attached to create a fixing point for the roof sheeting. These can be either on the form of a Flyover Extenda Bracket or SHS uprights
KingPost Gable	A gable system utilizing a centre supporting King Post
Portal Gable	A rigid structural frame consisting essentially of two uprights connected at the top by a third member.

ENGINEERING TABLE OF CONTENTS

INDEX - MODULE A

MODULE A - AWNINGS, PATIOS & CARPORTS

LIST OF FIGURES

MODULE A - AWNINGS, PATIOS & CARPORTS

MODULE A - AWNINGS, PATIOS & CARPORTS

ATTACHED CARPORT/STORAGE

ATTACHED FLYOVER

ATTACHED PATIO

MODULE A - AWNINGS, PATIOS & CARPORTS
ENGINEERING WORKSHEET

Single Span / Multi Span
(cross out Not Applicable)

Wind Category: _____

Patio Type Selected: _____

Panel Thickness: _____

Load Width: _____

Uplift Load Selected: _____kN/m

Beam Type: _____

Max Beam Span (between posts): _____

Load Width (outer posts): _____

Load Width (inner posts): _____

Uplift on Post (outer): _____kN

Uplift on Post (inner): _____kN

Bolt Size Selected: _____

Post to Beam Connection: style _____

Post to Footing Type: style _____

Connection to House Type : style _____

STEP 1 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:-

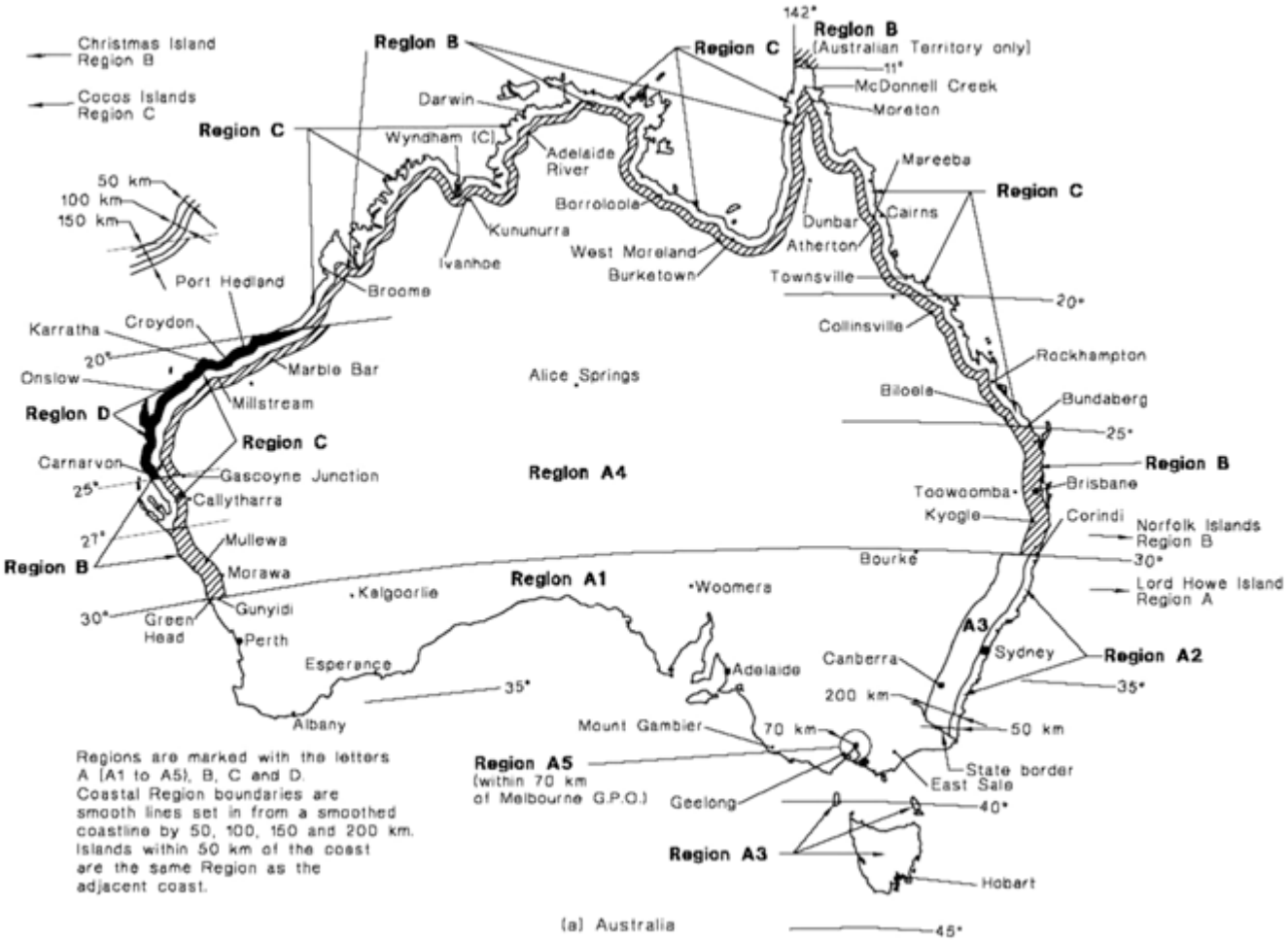
- Region
- Terrain Category
- Shielding Determination
- Topographic Effect

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 1170.2-2011, the approach described here follows the AS 4055-2012 - 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 1.1 - Region Select the Region



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Step 1.2 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).

STEP 1 DETERMINING CORRECT WIND SPEED

Step 1.3 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.

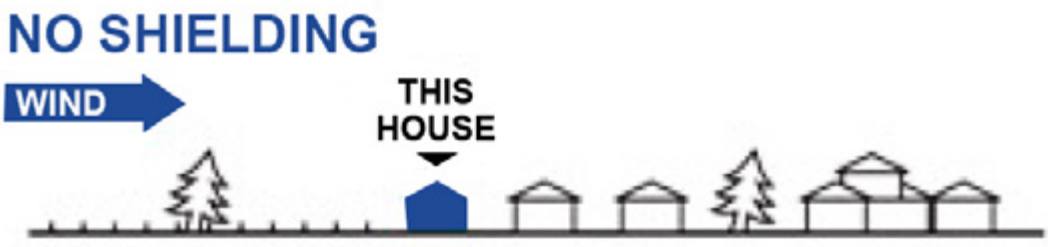
Partial Shielding
PS

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 1 DETERMINING CORRECT WIND SPEED

Step 1.4 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 4055-2012.

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

STEP 1 DETERMINING CORRECT WIND SPEED

Step 1.5 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 1.5 Wind Classification Chart

WIND CLASSIFICATION CONVERSION TABLE

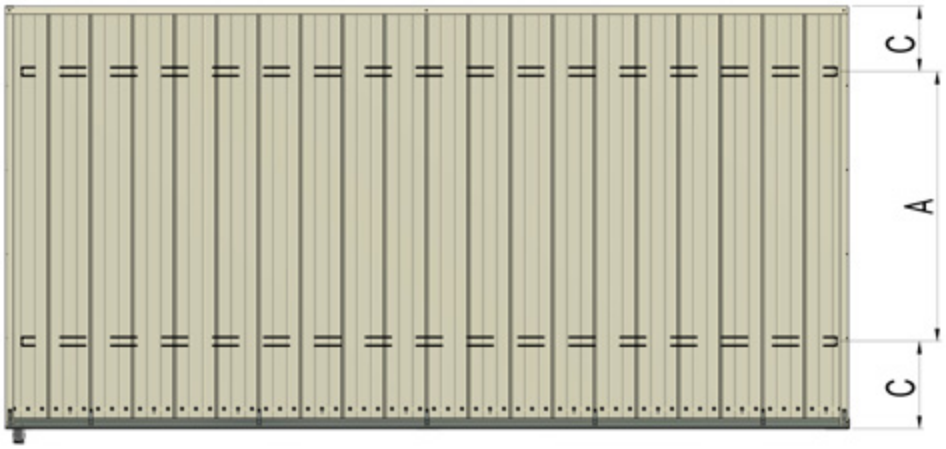
WIND CLASSIFICATION		Serviceability Limit State Gust Wind Speed metres per second	Ultimate Limit State Gust Wind Speed metres per second
Regions A and B	**Regions C and D**		
N1 (Non-Cyclonic)	N/A	W26	W34
N2 (Non-Cyclonic)	N/A	W26	W40
N3 (Non-Cyclonic)	C1 (Cyclonic)	W32	W50
N4 (Non-Cyclonic)	C2 (Cyclonic)	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 1170.2-2011 and AS 4055-2012

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.

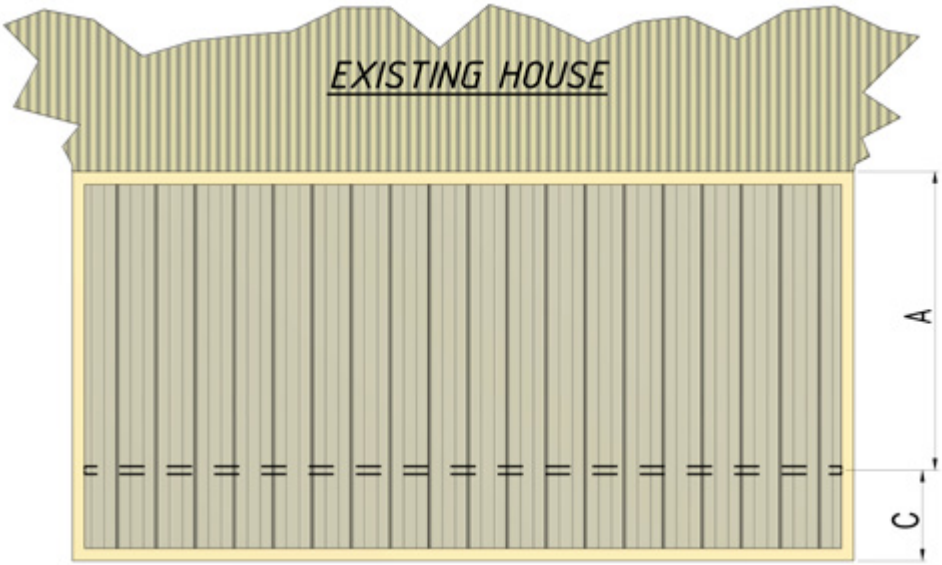
STEP 2 SELECT THE PATIO TYPE



TYPE 0

Free-Standing

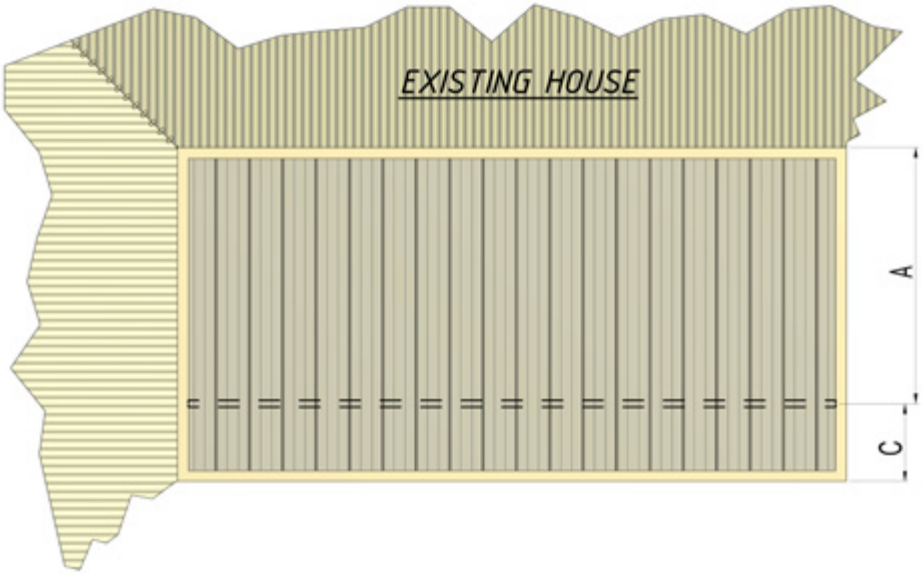
(Cp,n 0.5/0.7)



TYPE 1/1P

One Side Attached

(Cp,n 0.7/0.5)

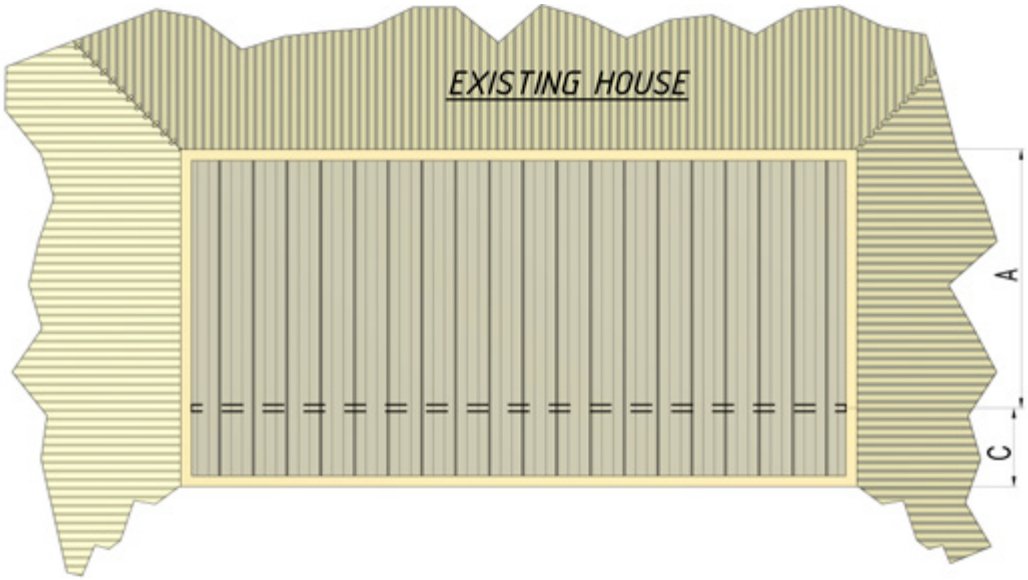


TYPE 2

Two Side Attached

(Cp,n 1)

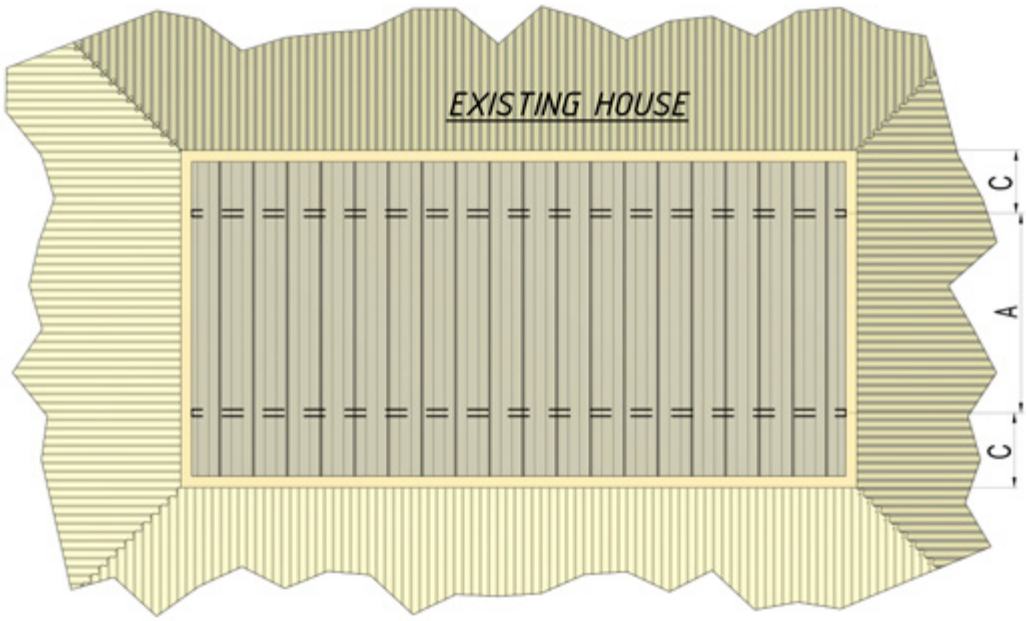
STEP 2 SELECT THE PATIO TYPE



TYPE 3

Three Side Attached

(Cp,n 1.2)



TYPE 4

All Sides Attached

(Cp,n 1)

Notes:

1. A side wall is classed as closed in if 70% of the cross sectional area is covered.
2. “A” above = DeltaSpan™ Panel Span (refer to Step 2).
3. “C” above = DeltaSpan™ Overhang.

Minimum Pitch:

DeltaTrim™	2°
DeltaOrb™	3°
DeltaCorroCorro™	3°
DeltaTrimTrim™	2°
DeltaTrimCorro™	3°

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DefinItion of Type 1P Awning

The engineering must allow for all conditions of usages, therfore a standard awning could be used for a carport or patio.

In the case of a carport it is possible to have one side blocked more than considered an open side by a car, caravan, camper van, boat etc and so for general awnings/carports the given wind pressure should be used and a type 1 should be considered.

In the case where the awning is usually at the rear of the property where it cannot be accessed by large vehicles that could block off one side the wind pressures experienced would be lower so a type 1P is allowed for in this situation.

It should be noted that any building in or blocking of the 3 open sides could be considered to require the use of the type 1 engineering.

Typically a type 1 would be used for a garage, and type 1P would be considered for a backyard lifestyle awning (providing the requirements are followed for this type).

Limits for Using Type 1P Awning Classification

Following are the dimensional requirements for using Type 1 awning classification, which has 1 partial wall.

- For awning dimensions, refer to figure 1.
- Awning is to be attached one side only to an existing building.
- Awning pitch “α” is to be between 1˚ and 10˚.
- Slope of the awning is to be normal to the attached wall.
- Minimum hc = 0.05 x d
- Maximum hc = 1.0 x d
- Maximum hc/wc to be as per Table 1.
- Maximum blockage under the roof parallel to the attached wall is to be 56% of the projected area.
- Awnings attached one side that do not comply with the above are to be classified as Type 1.

Table 1
Dimensional limits for Cp,n=0.5

hc/h	Max. hc/wc	hc/h	Max. hc/wc
<0.4	Not Allowed	0.75 to 0.8	0.71
0.4 to 0.5	No limits	0.8 to 0.9	0.45
0.5 to 0.75	1.0	0.9 to 1.0	0.33

Figure A1 & A2 - Roof Dimension

Figure A1

FRONT VIEW

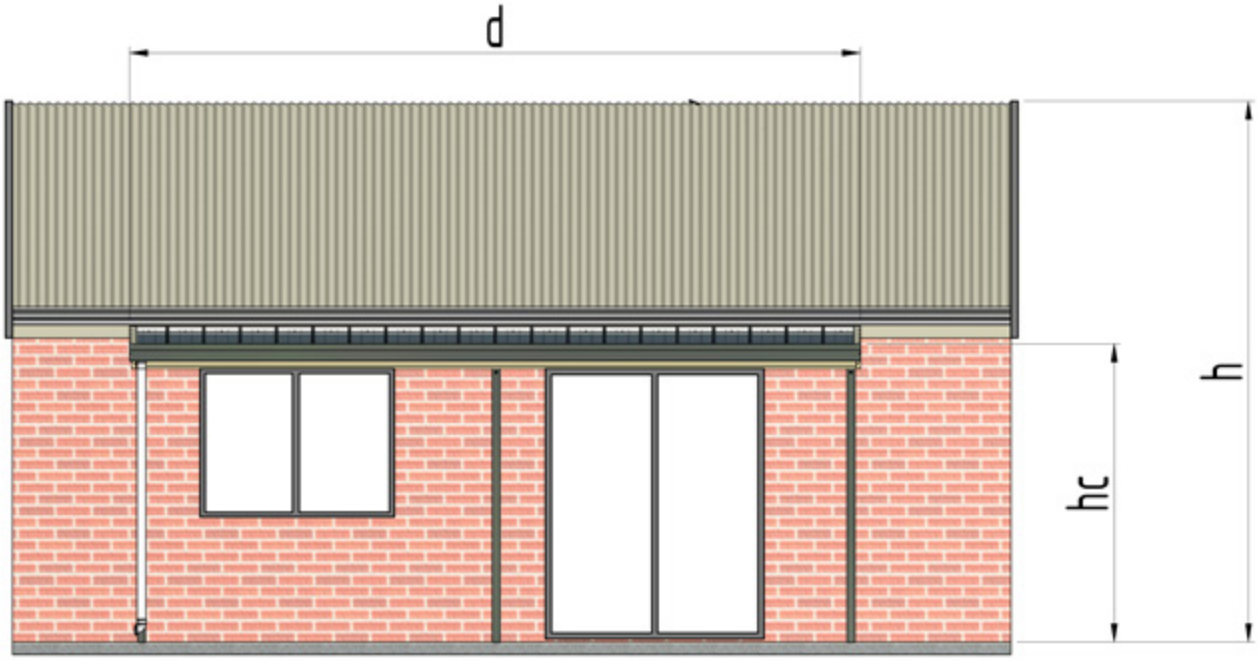


Figure A2

SIDE VIEW

STEP 3 SELECT THE STYLE OF ROOF SHEETING

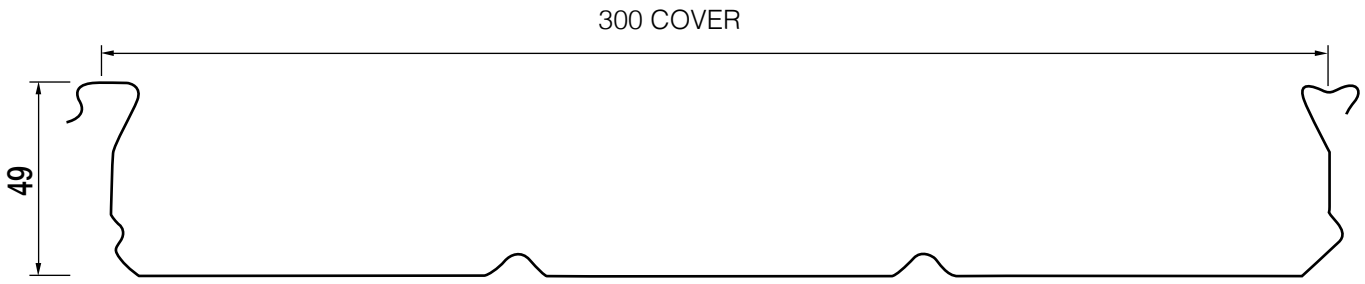
Step 3.1 Single Skin - Spans

DeltaSingle™

DeltaSingle™

1. Minimum roofing slope to be 1˚.
2. The minimum fixing requirements are 3/14g screws with cyclonic washers per sheet per support.
3. Allowable deflection limit for wind loading is span / 50.
4. Maintenance load of 0.5kN has been allowed for.
5. DeltaSingle™ is classified as a non-trafficable roof.
6. Maximum allowable overhang of sheeting is 30% of the adjacent span or 900mm, whichever is lesser.
7. 'Roof Span' is the maximum spacing of supports for sheeting.

Figure 2 - Sheeting Profile



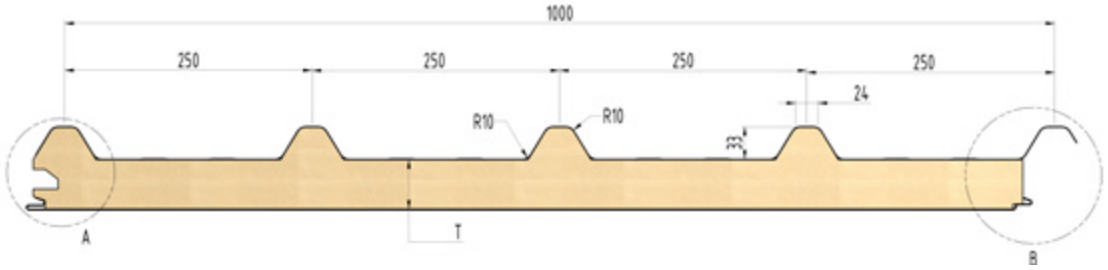
Material:
G550 0.48 BMT steel to AS 1397

Figure A3

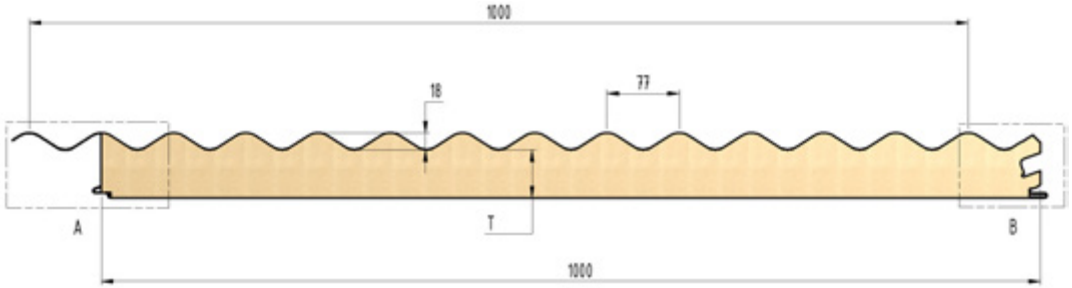
ALLOWABLE SPAN (MM) FOR 0.48 BMT DELTA SHEETING IN NON-CYCLONIC REGIONS								
Wind Class	Single-Span				Multi-Span			
	Cp,n				Cp,n			
	0.5	0.7	1	1.2	0.5	0.7	1	1.2
Patio Type	1P	1	2+4	3	1P	1	2+4	3
N1	5340	5130	4550	4280	6330	5820	4820	4370
N2	5240	4910	4060	3650	5850	4900	4050	3650
N3	4630	3850	3130	2820	4620	3850	3130	2820
N4	3720	3060	2500	2250	3710	3060	2490	2250
N5	2970	2460	2010	1830	2970	2450	2010	1830

Step 3.2 Insulated Spans

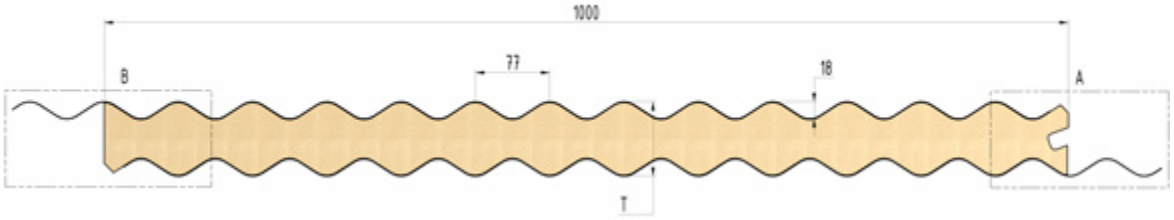
DeltaTrim™



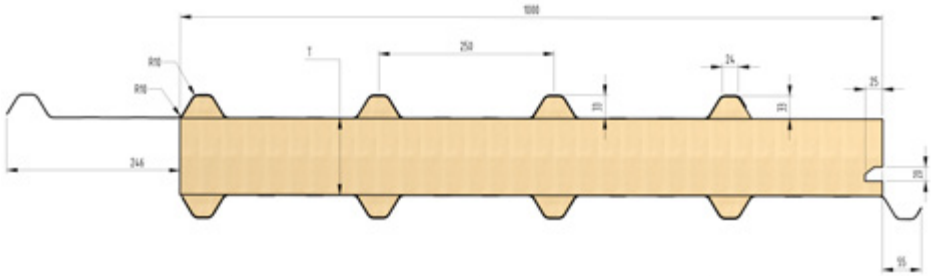
DeltaOrb™



DeltaCorroCorro™



DeltaTrimTrim™



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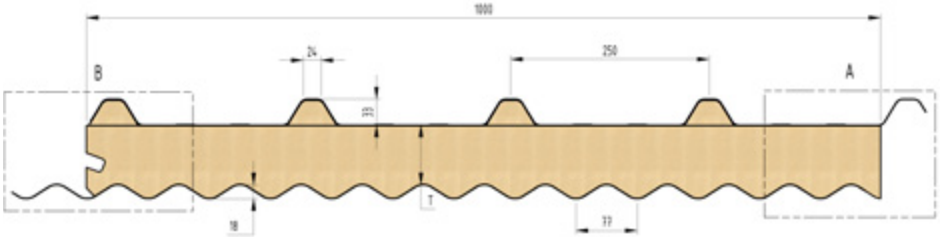

Figure A4

Step 3.2 Insulated Spans

DeltaTrim™-EPS-FR

SINGLE-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	50mm	5400	5000	4500	4300	900
	75mm	6500	5500	5000	4700	900
	100mm	7200	6200	5700	5500	1000
	125mm	7800	6800	6400	6800	1200
	150mm	8200	7400	7000	6800	1200
	175mm	8600	8000	7500	7000	1200
N3 (W41)	50mm	4800	3800	3300	3000	900
	75mm	5500	4300	3900	3700	900
	100mm	6200	5000	4500	4300	1000
	125mm	6800	5500	5000	5000	1200
	150mm	7400	6000	5500	5100	1200
	175mm	8000	7500	6000	5900	1200
N4 (W50)	50mm	4000	3300	3000	3000	600
	75mm	4600	3600	3400	3300	600
	100mm	5300	4100	3800	3500	800
	125mm	6000	4500	4200	4000	900
	150mm	6600	5200	4800	4600	900
	175mm	7000	5800	5200	5000	900
N5 (W60)	50mm	3300	2800	2400	2200	600
	75mm	3600	3000	2800	2500	600
	100mm	3900	3300	3100	3000	600
	125mm	4100	3800	3500	3300	600
	150mm	4500	4300	3900	3500	600
	175mm	5000	4700	4400	4200	600

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaTrim™-EPS-FR

MULTI-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	50mm	5900	5500	4950	4730	900
	75mm	7000	6000	5500	5170	900
	100mm	7700	6700	6200	6000	1000
	125mm	8300	7300	6900	7300	1200
	150mm	8700	7900	7500	7300	1200
	175mm	9100	8500	8000	7500	1200
N3 (W41)	50mm	5280	4180	3630	3300	900
	75mm	6000	4730	4290	4070	900
	100mm	6700	5500	4950	4730	1000
	125mm	7300	6000	5500	5500	1200
	150mm	7900	6500	6000	5600	1200
	175mm	8500	8000	6500	6400	1200
N4 (W50)	50mm	4400	3630	3300	3300	600
	75mm	5060	3960	3740	3630	600
	100mm	5800	4510	4180	3850	800
	125mm	6500	4950	4620	4400	900
	150mm	7100	5700	5280	5060	900
	175mm	7500	6300	5700	5500	900
N5 (W60)	50mm	3630	3080	2640	2420	600
	75mm	3960	3300	3080	2750	600
	100mm	4290	3630	3410	3300	600
	125mm	4510	4180	3850	3630	600
	150mm	4950	4730	4290	3850	600
	175mm	5500	5170	4840	4620	600

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STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaTrim™-EPS-FR

CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
C1 (W41C)	50mm	4800	3700	3100	3200	900
	75mm	5500	4500	3700	3700	900
	100mm	6000	5000	4400	4400	1000
	125mm	6500	5600	5000	4900	1200
	150mm	7000	6000	5500	5400	1200
	175mm	7500	6500	6000	6000	1200
C2 (W50C)	50mm	4000	2900	2600	2500	600
	75mm	4600	3500	3000	3000	600
	100mm	5200	4200	3500	3400	600
	125mm	5700	4800	4000	3900	600
	150mm	6300	5300	4500	4400	600
	175mm	6700	6000	5000	4900	600
C3 (W60C)	50mm	3300	2600	2200	2000	450
	75mm	3800	2800	2600	2400	450
	100mm	4300	3100	2800	2700	450
	125mm	5000	3500	3000	2900	450
	150mm	5500	3900	3400	3500	450
	175mm	5900	4300	3800	4000	450

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaOrb™-EPS-FR

SINGLE-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	50mm	5400	4800	4300	4400	900
	75mm	6700	5700	5200	5300	900
	100mm	7400	6300	5900	6000	1000
	125mm	8000	6700	6200	6300	1200
	150mm	8500	7000	6500	6500	1200
N3 (W41)	50mm	5100	4000	3400	3600	900
	75mm	5700	4500	4100	4200	900
	100mm	6200	4900	4500	4600	1000
	125mm	6600	5400	5000	5100	1200
	150mm	6900	5500	5100	5200	1200
N4 (W50)	50mm	4000	3100	2600	2700	600
	75mm	4700	3700	3200	3300	600
	100mm	5100	4300	3600	3700	800
	125mm	5400	4700	4200	4300	900
	150mm	5600	4900	4300	4400	900
N5 (W60)	50mm	3400	2900	2400	2500	600
	75mm	3700	3100	2900	3000	600
	100mm	4100	3400	3100	3200	600
	125mm	4300	3600	3300	3400	600
	150mm	4500	3900	3500	3500	700

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaOrb™-EPS-FR

MULTI-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	50mm	5900	5280	4730	4840	900
	75mm	7200	6200	5700	5800	900
	100mm	7900	6800	6400	6500	1000
	125mm	8500	7200	6700	6800	1200
	150mm	9000	7500	7000	7000	1200
N3 (W41)	50mm	5600	4400	3740	3960	900
	75mm	6200	4950	4510	4620	900
	100mm	6700	5390	4950	5060	1000
	125mm	7100	5900	5500	5600	1200
	150mm	7400	6000	5600	5700	1200
N4 (W50)	50mm	4400	3410	2860	2970	600
	75mm	5170	4070	3520	3630	600
	100mm	5600	4730	3960	4070	800
	125mm	5900	5170	4620	4730	900
	150mm	6100	5390	4730	4840	900
N5 (W60)	50mm	3740	3190	2640	2750	600
	75mm	4070	3410	3190	3300	600
	100mm	4510	3740	3410	3520	600
	125mm	4730	3960	3630	3740	600
	150mm	4950	4290	3850	3850	700

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaOrb™-EPS-FR

CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
C1 (W41C)	50mm	4500	3500	2900	3000	900
	75mm	5200	4000	3500	3600	900
	100mm	5700	4400	3900	4000	1000
	125mm	6100	4800	4200	4300	1200
	150mm	6400	5100	4500	4600	1200
C2 (W50C)	50mm	3700	2700	2300	2400	600
	75mm	4400	3300	2800	2900	600
	100mm	4600	3700	3100	3200	600
	125mm	4900	4200	3500	3600	600
	150mm	5100	4500	3800	3900	600
C3 (W60C)	50mm	3100	2400	2000	1900	450
	75mm	3300	2600	2400	2300	450
	100mm	3600	2900	2600	2500	450
	125mm	3900	3000	2800	2700	450
	150mm	4100	3100	3000	2900	450

Step 3.2 Insulated Spans

DeltaCorroCorro™-EPS-FR

SINGLE-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	4900	4900	4900	4900	1700
	100mm	6300	6300	6300	6300	2200
	125mm	7600	7600	7600	7600	2600
	150mm	8200	8200	8200	8200	2900
	175mm	9600	9600	9600	9600	3300
	200mm	10600	10600	10600	10600	3700
	250mm	12000	12000	12000	12000	4200
N3 (W41)	75mm	4800	4400	4000	4000	1400
	100mm	6000	5600	5100	5100	1800
	125mm	7300	6700	6100	6100	2200
	150mm	8000	7300	6800	6800	2400
	175mm	9500	8700	8100	8100	2800
	200mm	10500	9700	8900	8900	3100
	250mm	12000	11500	10000	10000	3500
N4 (W50)	75mm	4000	3500	3200	3200	1000
	100mm	5000	4600	4200	4200	1300
	125mm	6000	5600	5000	5000	1500
	150mm	6600	6100	5500	5500	1700
	175mm	7900	7200	6700	6700	2000
	200mm	8800	8100	7400	7400	2200
	250mm	10500	9600	8400	8400	2300
N5 (W60)	75mm	300	2600	2400	2400	600
	100mm	4200	3600	3300	3300	800
	125mm	5100	4600	4100	4100	1000
	150mm	5600	5100	4500	4500	1100
	175mm	6700	6100	5500	5500	1400
	200mm	7400	6800	6000	6000	1500
	250mm	8800	7600	6000	6000	1800

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Step 3.2 Insulated Spans

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MULTI-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	5400	5400	5400	5400	1700
	100mm	7000	7000	7000	7000	2200
	125mm	8400	8400	8400	8400	2600
	150mm	9000	9000	9000	9000	2900
	175mm	10100	10100	10100	10100	3300
	200mm	11100	11100	11100	11100	3700
	250mm	12600	12600	12600	12600	4200
N3 (W41)	75mm	5300	4800	4400	4400	1400
	100mm	6600	6200	5600	5600	1800
	125mm	8000	7400	6700	6700	2200
	150mm	8800	8000	7500	7500	2400
	175mm	10000	9100	8500	8500	2800
	200mm	11000	10200	9300	9300	3100
	250mm	12600	12100	10500	10500	3500
N4 (W50)	75mm	4400	3900	3500	3500	1000
	100mm	5500	5100	4600	4600	1300
	125mm	6600	6200	5500	5500	1500
	150mm	7300	6700	6100	6100	1700
	175mm	8300	7600	7000	7000	2000
	200mm	9200	8500	7800	7800	2200
	250mm	11000	10100	8800	8800	2300
N5 (W60)	75mm	3300	2900	2600	2600	600
	100mm	4600	4000	3600	3600	800
	125mm	5600	5100	4500	4500	1000
	150mm	6200	5600	5000	5000	1100
	175mm	7000	6400	5800	5800	1400
	200mm	7800	7100	6300	6300	1500
	250mm	9200	8000	6300	6300	1800

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaTrimTrim™-EPS-FR

SINGLE-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	4900	4900	4900	4900	1700
	100mm	6300	6300	6300	6300	2200
	125mm	7600	7600	7600	7600	2600
	150mm	8200	8200	8200	8200	2900
	175mm	9600	9600	9600	9600	3300
N3 (W41)	75mm	4800	4400	4000	4000	1400
	100mm	6000	5600	5100	5100	1800
	125mm	7300	6700	6100	6100	2200
	150mm	8000	7300	6800	6800	2400
	175mm	9500	8700	8100	8100	2800
N4 (W50)	75mm	4000	3500	3200	3200	1000
	100mm	5000	4600	4200	4200	1300
	125mm	6000	5600	5000	5000	1500
	150mm	6600	6100	5500	5500	1700
	175mm	7900	7200	6700	6700	2000
N5 (W60)	75mm	300	2600	2400	2400	600
	100mm	4200	3600	3300	3300	800
	125mm	5100	4600	4100	4100	1000
	150mm	5600	5100	4500	4500	1100
	175mm	6700	6100	5500	5500	1400

Step 3.2 Insulated Spans

DeltaTrimTrim™-EPS-FR

MULTI-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	5400	5400	5400	5400	1700
	100mm	7000	7000	7000	7000	2200
	125mm	8400	8400	8400	8400	2600
	150mm	9000	9000	9000	9000	2900
	175mm	10100	10100	10100	10100	3300
N3 (W41)	75mm	5300	4800	4400	4400	1400
	100mm	6600	6200	5600	5600	1800
	125mm	8000	7400	6700	6700	2200
	150mm	8800	8000	7500	7500	2400
	175mm	10000	9100	8500	8500	2800
N4 (W50)	75mm	4400	3900	3500	3500	1000
	100mm	5500	5100	4600	4600	1300
	125mm	6600	6200	5500	5500	1500
	150mm	7300	6700	6100	6100	1700
	175mm	8300	7600	7000	7000	2000
N5 (W60)	75mm	3300	2900	2600	2600	600
	100mm	4600	4000	3600	3600	800
	125mm	5600	5100	4500	4500	1000
	150mm	6200	5600	5000	5000	1100
	175mm	7000	6400	5800	5800	1400

Step 3.2 Insulated Spans

DeltaTrimCorro™-EPS-FR

SINGLE-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	4900	4900	4900	4900	1700
	100mm	6300	6300	6300	6300	2200
	125mm	7600	7600	7600	7600	2600
	150mm	8200	8200	8200	8200	2900
	175mm	9600	9600	9600	9600	3300
	200mm	10600	10600	10600	10600	3700
N3 (W41)	75mm	4800	4400	4000	4000	1400
	100mm	6000	5600	5100	5100	1800
	125mm	7300	6700	6100	6100	2200
	150mm	8000	7300	6800	6800	2400
	175mm	9500	8700	8100	8100	2800
	200mm	10500	9700	8900	8900	3100
N4 (W50)	75mm	4000	3500	3200	3200	1000
	100mm	5000	4600	4200	4200	1300
	125mm	6000	5600	5000	5000	1500
	150mm	6600	6100	5500	5500	1700
	175mm	7900	7200	6700	6700	2000
	200mm	8800	8100	7400	7400	2200
N5 (W60)	75mm	300	2600	2400	2400	600
	100mm	4200	3600	3300	3300	800
	125mm	5100	4600	4100	4100	1000
	150mm	5600	5100	4500	4500	1100
	175mm	6700	6100	5500	5500	1400
	200mm	7400	6800	6000	6000	1500

STEP 3 SELECT THE STYLE OF ROOF SHEETING

Step 3.2 Insulated Spans

DeltaTrimCorro™-EPS-FR

MULTI-SPAN NON-CYCLONIC SPAN TABLES						
Wind Category	Panel Thickness	TYPE 1 (3 or more sides open)	TYPE 2 (2 sides open)	TYPE 3 (1 side open)	TYPE 4 (Fully enclosed)	Maximum Overhang (Each end)
N1/N2 (W28 /W33)	75mm	5400	5400	5400	5400	1700
	100mm	7000	7000	7000	7000	2200
	125mm	8400	8400	8400	8400	2600
	150mm	9000	9000	9000	9000	2900
	175mm	10100	10100	10100	10100	3300
	200mm	11100	11100	11100	11100	3700
N3 (W41)	75mm	5300	4800	4400	4400	1400
	100mm	6600	6200	5600	5600	1800
	125mm	8000	7400	6700	6700	2200
	150mm	8800	8000	7500	7500	2400
	175mm	10000	9100	8500	8500	2800
	200mm	11000	10200	9300	9300	3100
N4 (W50)	75mm	4400	3900	3500	3500	1000
	100mm	5500	5100	4600	4600	1300
	125mm	6600	6200	5500	5500	1500
	150mm	7300	6700	6100	6100	1700
	175mm	8300	7600	7000	7000	2000
	200mm	9200	8500	7800	7800	2200
N5 (W60)	75mm	3300	2900	2600	2600	600
	100mm	4600	4000	3600	3600	800
	125mm	5600	5100	4500	4500	1000
	150mm	6200	5600	5000	5000	1100
	175mm	7000	6400	5800	5800	1400
	200mm	7800	7100	6300	6300	1500

STEP 4 DETERMINE THE LOAD WIDTH ON THE BEAM

LOAD WIDTH SINGLE-SPAN

Load Width on the House = 50% of Panel Span ”A”

Load Width on the Outside Beam = 50% of Panel Span ”A” + Overhang “C”

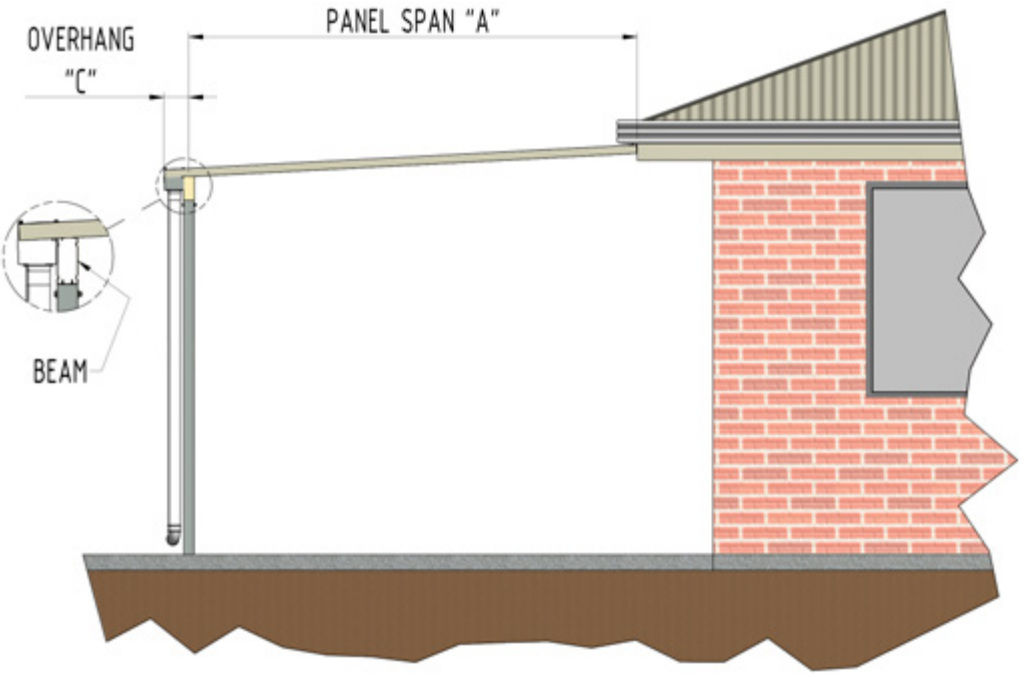

Figure A5

LOAD WIDTH MULTI-SPAN

Load Width on the House = 50% of Panel Span”A”

Load Width on the Centre Beam = 50% of Panel Span ”A” + 50% of Panel Span ”B”

Load Width on the Outside Beam = 50% of Panel Span ”B” + Overhang “C”

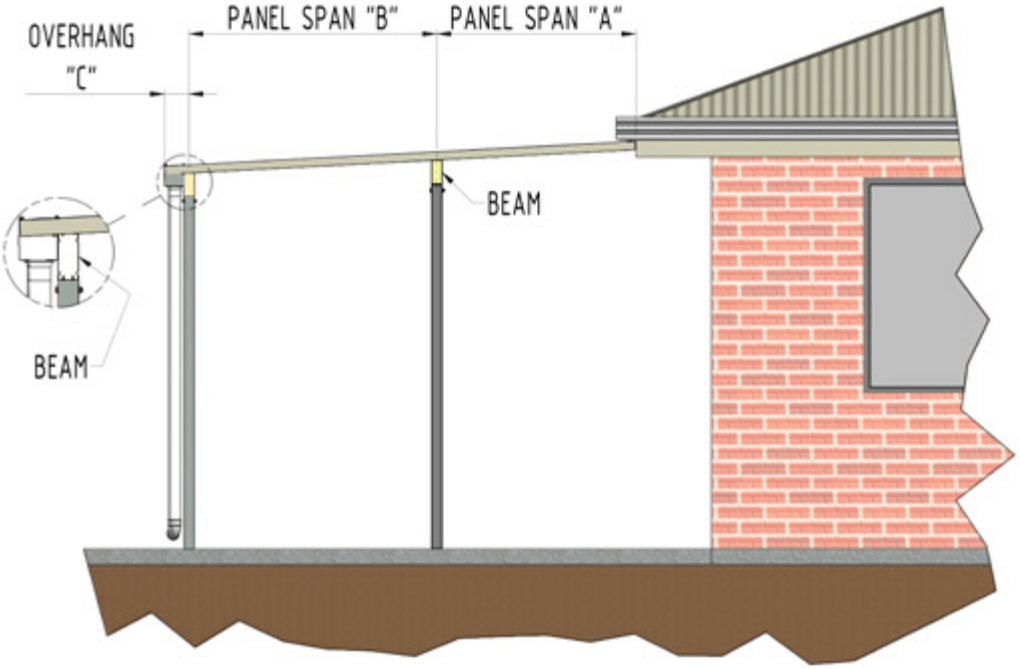

Figure A6

STEP 4 DETERMINE THE LOAD WIDTH ON THE BEAM

BEAM TYPES

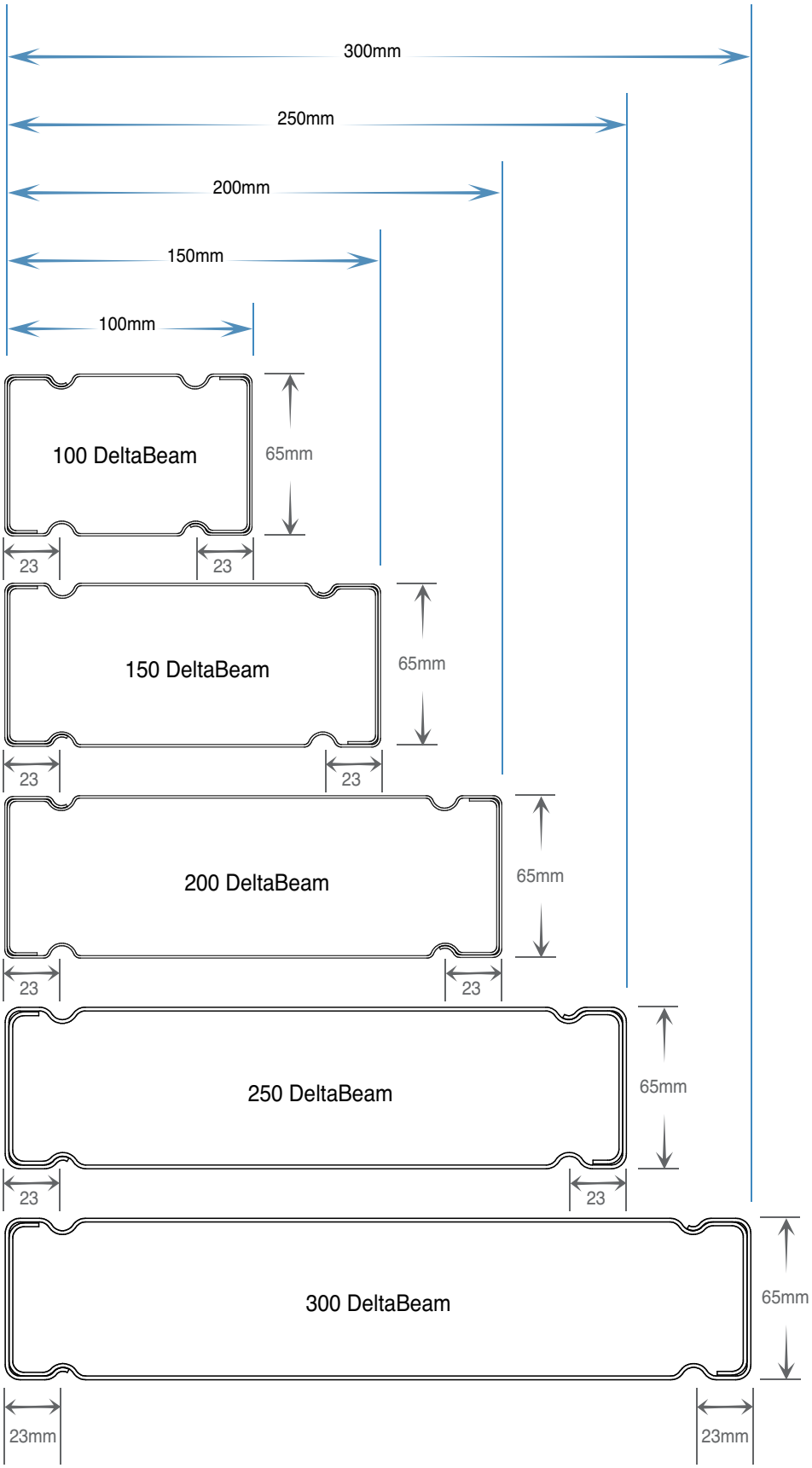

Figure A7

STEP 5 DETERMINE THE UPLIFT LOAD ON THE BEAM

a) Use the “Load Widths” from Step 4 to determine the “Uplift Load on the Beam” in the table below.
b) Match the “Wind Category” and “Load Width” column with the Patio Style (1, 2, 3, or 4).

UPLIFT LOADS ON THE BEAM (kN/m) - NON-CYCLONIC					
Wind Category	**Load Width (mm)**	**TYPE 1**	**TYPE 2**	**TYPE 3**	**TYPE 4**
N1/N2 (W33N)	1500	0.91	1.73	2.07	2.25
	1800	1.10	2.08	2.49	2.70
	2100	1.28	2.42	2.90	3.14
	2400	1.47	2.77	3.32	3.59
	2700	1.65	3.11	3.73	4.04
	3000	1.83	3.46	4.15	4.49
	3300	2.01	3.80	4.56	4.94
	3600	2.20	4.15	4.98	5.39
	3900	2.38	4.49	5.39	5.84
	4200	2.56	4.84	5.81	6.29
	4500	2.74	5.18	6.22	6.74
	4800	2.93	5.53	6.64	7.19
	5100	3.11	5.88	7.05	7.64
	5400	3.39	6.40	7.67	8.32
	6000	3.66	6.91	8.29	8.99
N3 (W41N)	1500	1.49	2.70	3.24	3.51
	1800	1.75	3.24	3.74	4.21
	2100	2.00	3.78	4.24	4.91
	2400	2.29	4.32	5.04	5.62
	2700	2.57	4.86	5.83	6.32
	3000	2.86	5.40	6.48	7.02
	3300	3.14	5.94	7.13	7.72
	3600	3.43	6.48	7.78	8.43
	3900	3.71	7.02	8.42	9.13
	4200	4.00	7.56	9.07	9.83
	4500	4.28	8.10	9.72	10.53
	4800	4.57	8.64	10.37	11.23
	5100	4.86	9.18	11.02	11.93
	5400	5.29	9.99	11.99	12.99
	6000	5.71	10.80	12.96	14.04
N4 (W50N)	1500	2.13	4.01	4.82	5.22
	1800	2.56	4.83	5.79	6.27
	2100	2.98	5.63	6.75	7.31
	2400	3.41	6.43	7.72	8.36
	2700	3.83	7.23	8.68	9.40
	3000	4.35	8.04	9.65	10.45
	3300	4.86	8.84	10.61	11.49
	3600	5.20	9.65	11.58	12.53
	3900	5.53	10.45	12.54	13.56
	4200	5.96	11.26	13.51	14.62
	4500	6.38	12.06	14.47	15.67
	4800	6.81	12.86	15.44	16.72
	5100	7.23	13.66	16.40	17.76

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STEP 5 DETERMINE THE UPLIFT LOAD ON THE BEAM

UPLIFT LOADS ON THE BEAM (kN/m) - CYCLONIC					
Wind Category	**Load Width (mm)**	**TYPE 1**	**TYPE 2**	**TYPE 3**	**TYPE 4**
C1 (W41C)	1500	1.43	2.70	3.24	4.86
	1800	1.72	3.24	3.89	5.83
	2100	2.00	3.78	4.54	6.80
	2400	2.29	4.32	5.19	7.78
	2700	2.57	4.86	5.83	8.75
	3000	2.86	5.40	6.48	9.72
	3300	3.14	5.94	7.13	10.69
	3600	4.43	6.48	7.78	11.67
	3900	3.71	7.01	8.42	12.64
	4200	4.00	7.56	9.07	13.61
	4500	4.28	8.10	9.72	14.58
	4800	4.57	8.64	10.37	15.55
	5100	4.86	9.18	11.02	16.52
	5400	5.29	9.99	11.99	17.98
	6000	5.71	10.80	12.96	19.44
C2 (W50C)	1500	2.13	4.01	4.82	7.23
	1800	2.56	4.83	5.79	8.68
	2100	2.98	5.63	6.75	10.13
	2400	3.41	6.43	7.72	11.58
	2700	3.83	7.23	8.68	13.02
	3000	4.26	8.04	9.65	14.47
	3300	4.68	8.84	10.61	15.91
	3600	5.11	9.65	11.58	17.36
	3900	5.53	10.45	12.54	18.81
	4200	5.96	11.26	13.52	20.26
	4500	6.38	12.06	14.47	21.70
	4800	6.81	12.86	14.44	23.15
	5100	7.23	13.66	16.40	24.59
C3 (W60C)	1500	3.13	5.91	7.10	10.65
	1800	3.76	7.10	8.52	12.78
	2100	4.38	8.28	9.94	14.90
	2400	5.01	9.47	11.36	17.03
	2700	5.63	10.65	12.77	19.16
	3000	6.26	11.83	14.19	21.29
	3300	6.88	13.01	15.61	23.42
	3600	7.51	14.19	17.03	25.55
	3900	8.13	15.38	18.45	27.68
	4200	8.76	16.56	19.87	29.81

STEP 6 BEAM SPAN SELECTION

Use the “Uplift on the Beam” (from Step 5) to select a suitable Beam and Post Spacing.

Note: Ensure the Beam’s Load Capacity (kN/m) below, exceeds the Uplift Load on the Beam from Step 5.

LOAD CAPACITES OF BEAMS (kN/m) - SINGLE SPAN

		Maximum distance between Posts (Beam Span)												
Type of Beam	Size of Beam	1.8 mtrs	2.4 mtrs	3.0 mtrs	3.6 mtrs	4.2 mtrs	4.8 mtrs	5.4 mtrs	6.0 mtrs	6.6 mtrs	7.2 mtrs	7.8 mtrs	8.4 mtrs	9.0 mtrs
		Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span	Single Span
DeltaMaxBeam	150 x 65 x 1	18.12	11.46	7.83	5.65	4.26	3.30	2.55	2.01	-	-	-	-	-
	200 x 65 x 1	19.02	12.92	9.32	7.00	5.43	4.33	3.52	2.88	2.32	1.90	1.58	-	-
DeltaBeam	100 x 65 x 1	15.88	9.14	5.91	4.06	2.91	-	-	-	-	-	-	-	-
	150 x 65 x 1.2	23.82	14.75	9.94	7.11	5.33	3.98	3.06	2.41	1.94	-	-	-	-
	200 x 65 x 1.2	25.95	17.39	12.39	9.23	7.11	5.63	4.53	3.57	2.87	2.34	1.94	1.62	-
DeltaXtremeBeam	250 x 65 x 1.6	41.33	28.61	20.98	16.00	12.55	10.08	8.25	6.61	5.28	4.29	3.53	2.93	2.46
	300 x 65 x 1.6	38.94	27.82	21.03	16.48	13.25	10.87	9.06	7.65	6.47	5.26	4.32	3.59	3.01
Timber	140 x 45 F7	15.0	6.6	3.4	1.9	1.2	0.8	-	-	-	-	-	-	-
	190 x 45 F7	27.3	15.3	8.5	4.9	3.1	2.0	1.4	1.0	-	-	-	-	-
	125 x 50 F14	13.3	7.4	4.1	2.3	1.5	1.0	-	-	-	-	-	-	-
	150 x 50 F14	19.1	10.7	6.9	4.1	2.5	1.7	1.2	0.8	-	-	-	-	-
	200 x 50 F14	34.0	19.1	12.2	8.5	6.1	4.1	2.8	2.1	-	-	-	-	-
	150 x 50 F14	28.7	16.1	10.3	6.1	3.8	2.6	1.8	1.3	-	-	-	-	-
	200 x 75 F14	51.1	28.7	18.4	12.7	9.2	6.1	4.3	3.1	-	-	-	-	-
“C” Purlins	C150 x 1.5	14.5	8.1	4.0	2.2	1.3	0.8	0.5	-	-	-	-	-	-
	C150 x 1.9	15.7	8.8	5.6	3.0	1.7	1.1	0.7	0.5	-	-	-	-	-
	C200 x 1.5	20.2	11.3	7.2	4.1	2.4	1.5	1.0	0.7	-	-	-	-	-
	C200 x 1.9	29.3	16.5	10.5	5.7	3.5	2.2	1.1	1.0	-	-	-	-	-
RHS	100 x 50 x 2	14.3	8.0	5.1	3.6	2.3	1.5	1.0	0.7	-	-	-	-	-
	100 x 50 x 3	20.7	11.6	7.4	5.1	3.2	2.1	1.5	1.1	-	-	-	-	-
	100 x 50 x 4	25.9	14.6	9.3	6.3	4.0	2.7	1.8	1.3	-	-	-	-	-
	125 x 75 x 3	36.7	20.6	13.2	9.2	6.7	4.9	3.5	2.5	-	-	-	-	-
	125 x 75 x 4	46.9	26.3	16.8	11.7	8.6	6.2	4.4	3.2	-	-	-	-	-
	125 x 50 x 5	56.5	31.8	20.3	14.1	10.3	7.4	5.2	3.8	-	-	-	-	-
	150 x 50 x 3	39.9	22.4	14.3	9.9	7.3	5.6	4.3	3.1	-	-	-	-	-
	150 x 50 x 4	50.8	26.6	18.3	12.5	9.0	6.7	5.1	3.9	-	-	-	-	-
	150 x 50 x 5	61.3	34.5	22.0	15.3	11.2	8.6	6.4	4.6	-	-	-	-	-
	150 x 100 x 4	114.3	64.3	41.1	28.5	18.0	12.0	8.4	6.1	-	-	-	-	-

Deflection limits adopted are:
L/125 under serviceability wind (assumed 50% of ULS wind)
L/150 under maintenance load
L/300 under dead load (30kg/m of sheeting/panel + self-weight of beam is allowed)

STEP 6 BEAM SPAN SELECTION

Use the “Uplift on the Beam” (from Step 5) to select a suitable Beam and Post Spacing.

Note: Ensure the Beam’s Load Capacity (kN/m) below, exceeds the Uplift Load on the Beam from Step 5.

LOAD CAPACITES OF BEAMS (kN/m) - MULTI SPAN

Type of Beam	Size of Beam	Maximum distance between Posts (Beam Span)												
		1.8 mtrs	2.4 mtrs	3.0 mtrs	3.6 mtrs	4.2 mtrs	4.8 mtrs	5.4 mtrs	6.0 mtrs	6.6 mtrs	7.2 mtrs	7.8 mtrs	8.4 mtrs	9.0 mtrs
		Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span	Multi Span
DeltaMaxBeam	150 x 65 x 1	16.89	10.89	7.54	5.49	4.16	3.26	2.55	2.01	-	-	-	-	-
	200 x 65 x 1	17.17	11.86	8.68	6.61	5.18	4.15	3.40	2.83	2.32	1.90	1.58	-	-
DeltaBeam	100 x 65 x 1	15.63	9.05	5.87	4.06	2.91	-	-	-	-	-	-	-	-
	150 x 65 x 1.2	22.45	14.15	9.65	6.96	5.24	3.98	3.06	2.41	1.94	-	-	-	-
	200 x 65 x 1.2	23.56	16.08	11.63	8.77	6.82	5.44	4.42	3.57	2.87	2.34	1.94	1.62	-
DeltaXtremeBeam	250 x 65 x 1.6	37.04	26.02	19.35	14.93	11.85	9.60	7.91	6.61	5.28	4.29	3.53	2.93	2.46
	300 x 65 x 1.6	34.50	24.90	19.03	15.07	12.24	10.13	8.51	7.24	6.22	5.26	4.32	3.59	3.01
Timber	140 x 45 F7	13.0	7.3	4.7	3.2	2.2	1.5	1.0	-	-	-	-	-	-
	190 x 45 F7	23.7	13.3	8.5	5.9	4.3	3.3	2.6	1.9	-	-	-	-	-
	125 x 50 F14	11.5	6.5	4.1	2.8	2.1	1.6	1.2	0.9	-	-	-	-	-
	150 x 50 F14	16.6	9.3	6.0	4.1	3.0	2.3	1.8	1.5	-	-	-	-	-
	200 x 50 F14	29.6	16.6	10.6	7.4	5.4	4.1	3.2	2.6	-	-	-	-	-
	150 x 50 F14	25.0	14.0	9.0	6.2	4.5	3.5	2.7	2.2	-	-	-	-	-
	200 x 75 F14	44.4	25.0	16.0	11.1	8.1	6.2	4.9	4.0	-	-	-	-	-
“C” Purlins	C150 x 1.5	15.9	8.2	5.4	3.7	2.7	2.0	1.4	1.0	-	-	-	-	-
	C150 x 1.9	26.4	15.8	7.6	5.3	3.7	2.6	1.9	1.4	-	-	-	-	-
	C200 x 1.5	15.1	10.3	6.1	4.6	3.6	2.8	2.2	1.8	-	-	-	-	-
	C200 x 1.9	28.0	18.6	10.6	7.8	5.7	4.3	3.4	2.5	-	-	-	-	-
RHS	100 x 50 x 2	14.3	8.0	5.1	3.6	2.6	2.0	1.6	1.3	-	-	-	-	-
	100 x 50 x 3	20.7	11.6	7.4	5.1	3.8	2.9	2.3	1.8	-	-	-	-	-
	100 x 50 x 4	25.9	14.6	9.3	6.4	4.7	3.6	2.8	2.3	-	-	-	-	-
	125 x 75 x 3	36.7	20.6	13.2	9.2	6.7	5.1	4.0	3.3	-	-	-	-	-
	125 x 75 x 4	46.9	26.3	16.8	11.7	8.6	6.6	5.2	4.2	-	-	-	-	-
	125 x 50 x 5	56.5	31.8	20.3	14.1	10.3	7.9	6.2	5.0	-	-	-	-	-
	150 x 50 x 3	39.9	22.4	14.3	9.9	7.3	5.6	4.4	3.5	-	-	-	-	-
	150 x 50 x 4	50.8	26.6	18.3	12.5	9.0	6.7	5.1	4.0	-	-	-	-	-
	150 x 50 x 5	61.3	34.5	22.0	15.3	11.2	8.6	6.8	5.4	-	-	-	-	-
	150 x 100 x 4	113.3	64.3	41.1	28.5	21.0	16.0	12.7	10.2	-	-	-	-	-

Deflection limits adopted are:
L/125 under serviceability wind (assumed 50% of ULS wind)
L/150 under maintenance load
L/300 under dead load (30kg/m of sheeting/panel + self-weight of beam is allowed)

STEP 7 CALCULATE THE UPLIFT ON THE POSTS

Step 7.1 Select the Load Width on each Post, refer to the diagram below:

SINGLE-SPAN

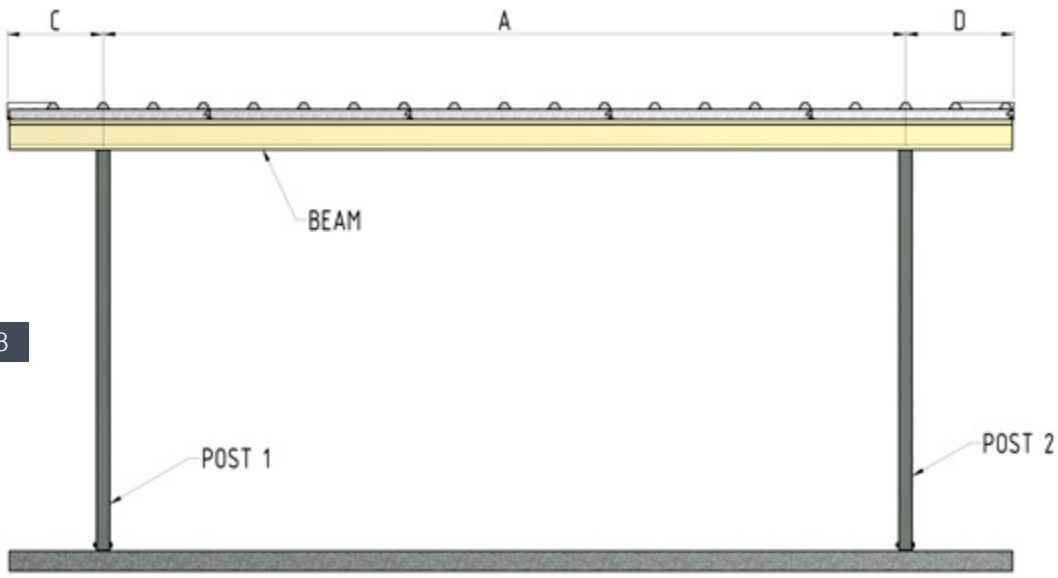


Figure A8

Load Width **- Post 1 =** Half (0.5) of “A” metres + “C” meters

Load Width **- Post 2 =** Half (0.5) of “A” metres + Half (0.5) “D” meters

MULTI-SPAN

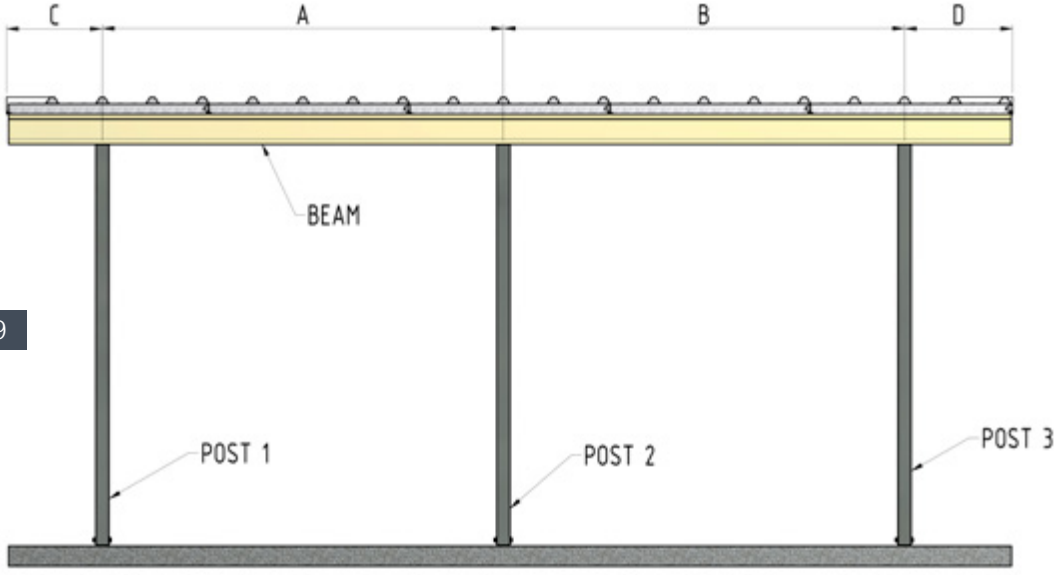


Figure A9

Load Width **- Post 1 =** Half (0.5) of “A” metres + “C” meters

Load Width **- Post 2 =** Half (0.5) of “A” metres + Half (0.5) “B” meters

Load Width **- Post 3 =** Half (0.5) of “B” metres + Half (0.5) “D” meters

Step 7.2 Calculate the Uplift

Uplift on the Post (kN) = Uplift on the Beam (kN/m) x Load Width of the Post (metres).

Timber Post to Stirrup (see Figure A10)

Tabulated Data is in kN

Fixing Details		Footing Details					
Number of Bolts and Diameter	Uplift (kN)	Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)	Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)
2/M10 Bolts	6.75	600	2.25	3.99	1200	4.49	7.98
2/M12 Bolts	9.65	750	2.81	4.99	1500	5.61	9.98
2/M16 Bolts	16.7	900	3.37	5.99	1800	6.74	11.98
		1000	3.74	6.65	2000	7.49	13.31

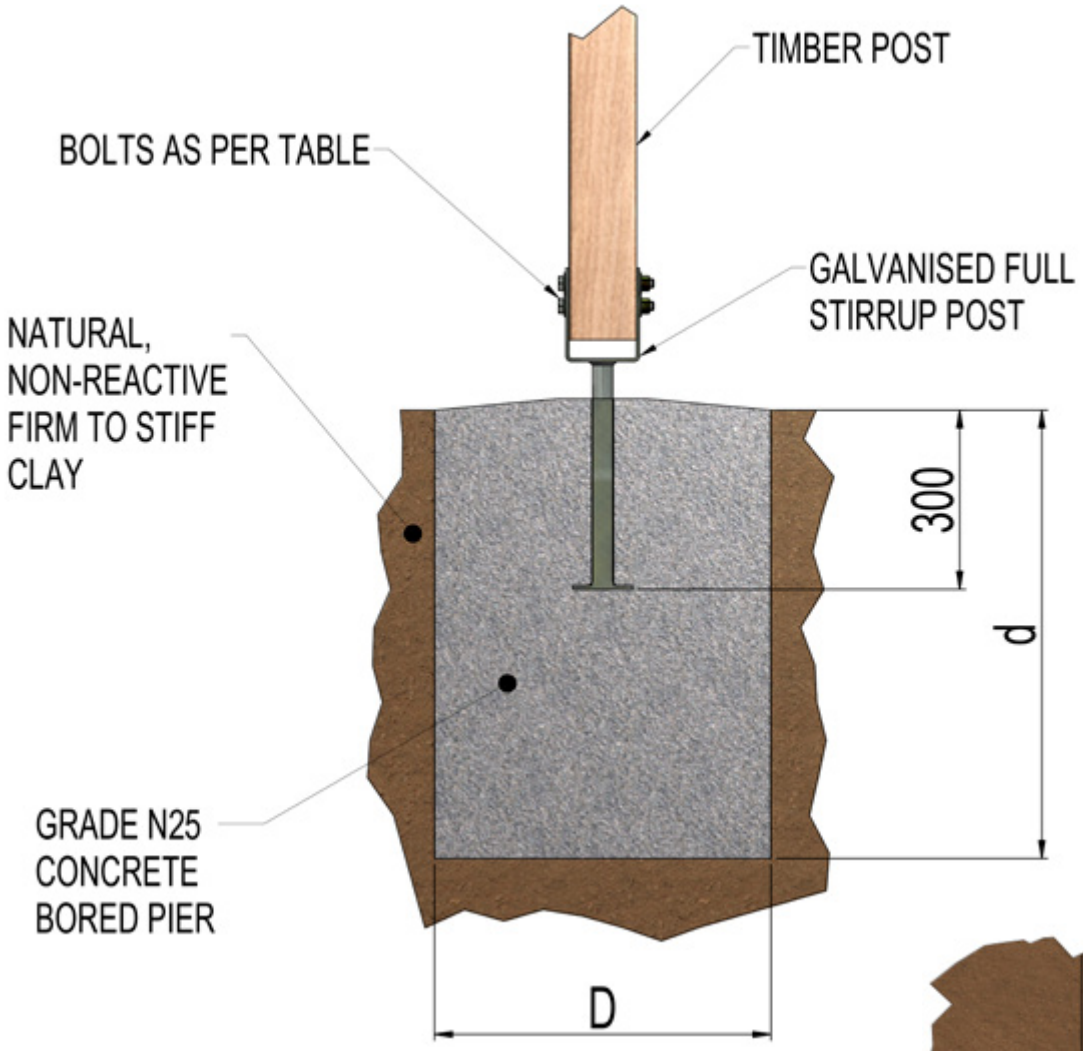
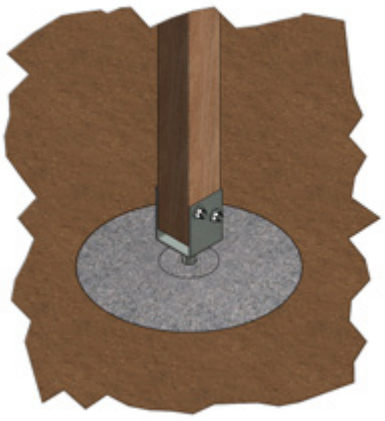


Figure A10



Steel Post to Pad Footing with Slab Over (see Figure A11)

Tabulated Data is in kN

Footing Details							
Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)	F	Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)	F
600	6.59	8.7	100	1200	9.2	12.69	100
750	7.52	9.7	100	1500	10.32	14.69	100
900	8.08	10.7	100	1800	11.45	16.69	100
1000	8.45	11.36	100	2000	12.19	18.02	100

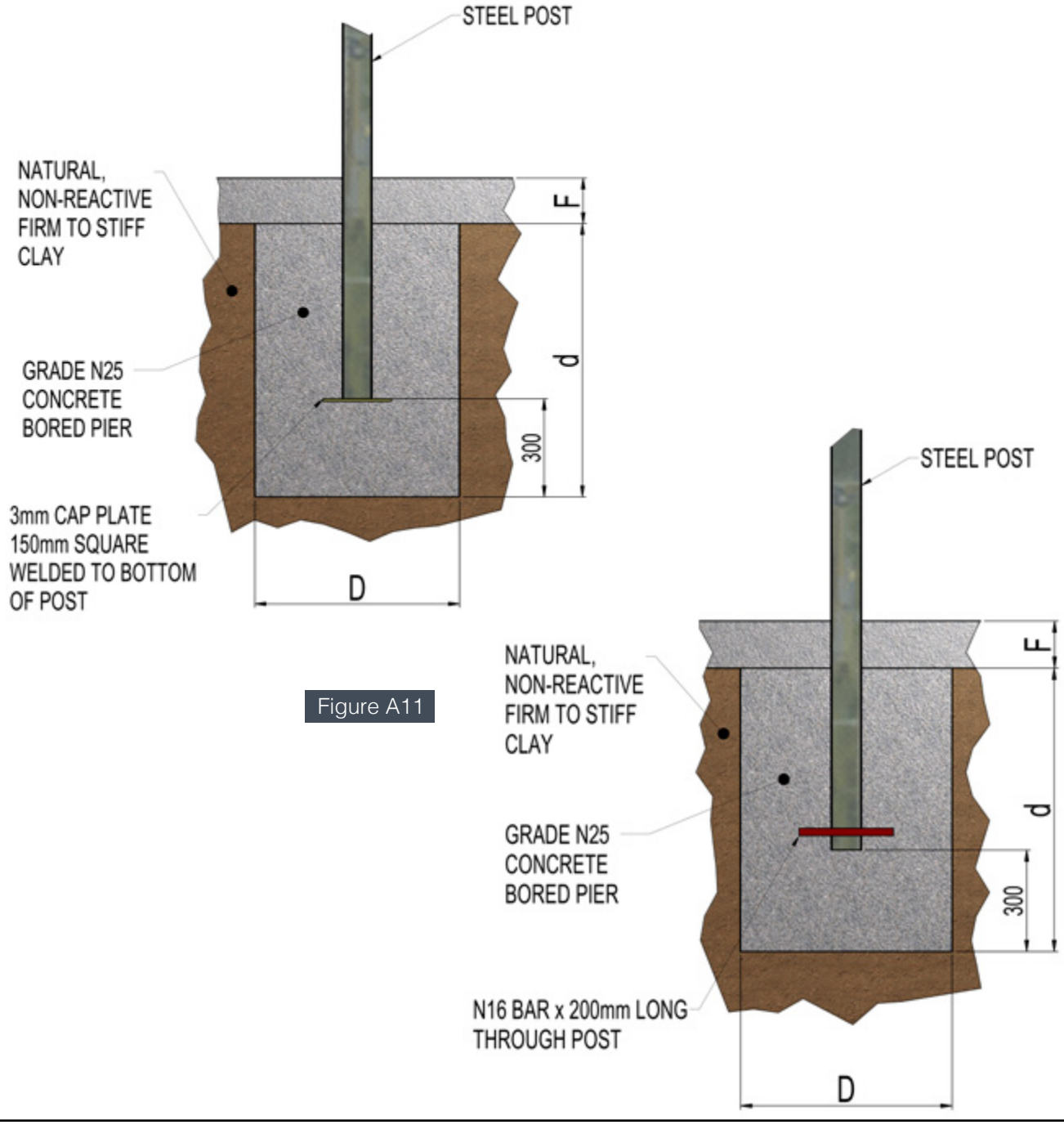


Figure A11

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Steel Post to Pad Footing (see Figure A12)

Tabulated Data is in kN

Footing Details					
Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)	Depth of Pad d(mm)	D=450mm (kN)	D=600mm (kN)
600	2.25	3.99	1200	4.49	7.98
750	2.81	4.99	1500	5.61	9.98
900	3.37	5.99	1800	6.74	11.98
1000	3.74	6.65	2000	7.49	13.31

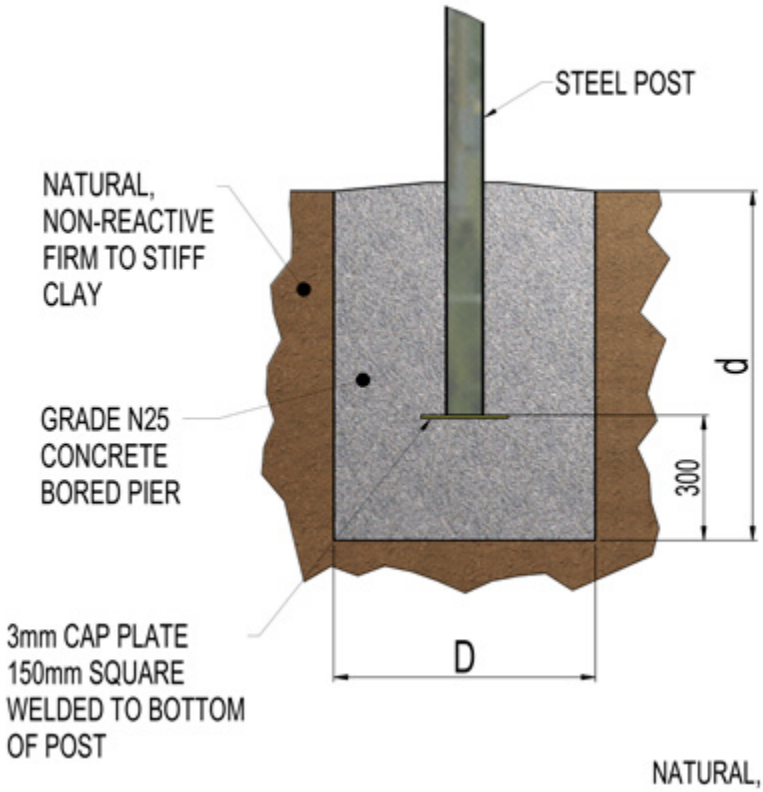
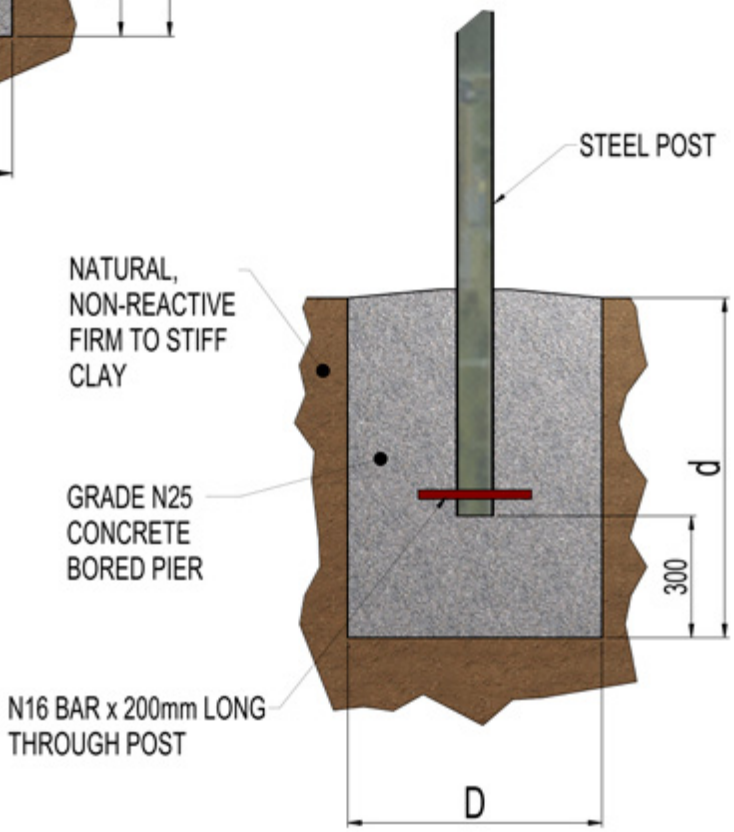


Figure A12



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Column to Slab (see Figure A13)

Tabulated Data is in kN

Fixing Details		
Post Size (mm)	**Cross Bolt - M10**	**Cross Bolt - M12**
65x65x1.6 Steel	3.6	3.6
65x65x1.6 Aluminium	3.4	3.6

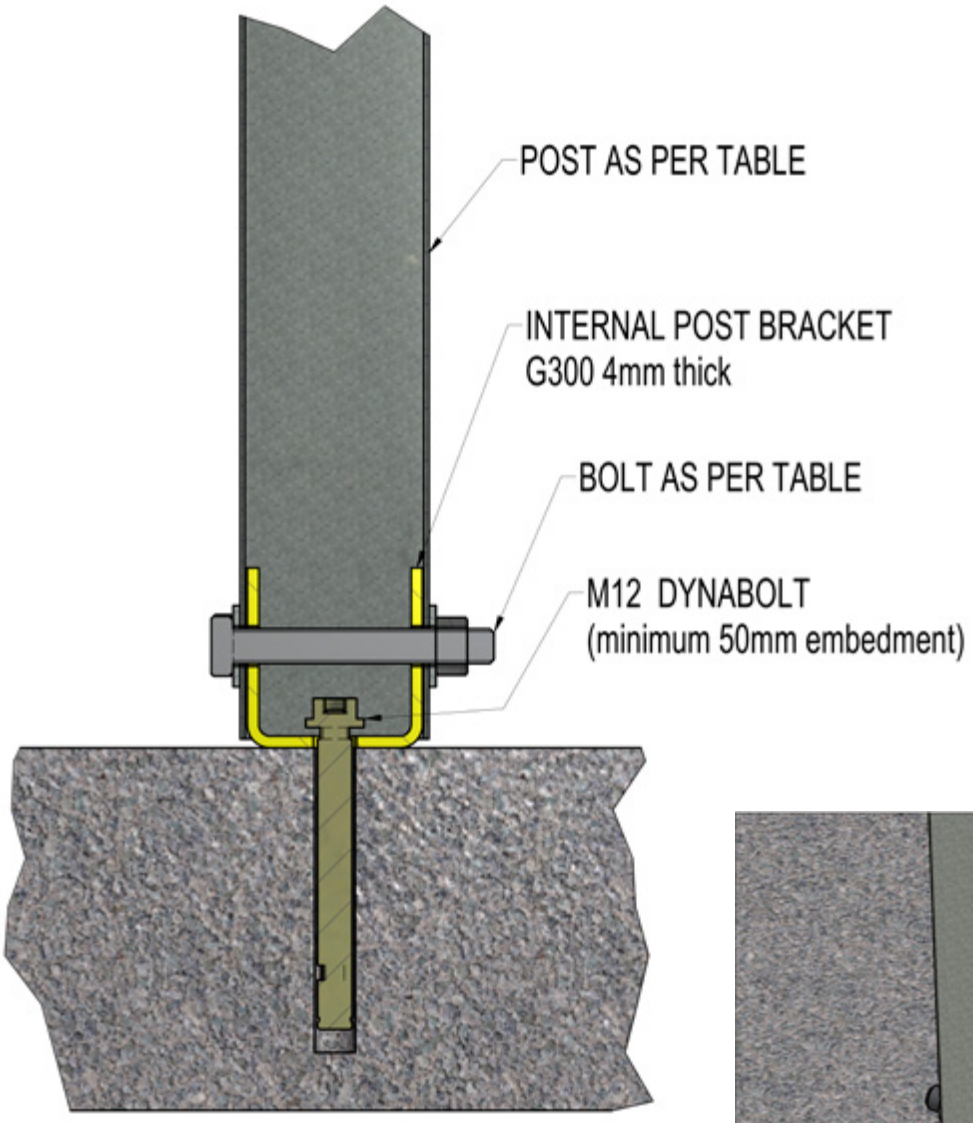
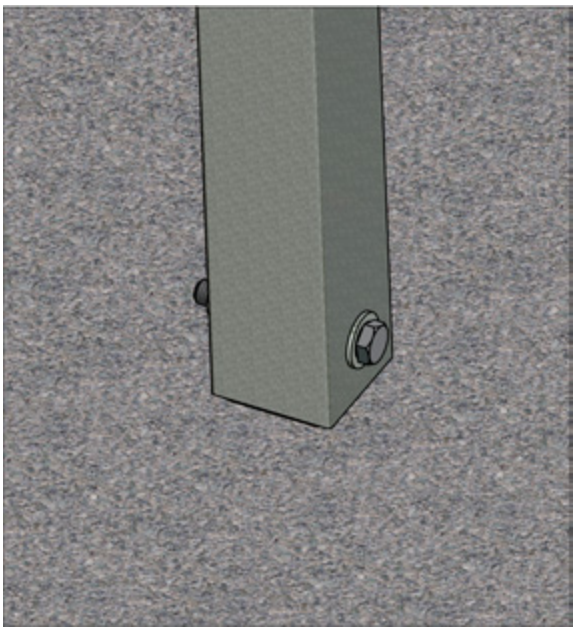


Figure A13



Column to Slab (see Figure A14)

Tabulated Data is in kN

Fixing Details		
Post Size (mm)	**Cross Bolt - M10**	**Cross Bolt - M12**
65x65x1.6 Steel	4.8	4.61

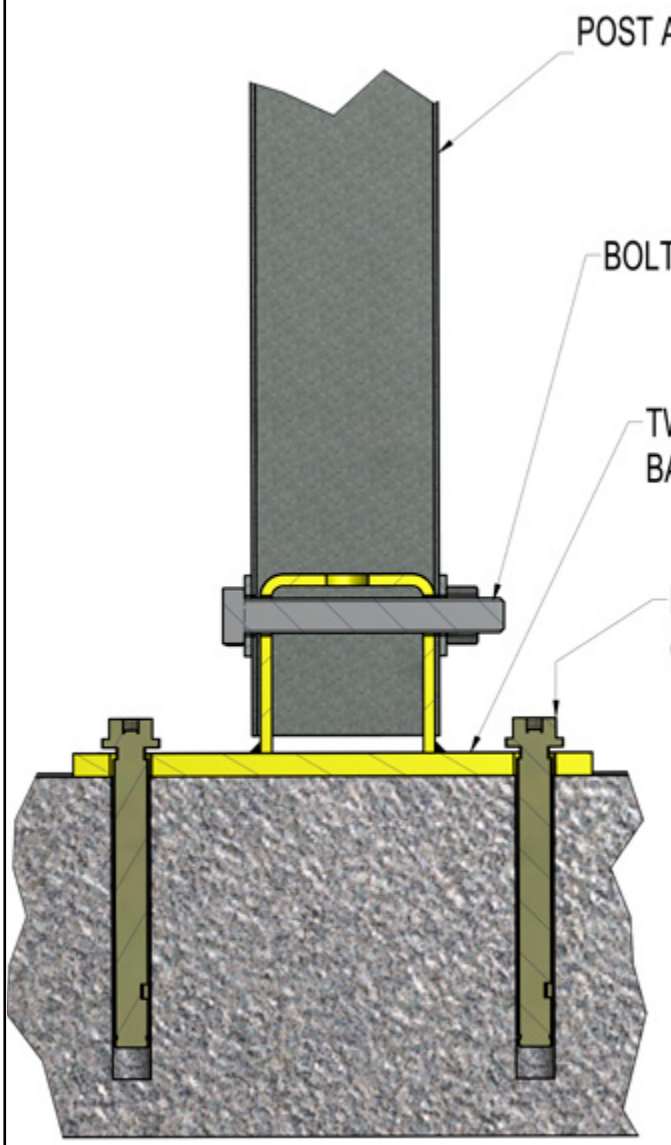
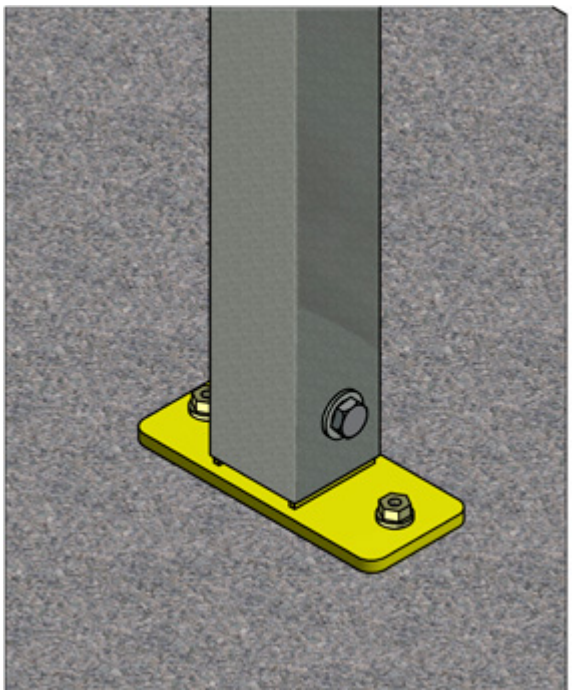


Figure A14



Column to Slab (see Figure A15)

Tabulated Data is in kN

Fixing Details		
Post Size (mm)	**Cross Bolt - M10**	**Cross Bolt - M12**
100x100x2.5 Steel	12.0	14.4

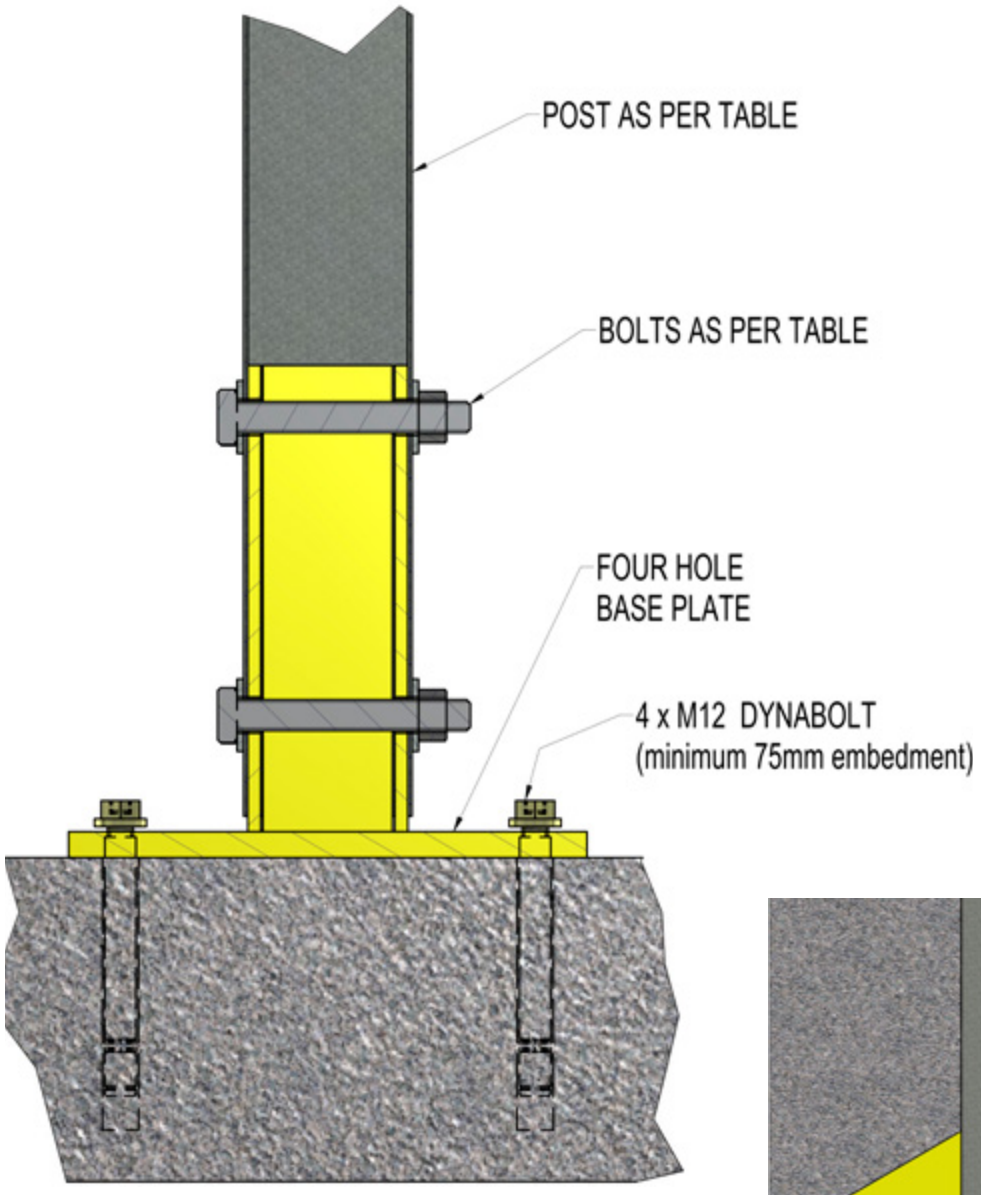
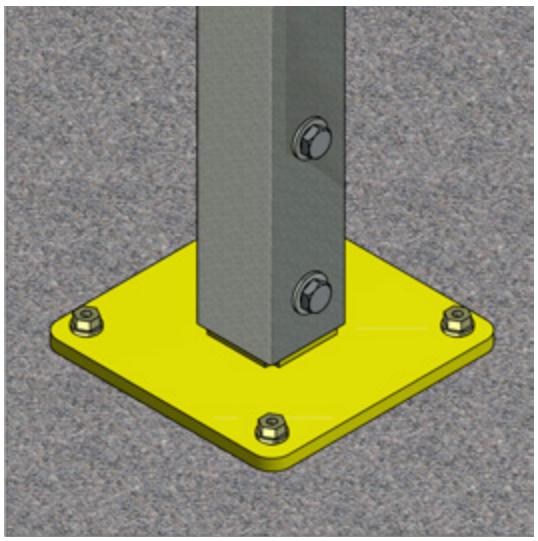


Figure A15



Timber Post to Timber Beam (see Figure A16)

Tabulated Data is in kN

Fixing Details	
Number of Bolts and Diameter	**Uplift (kN)**
2/M10 Bolts	6.75
2/M12 Bolts	9.65
2/M16 Bolts	16.7

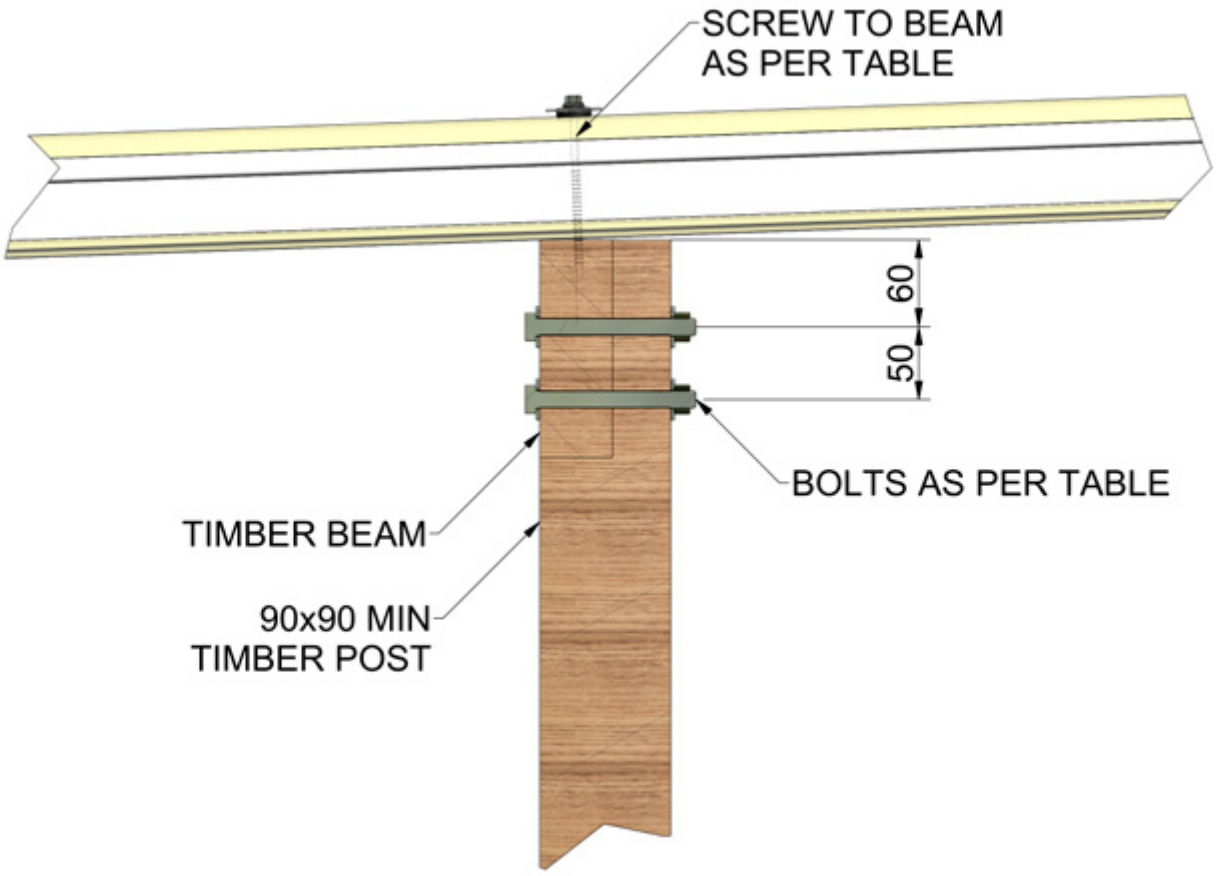


Figure A16

Timber Post to Steel Beam (see Figure A17)

Tabulated Data is in kN

Fixing Details	
Number of Bolts and Diameter	**Uplift (kN)**
2/M10 Bolts	6.75
2/M12 Bolts	9.65
2/M16 Bolts	16.7

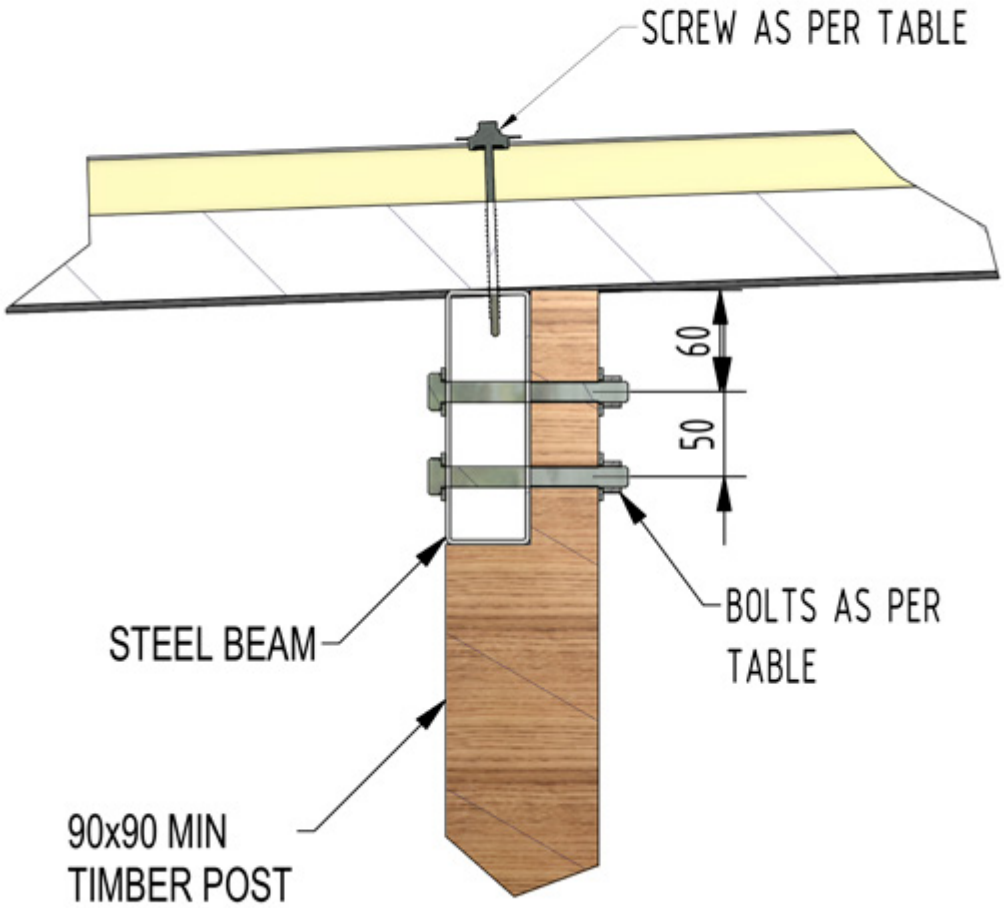


Figure A17

Steel Beam to Steel Post (see Figure A18)

Tabulated Data is in kN

Fixing Details	
Number of Bolts and Diameter	**Uplift (kN)**
2/M10 Bolts	7.2
2/M12 Bolts	8.64

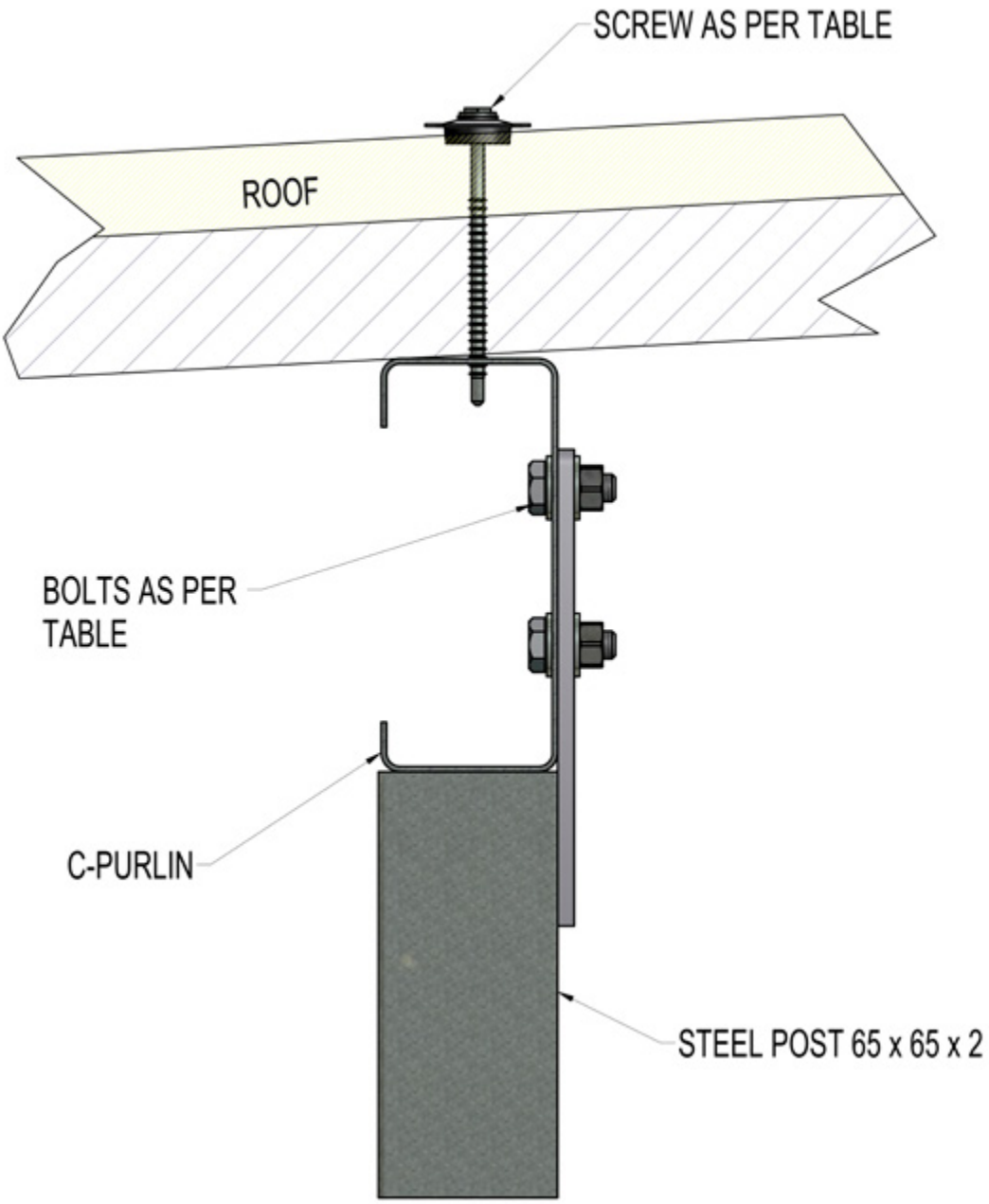


Figure A18

Steel Beam to Steel Post (see Figure A19)

Tabulated Data is in kN

Fixing Details	
Number of Bolts and Diameter	**Uplift (kN)**
2/M10 Bolts	14.4
2/M12 Bolts	17.28

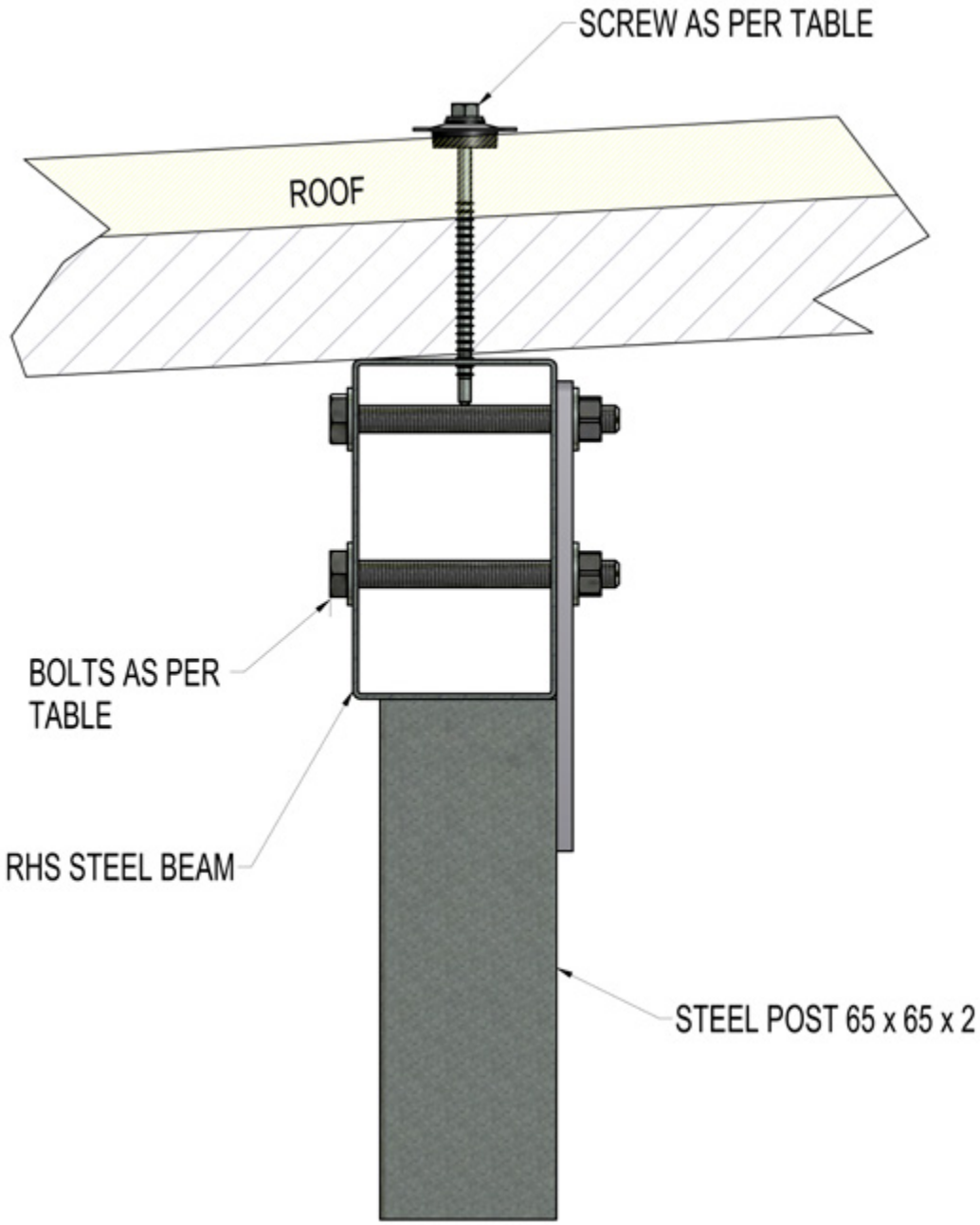


Figure A19

STEP 9 SELECT BEAM TO POST CONNECTION TYPE

Steel Beam to Steel Post (see Figure A20)		
Tabulated Data is in kN		
Fixing Details		
Post Size (mm)	**Cross Bolt - M10**	**Cross Bolt - M12**
65x65x1.6 Steel	3.6	3.6
65x65x1.6 Aluminium	3.4	3.6

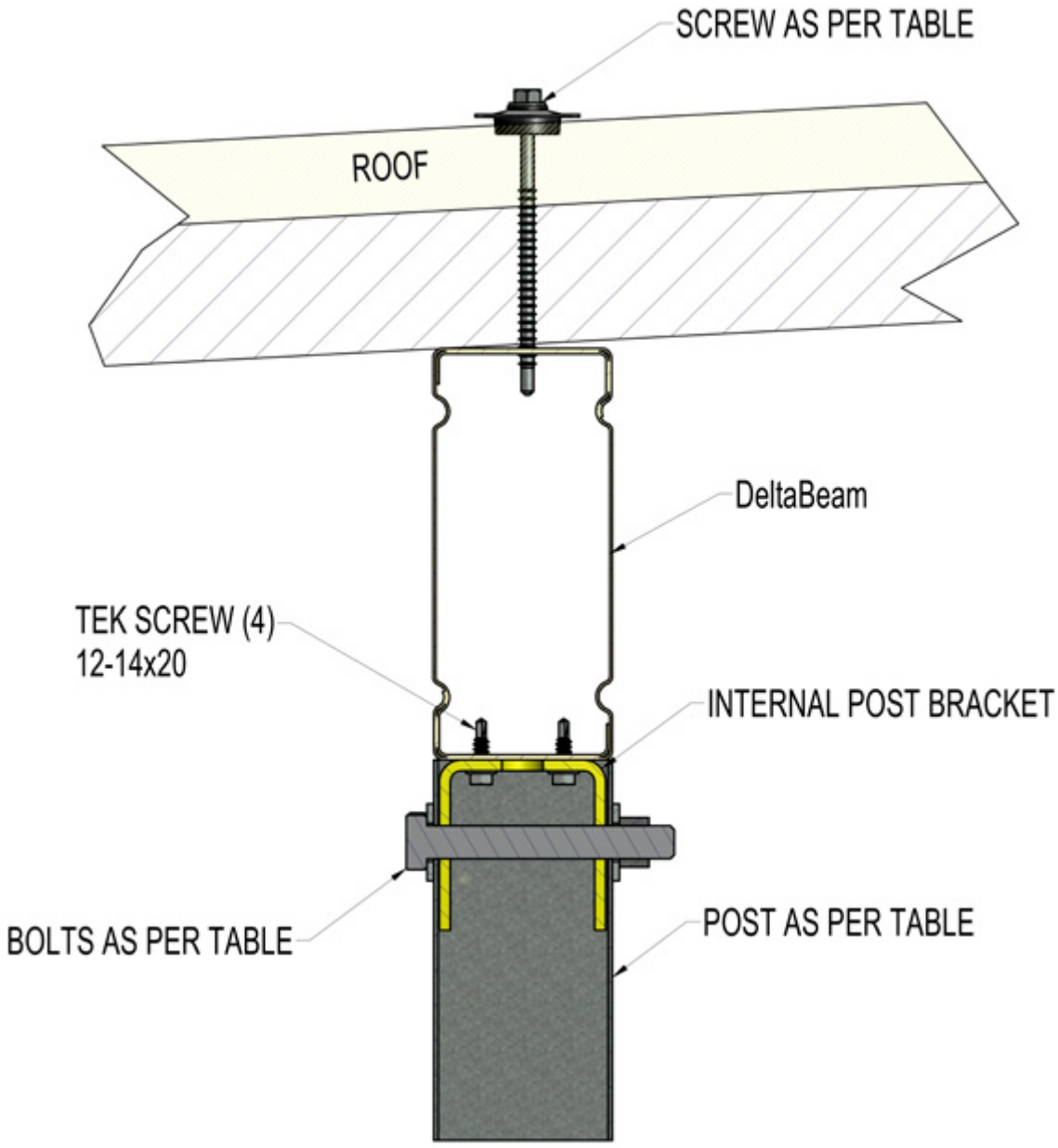


Figure A20

Steel Beam to Steel Post (see Figure A21)

Tabulated Data is in kN

Fixing Details		
Beam Size (mm)	**Cross Bolt - M10/2**	**Cross Bolt - M12/2**
1.0mm	22	26.4
1.2mm	26.4	31.68
1.6mm	35.2	42.24

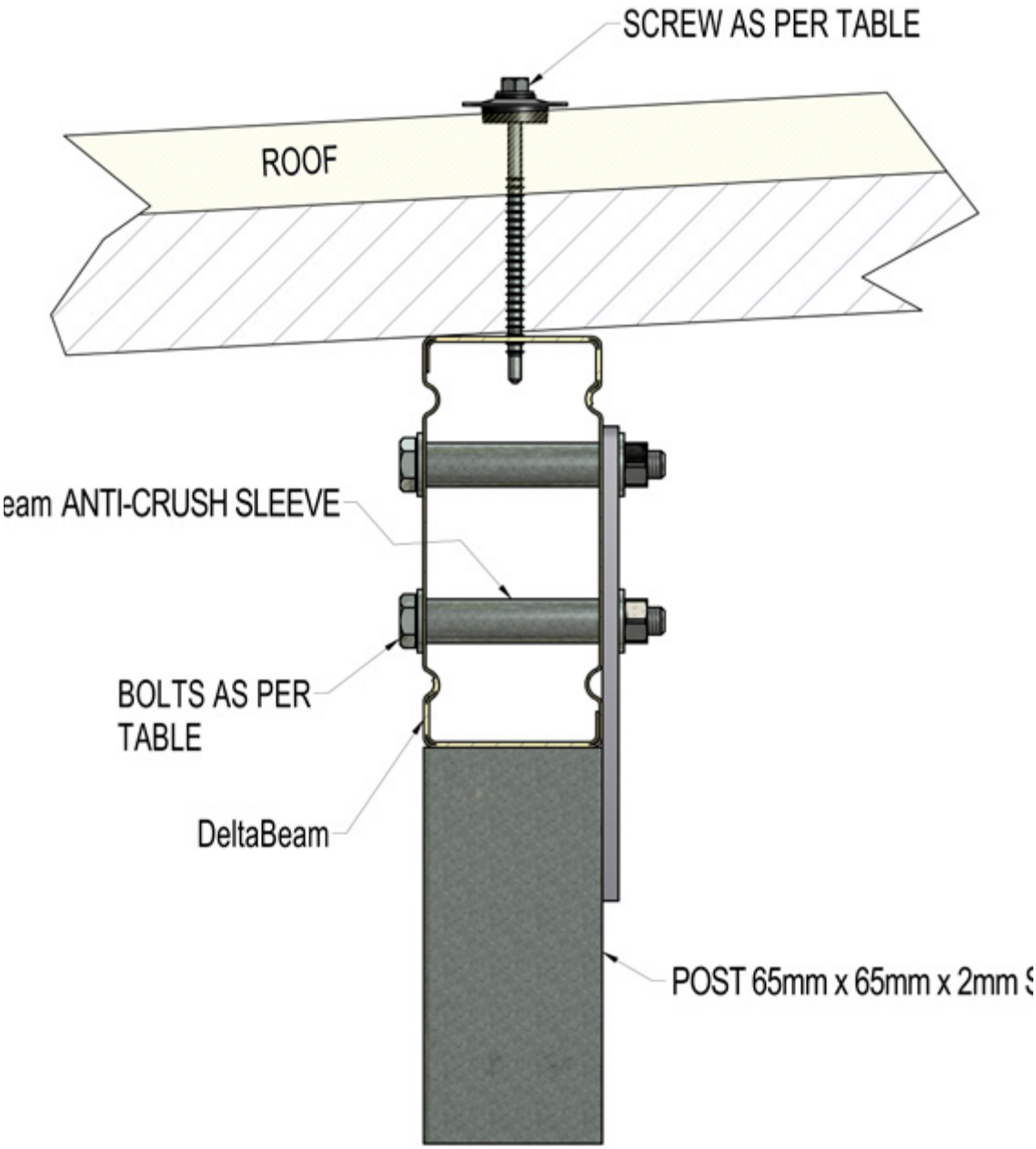


Figure A21

Steel Beam to Steel Post (see Figure A22)

Tabulated Data is in kN

Fixing Details		
Beam Size (mm)	**Cross Bolt - M10/4**	**Cross Bolt - M12/4**
1.0mm	44	52.8
1.2mm	52.8	63.36
1.6mm	70.4	84.48

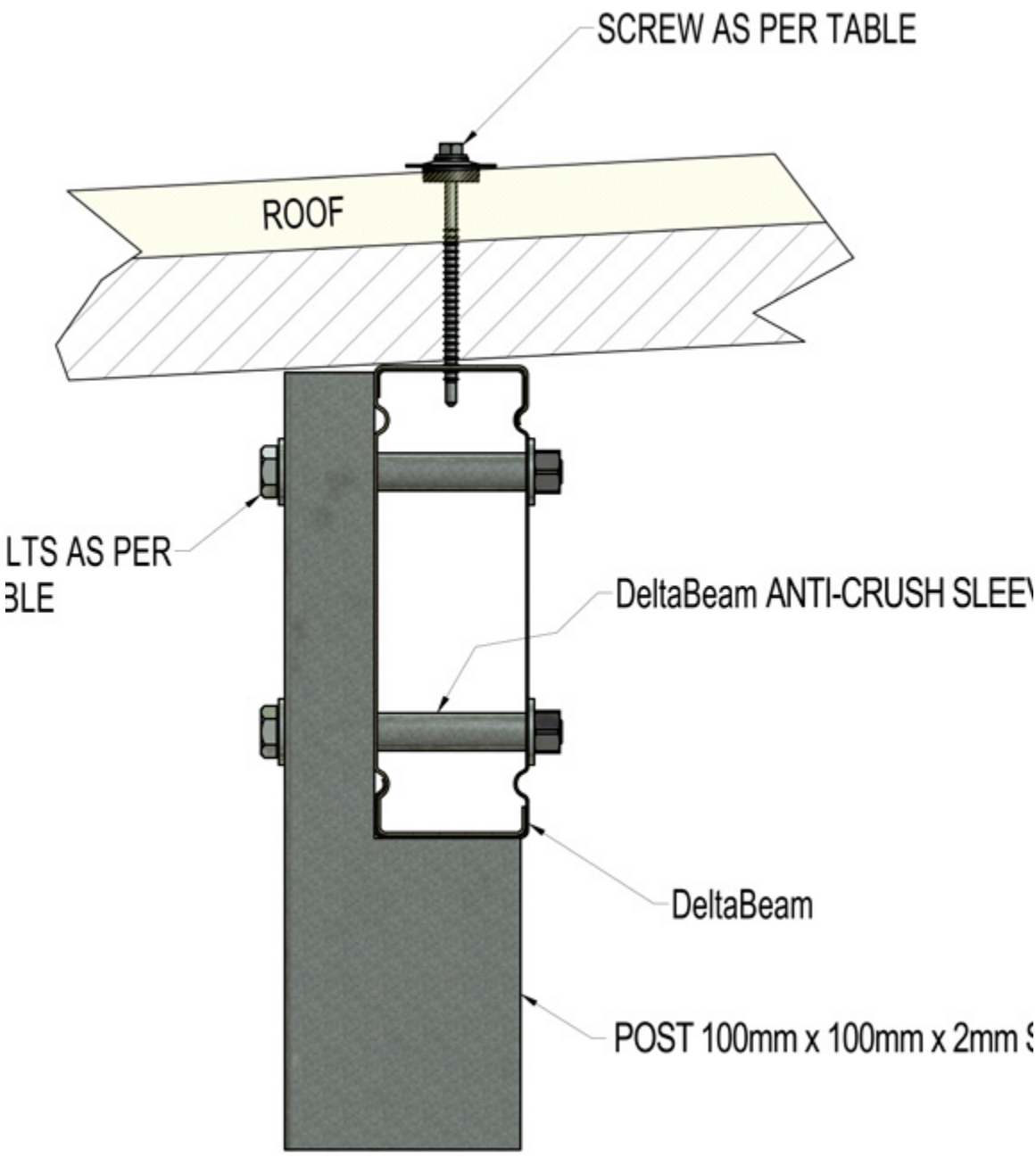


Figure A22

Steel Beam to Steel Post (see Figure A23)

Tabulated Data is in kN

Fixing Details		
Post Size (mm)	**Tek Screws 12g - 4off**	**Tek Screws 12g - 8off**
65x65x1.6 Steel	4.68	9.36
65x65x1.6 Aluminium	3.76	7.53

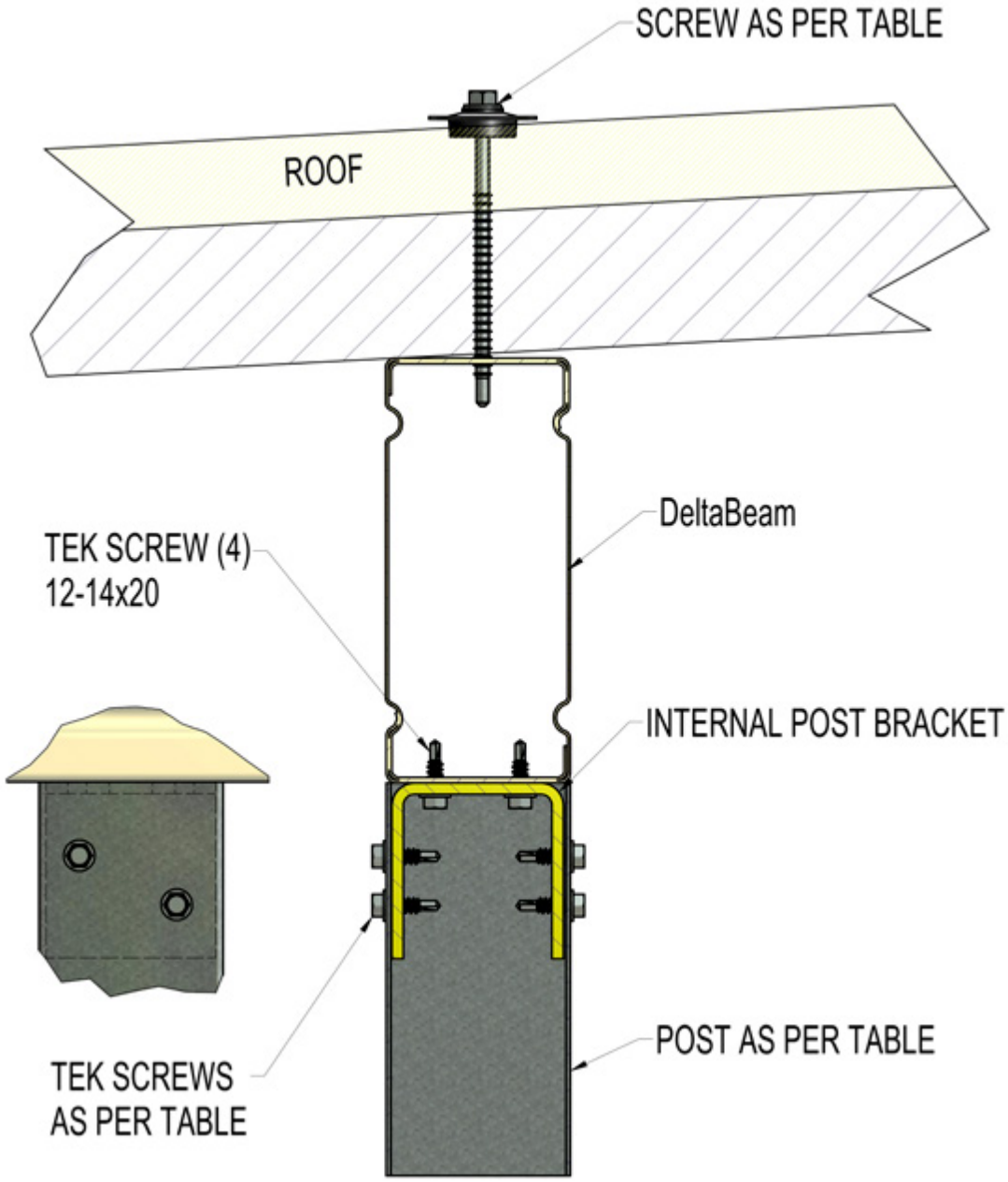


Figure A23

Steel Beam to Steel Post (see Figure A24)

Tabulated Data is in kN

Fixing Details		
Post Size (mm)	**Tek Screws 12g - 4off**	**Tek Screws 12g - 8off**
65x65x1.6 Steel	4.68	7.8
65x65x1.6 Aluminium	3.76	7.53

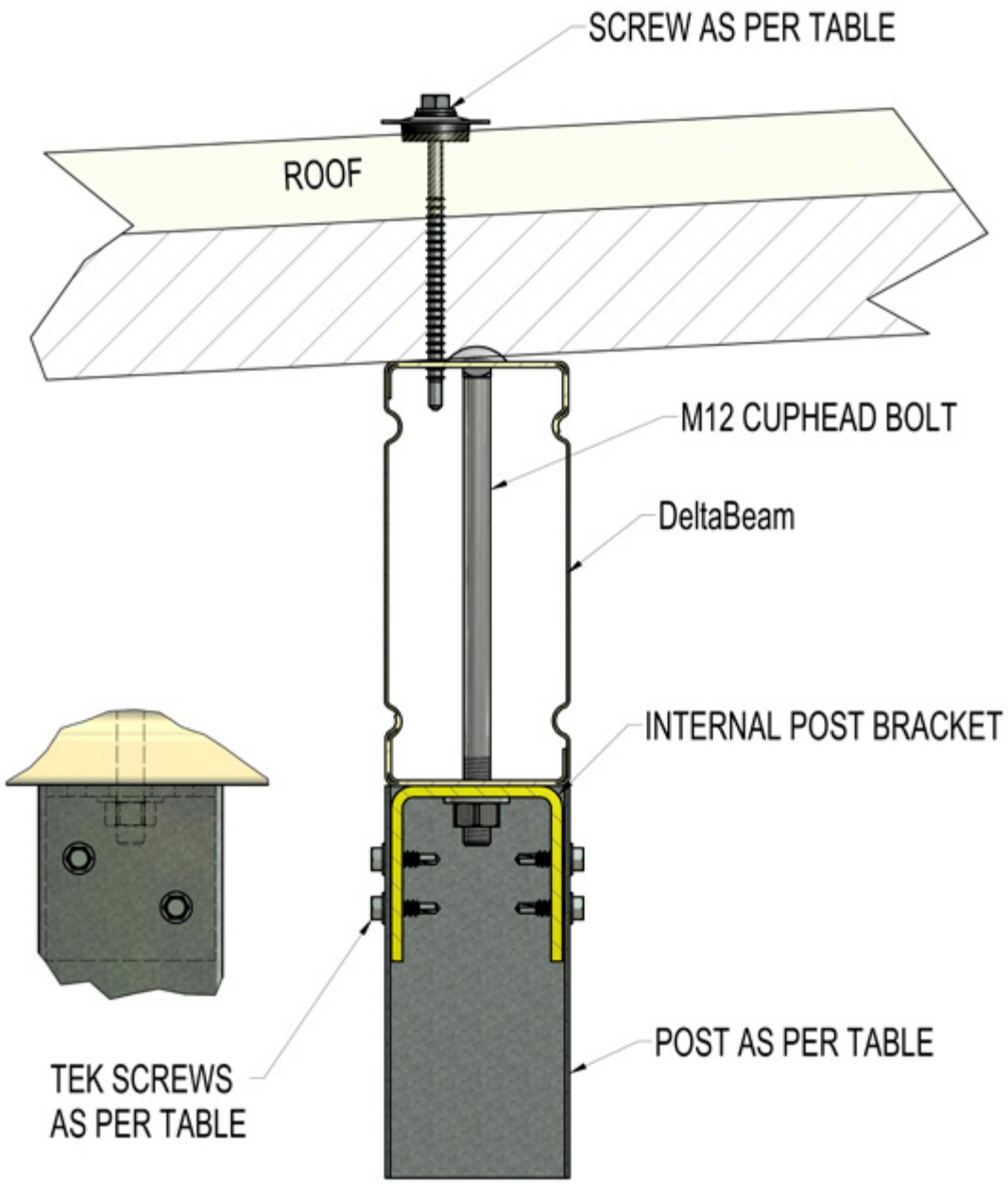


Figure A24

STEP 9 SELECT BEAM TO POST CONNECTION TYPE

Steel Beam to Steel Post (see Figure A25)		
Tabulated Data is in kN		
Fixing Details		
Post Size (mm)	**Cross Bolt - M10**	**Cross Bolt - M12**
65x65x1.6 Steel	3.6	3.6
65x65x1.6 Aluminium	3.4	3.6

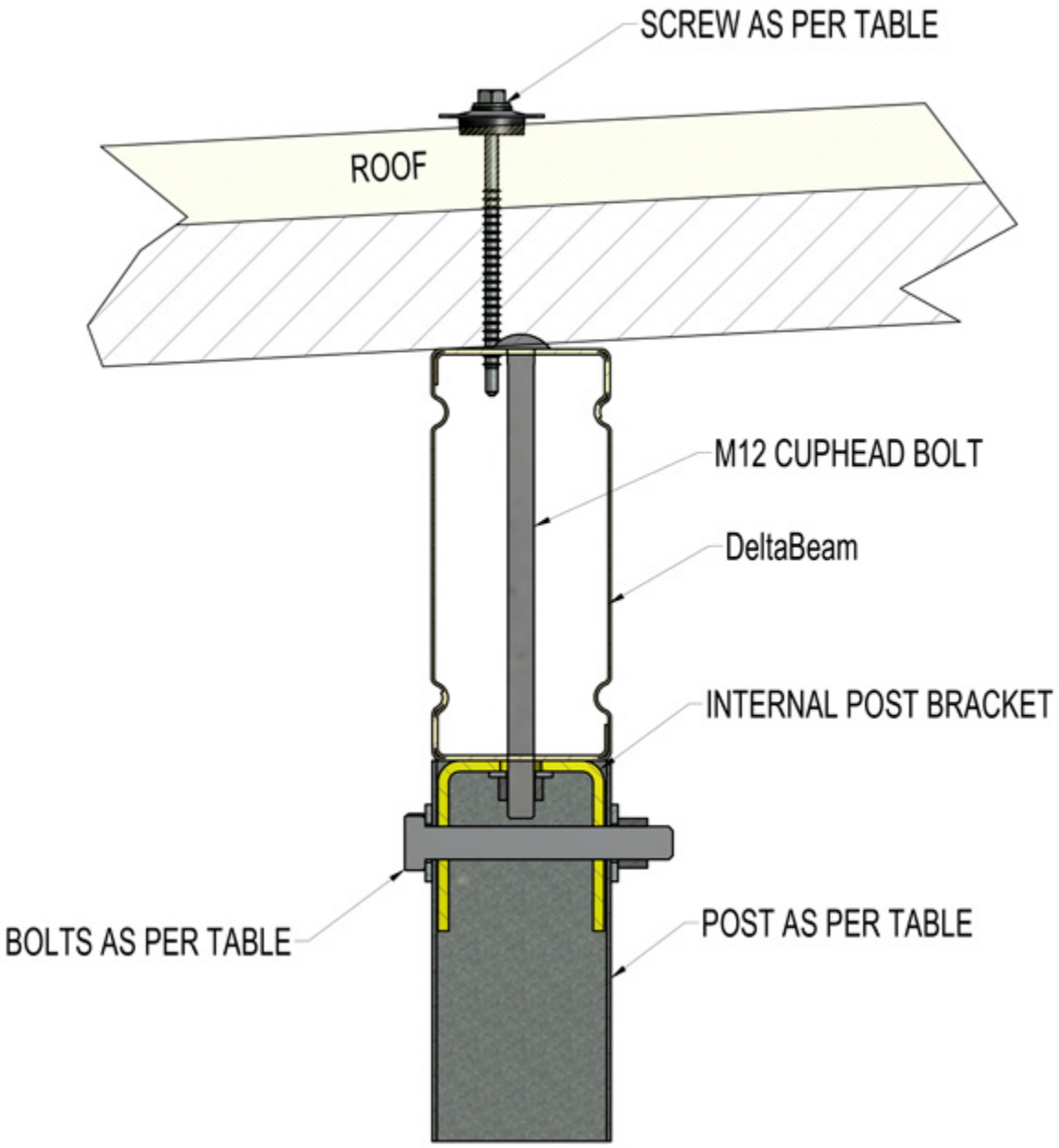


Figure A25

Roofing to Timber Fascia (see Figure A26)

Tabulated Values are the Maximum Load Width in Metres

Rafter/Truss Spacing	Wall on 1 Side			Wall on 2 or 3 Sides or Fully Enclosed		
	N1/N2	N3	N4	N1/N2	N3	N4
600mm	3.5	2.7	1.7	2.4	1.5	1.0
900mm	2.3	1.8	1.1	1.6	1.0	0.7
1200mm	1.8	1.4	0.9	1.2	0.8	0.5
600mm Stiffened	3.5	2.8	2.3	2.7	2.2	1.8
900mm Stiffened	3.5	2.8	2.3	2.7	2.2	1.5
1200mm Stiffened	3.5	2.8	2.0	2.7	1.7	1.1

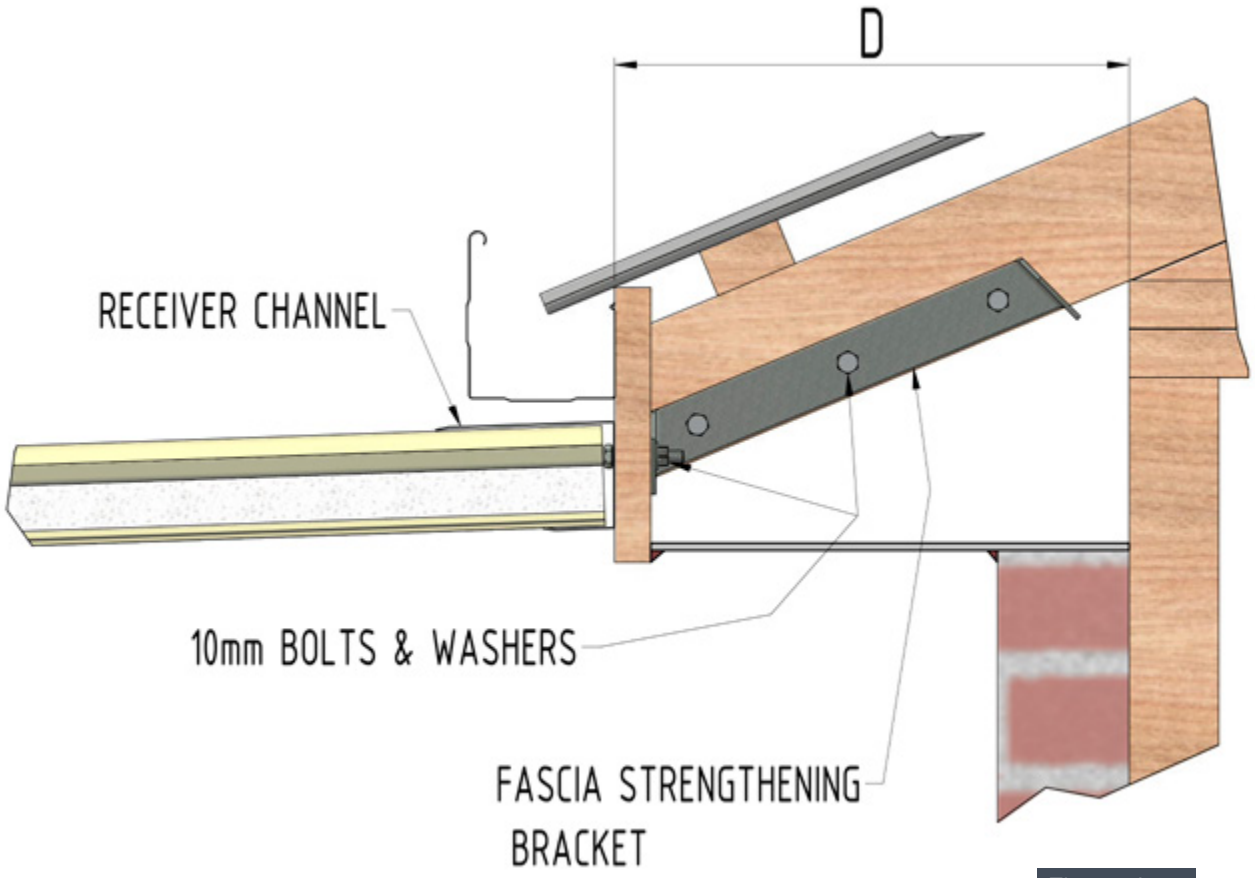


Figure A26

Rafter Strengthening:

D = 750mm maximum

Fix timber stiffener -

90 x 35 x 1500 long to rafter with
75mm long x No.14 Type 17 batten screws
@ 300 centres (not shown above).

Roofing to Metal Fascia (see Figure A27)

Tabulated Values are the Maximum Load Width in Metres

Rafter/Truss Spacing	Wall on 1 Side			Wall on 2 or 3 Sides or Fully Enclosed		
	N1/N2	N3	N4	N1/N2	N3	N4
600mm	3.5	2.7	1.7	2.4	1.5	1.0
900mm	2.3	1.8	1.1	1.6	1.0	0.7
1200mm	1.8	1.4	0.9	1.2	0.8	0.5
600mm Stiffened	3.5	2.8	2.3	2.7	2.2	1.8
900mm Stiffened	3.5	2.8	2.3	2.7	2.2	1.5
1200mm Stiffened	3.5	2.8	2.0	2.7	1.7	1.1

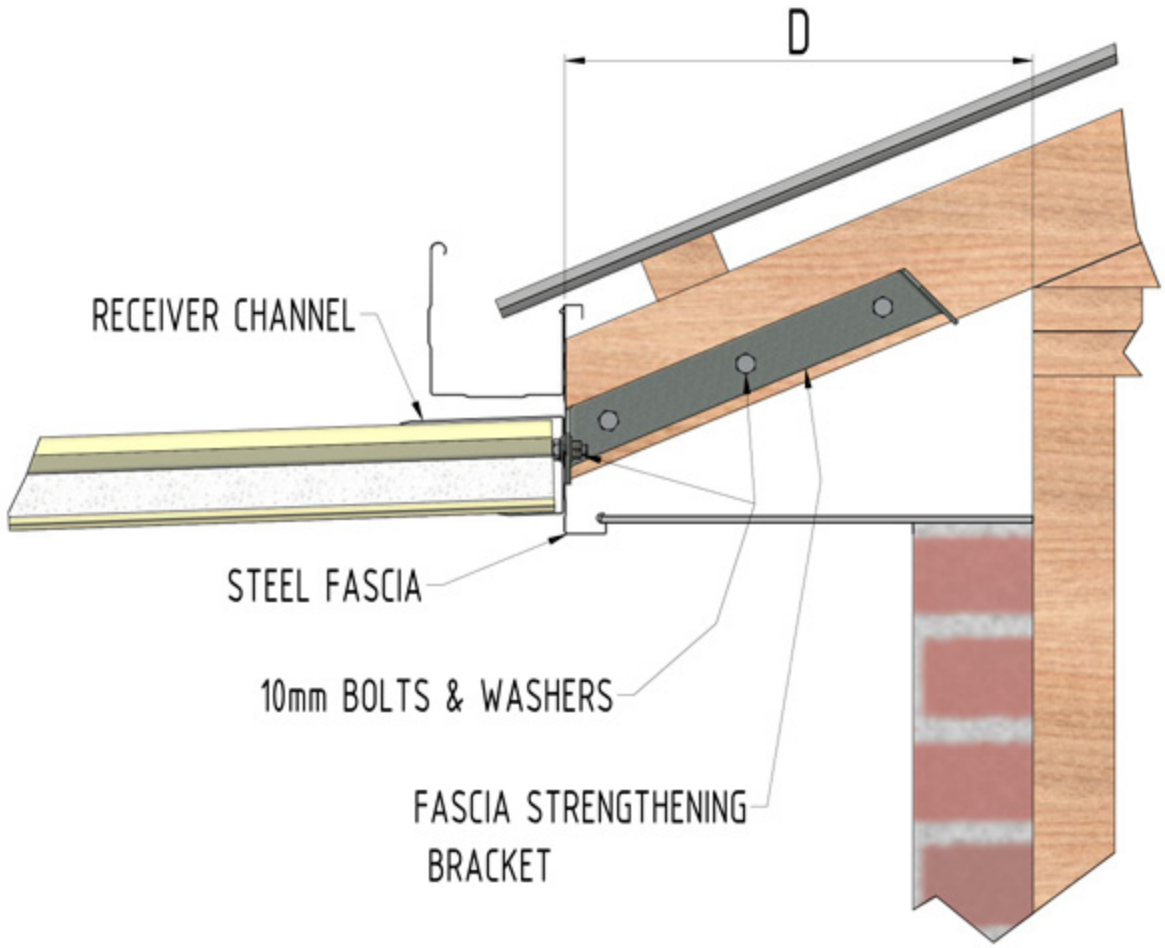


Figure A27

Rafter Strengthening:

D = 750mm maximum

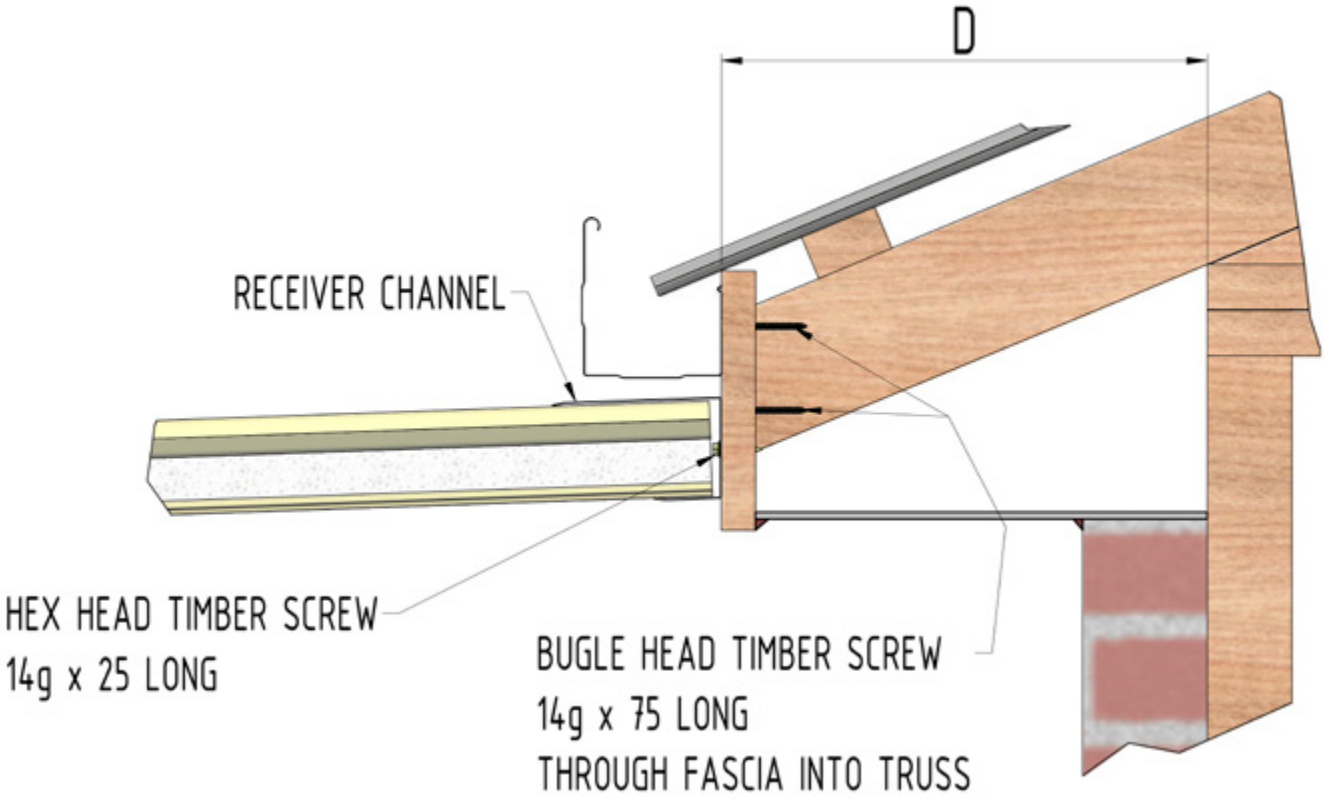
Fix timber stiffener -

90 x 35 x 1500 long to rafter with
75mm long x No.14 Type 17 batten screws
@ 300 centres (not shown above).

Roofing to Timber Fascia with Bugle Head Screw (see Figure A28)

Tabulated Values are the Maximum Load Width in Metres

Rafter/Truss Spacing	Wall on 1 Side			Wall on 2 or 3 Sides or Fully Enclosed		
	N1/N2	N3	N4	N1/N2	N3	N4
600mm	3.5	2.8	2.3	2.7	2.2	1.8
900mm	3.5	2.8	2.3	2.7	2.2	1.5
1200mm	3.5	2.8	2.0	2.7	1.7	1.1



D = 750mm maximum

Figure A28

Roofing to Masonry Wall (see Figure A29)

Tabulated Values are the Maximum Load Width in Metres

To Masonary Wall	Wall on 1 Side			Wall on 2 or 3 Sides or Fully Enclosed		
	N1/N2	N3	N4	N1/N2	N3	N4
6mm Shuredrive @300mm centres	3.5	2.6	1.7	2.3	1.4	0.9
6mm Shuredrive @200mm centres	3.5	2.8	2.3	2.7	2.0	1.3
M8 Dynabolts @400mm centres	3.5	2.8	2.3	2.7	2.2	1.8

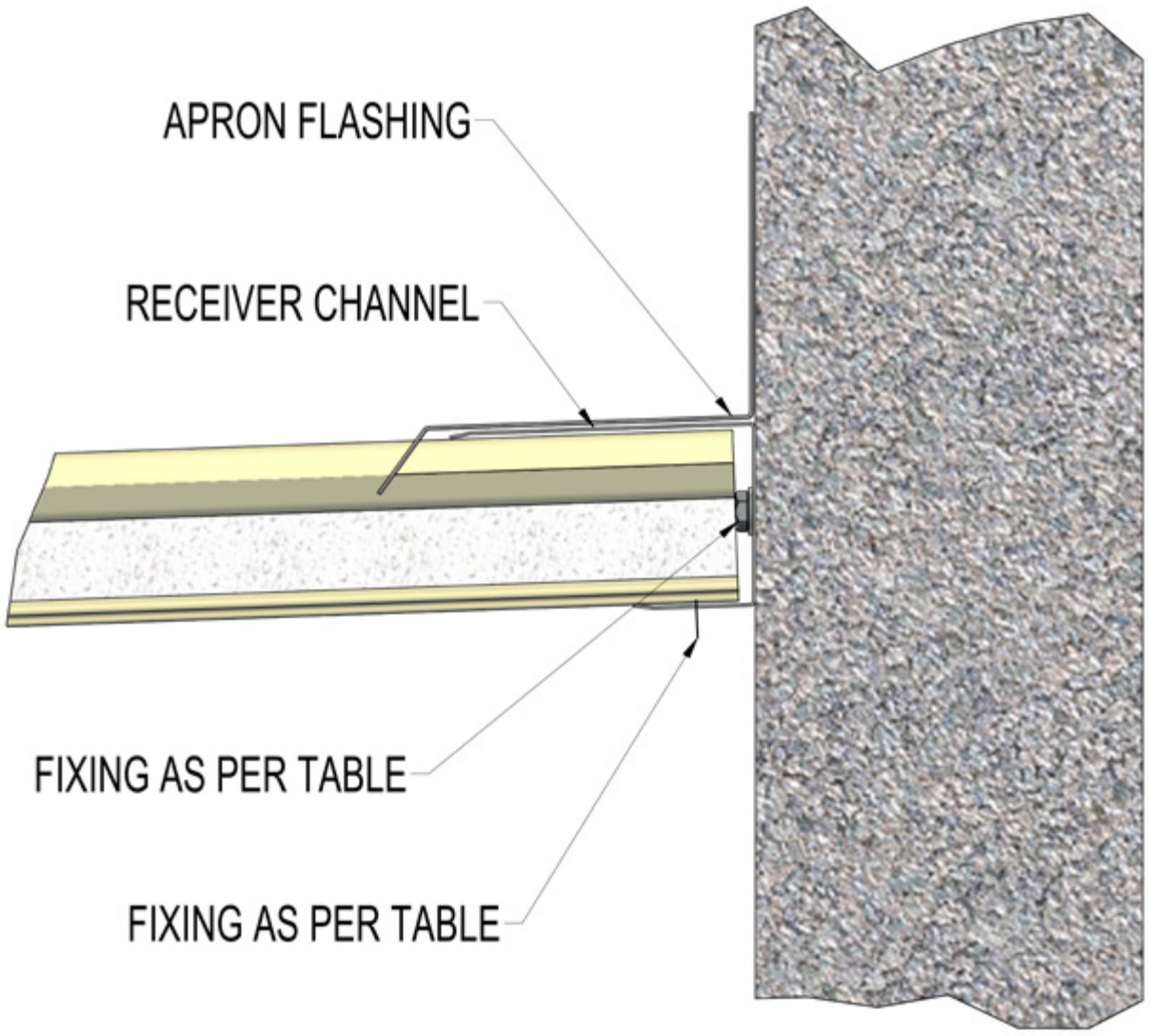


Figure A29

Roofing to Blockwork Wall (see Figure A30)

Tabulated Values are the Maximum Load Width in Metres

To Masonary Wall	Wall on 1 Side			Wall on 2 or 3 Sides or Fully Enclosed		
	N1/N2	N3	N4	N1/N2	N3	N4
6mm Shuredrive @300mm centres	3.5	2.6	1.7	2.3	1.4	0.9
6mm Shuredrive @200mm centres	3.5	2.8	2.3	2.7	2.0	1.3

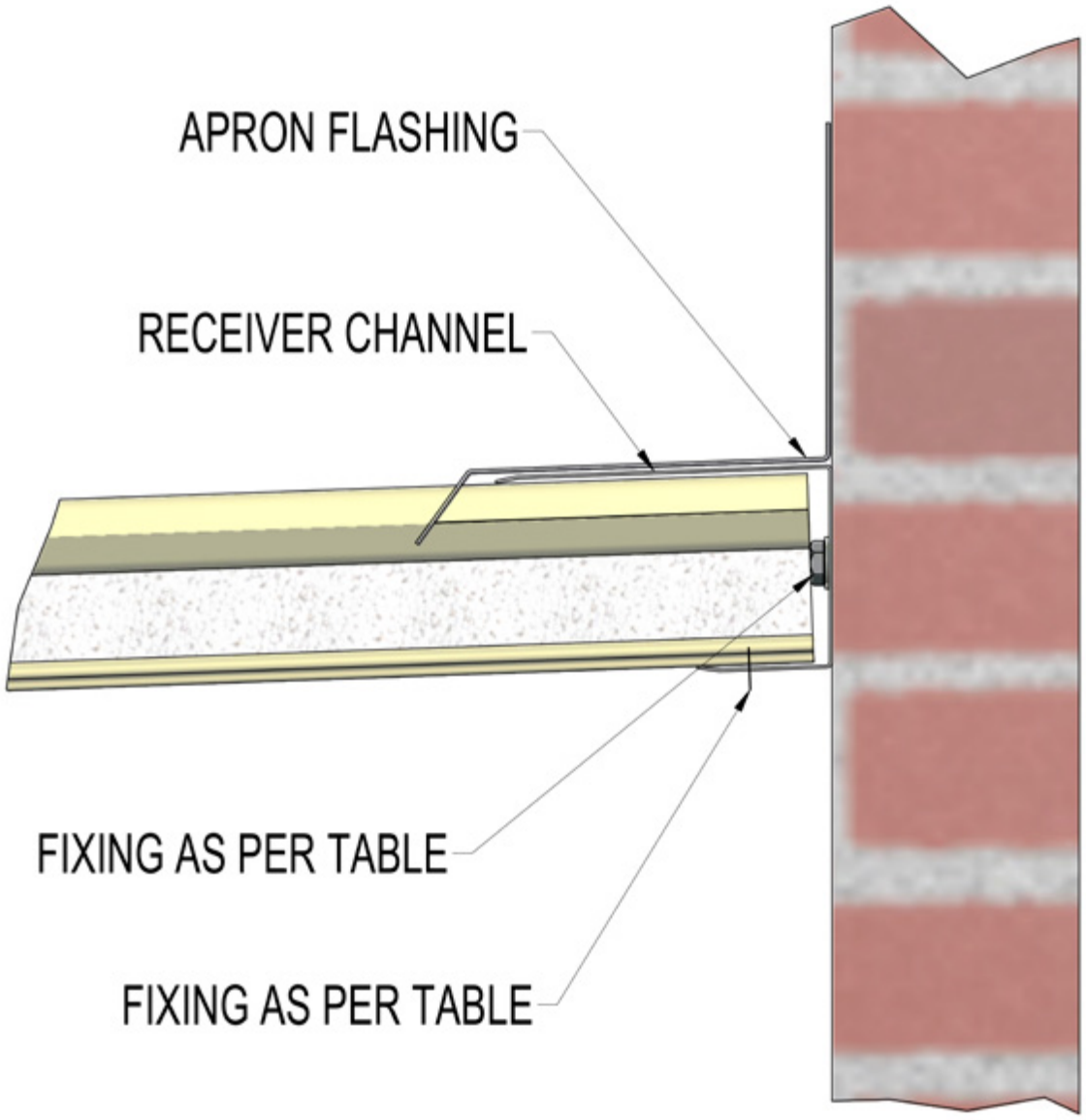


Figure A30

Flyover with Extenda Bracket (see Figure A31)

Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	DPB1002 2.5M	DELTABEAM™ - 150MM	**4**	2	ROOFEXTENDA	S300, S400 & S500
2	4	DPP5736	BEAM SPACER	**5**	2	TIMBER TRUSS	TIMBER TRUSS
3	4	M10 CUP HEAD x 90 + NUT	M10 CUP HEAD x 90 + NUT	**6**	2	HEX BOLT M10 x 90	HEX BOLT M10 x 90 + NUT

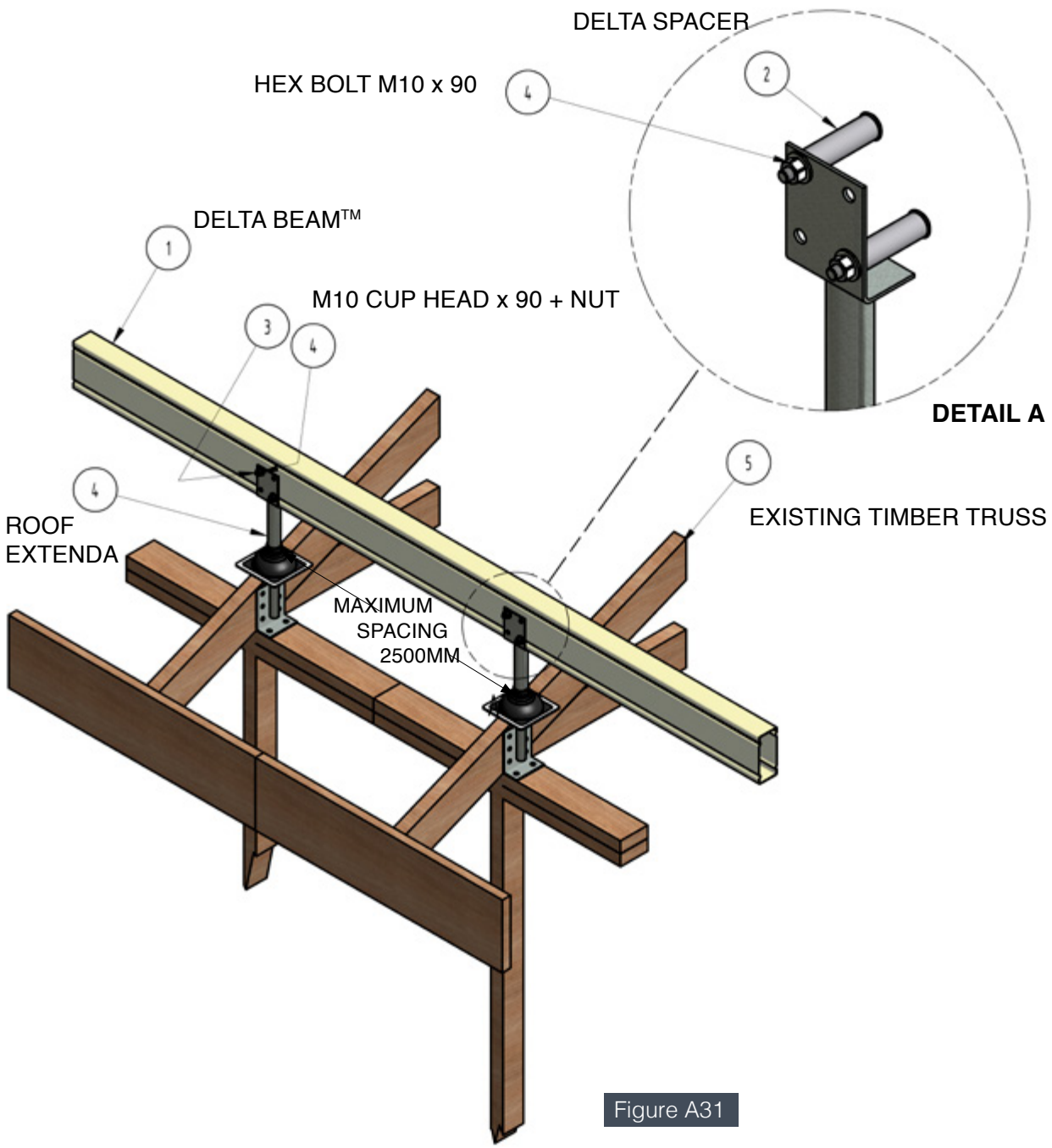


Figure A31

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Flyover with SHS Upright (See Figure A32)

Part List

ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	65x65x1.6 SHS	FLYOVER UPRIGHT SHS	6	4	DPP5736	BEAM SPACER
2	8	90064A580	TEK SCREW (SDS) 12-14x20	7	6	HEX BOLT M10x90	HEX BOLT M10x90 + NUT
3	1	DPB1002 2.5m	DELTABEAM - 150	8	6	HEXBOLT_STEEL_DIN931_DIN931	HEX-HEAD BOLT M10x70 + NUT
4	2	DPP1226-X	ADJUSTABLE BOX GUTTER BRACKET	9	2	TIMBER TRUSS WALL	TIMBER TRUSS WALL
5	2	DPP5706-P	INTERNAL POST BRACKET (SUIT 65x65x1.6)				

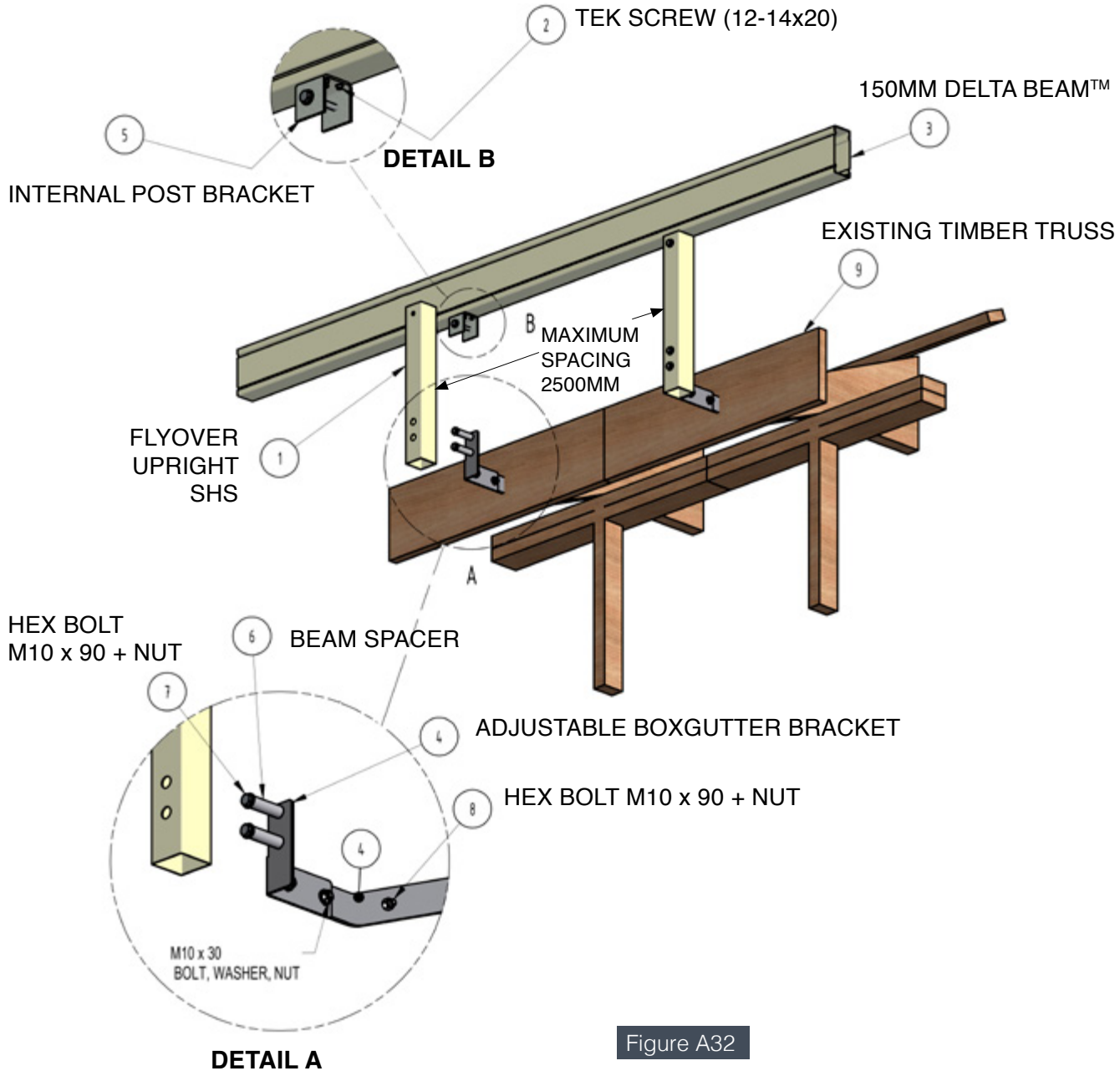

Figure A32

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a) Select the number of fixings and type required.
b) Uplift load on the Beam was calculated in Step 5.

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

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DELTA PANELS™

a) Select the number of fixings and type required.
b) Uplift load on the Beam was calculated in Step 5.

Screw Types

Main Fasteners

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

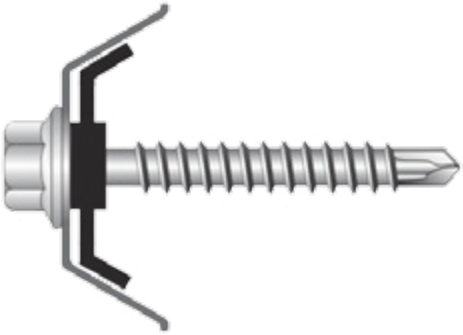
Figure A33

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

Figure A34

Cyclone Plate and Washer

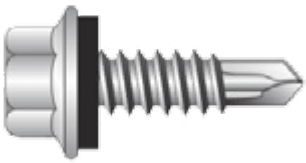
Figure A35



Secondary Fasteners

Tek M13 x 25mm - Fixing
Stitching Screw

Figure A36



DELTA PANELS™

a) Select the number of fixings and type required.
b) Uplift load on the Beam was calculated in Step 5.

Screw Selection Tables

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

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

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

The high rib overlap needs to be secured with 13X25 tek screws (or the steel screw equivalent) at 300mm on centre.

a) Select the number of fixings and type required.
b) Uplift load on the Beam was calculated in Step 5.

Screw Selection Tables

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

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

The high rib overlap needs to be secured with 13X25 tek screws (or the steel screw equivalent) at 300mm on centre.

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