

Plano-Therm®

Plano-Therm® Design Guide
To suit 0.35 W/m²K U-value
Vertically Laid Twin-Therm®



September 2008

Every effort has been made to ensure that the details included in this publication are correct at the time of printing. CA Group accepts no liability for errors included in this publication. To ensure that the products are suitable for the project refer to CA Building Products Technical Department. The information within this document remains the intellectual property of CA Group Limited and we reserve the right to amend specifications without prior notice.

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1.2	Available materials
1.3	Panel sizes and thickness
1.4	Tolerances
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2.0	Components
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Introduction

Plano-Therm® is an economic metal secret fix flat panel rain screen system. It has been designed to be simple to fix and to be suitable for use in a wide range of wall construction build ups. All of this has been achieved with no loss of visual quality and scope for design freedom, allowing the designer to create a bespoke look, without having to choose from a catalogue of standard parts. The system can be used in both landscape and portrait orientations, standard joint and bearer bond joint configurations. The system can also be used in soffit applications.

One of the unique features of the Plano-Therm® panel system is its integration with the CA Building Products Twin-Therm® wall cladding system. This allows the designer to specify a full wall construction from a single trusted source of responsibility. Plano-Therm® can also be mounted directly to a masonry wall, structural composite panels and stud wall constructions

The Plano-Therm® system has been fully tested successfully to CWCT 'Schedule A', complete with window interface to 600Pa, as follows.

- 1) Air Leakage – Infiltration CWCT Section 5 Para 5.1.1
- 2) Air Leakage – Exfiltration CWCT Section 5 Para 5.1.2
- 3) Water Penetration – Dynamic Pressure CWCT Section 7 Para 5.2.1
- 4) Wind Resistance – Serviceability CWCT Section 11 Para 5.3.1
- 5) Repeat Air Leakage – Infiltration CWCT Section 5 Para 5.1.1
- 6) Repeat Air Leakage – Exfiltration CWCT Section 5 Para 5.1.2
- 7) Repeat Water Penetration – Dynamic Pressure CWCT Section 7 Para 5.2.1
- 8) Wind Resistance – Safety CWCT Section 12 Para 5.3.2

The system achieved a remarkable 0.17m³/hr/m² air leakage rate at 600Pa.

Note- To achieve the specialist requirements of the above, please request a copy of the –'Plano-Therm® CWCT - Specialist fixing notes for Twin Therm®

Please note reference should be made to the relevant Twin-Therm® technical documents and publications, when considering the use of a combined Plano-Therm® Twin-Therm® system.

Materials

Plano-Therm® is available in the following range of finishes and materials.

Aluminium

Polyester powder coated to a wide range of standard colours and gloss levels

Coil coated aluminium in PVDF and Duranar finish to a wide range of standard colours including metallic's, simulated patinated copper and simulated brushed Zinc. Please see available separate colour chart ²

Anodised finish in Natural, Gold, Bronze, Black and Blue Grey from Analok Range

Textured Aluminium in any of the above finishes

Stainless Steel

Grade 316 stainless steel in a wide variety of brushed and polished finishes

Textured stainless steel

Acid treated coloured stainless steel

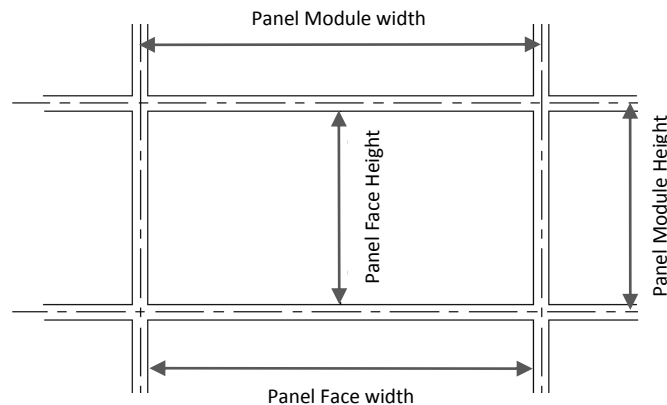
Corten A Steel

Weathering steel in self finish³

Notes- ² Minimum quantity restrictions apply of 500m² minimum. ³ System modifications are required for this option to control internal run-off

Panel sizes

Panels are available up to 4000mm long and up to 1000mm high (module size). Sizes outside of these may be available upon special request. Panel module differs from panel face size as below. Any mixture of panel module can be mixed and matched on a project for design freedom.



Metal thickness

The material thickness will be a direct function of the material and panel vertical height specified, as per the below table. The length of panel does not affect this.

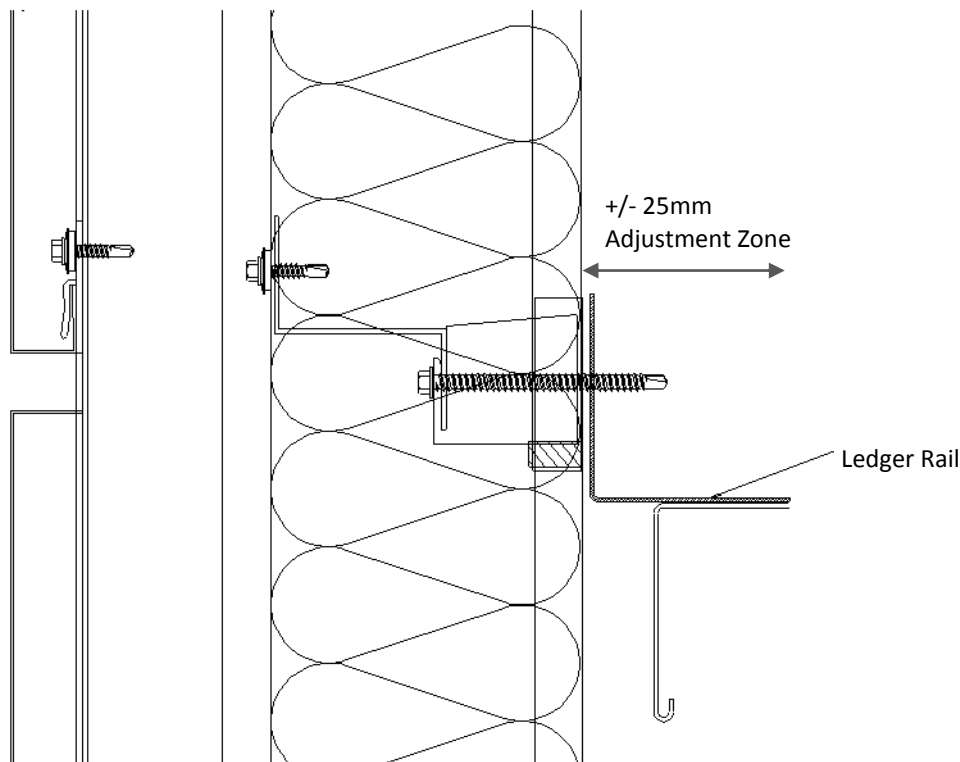
Material	Panel Vertical Module (mm) / Material Thickness							
	200	400	500	600	700	800	900	1000
Aluminium	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0
Stainless Steel	1.6	1.6	1.6	1.6	1.6	1.6	2.0	2.0
Corten A Steel	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0

-The above green shaded cells are where mechanical stiffening needs to be introduced to the panel reverse to limit panel deflection to L/90, where L is the distance between supports, a maximum negative load of 1.2kN/m² and panels in multispans condition with max centres between supports of 800mm. Steelwork Cladding rails at 1500mm max centres

Tolerances

The Plano-Therm® panel and support system does not have the ability to be adjusted to accommodate variances in the back wall construction it is to be affixed to. Thus it is imperative that the backing wall construction/support rails be specified to a tolerance of +/- 2mm from a theoretical true vertical plane.

If this is not possible then an adjustable rail system will need to be incorporated. Where Plano-Therm® is to be used in conjunction with the Twin-Therm® System, an additional ledger rail system can be utilised as below to ensure this tolerance can be achieved, subject to agreement with the steelwork supplier.



System Depth

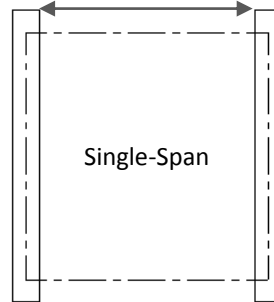
Build Up	System Depth
Plano-Therm® and Support Tracks only	89mm
Plano-Therm® Mounted to 0.35 U-Value Twin-Therm®	199mm
Plano-Therm® Mounted to 0.30 U-Value Twin-Therm®	225mm
Plano-Therm® Mounted to 0.25 U-Value Twin-Therm®	249mm

Note—above system depth is taken from the front of the Plano-Therm® panel to the face of the cladding rail supplied by others, excluding +/- 25mm adjustment zone.

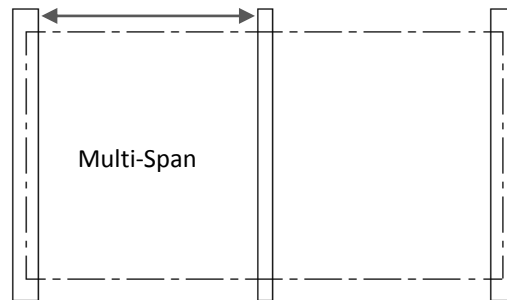
Support Centres

Therma-Track spacing both intermediate and at joint centres should **not** exceed **800mm** in a multi-span condition, and **500mm** in a single span condition, see below. **This is based on a cladding rail spacing of 1500mm maximum.**

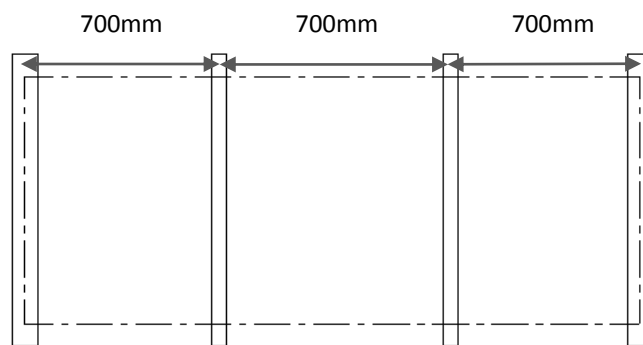
Max Support Rail Spacing 500mm



Max Support Rail Spacing 800mm



Example Panel Length 2100mm



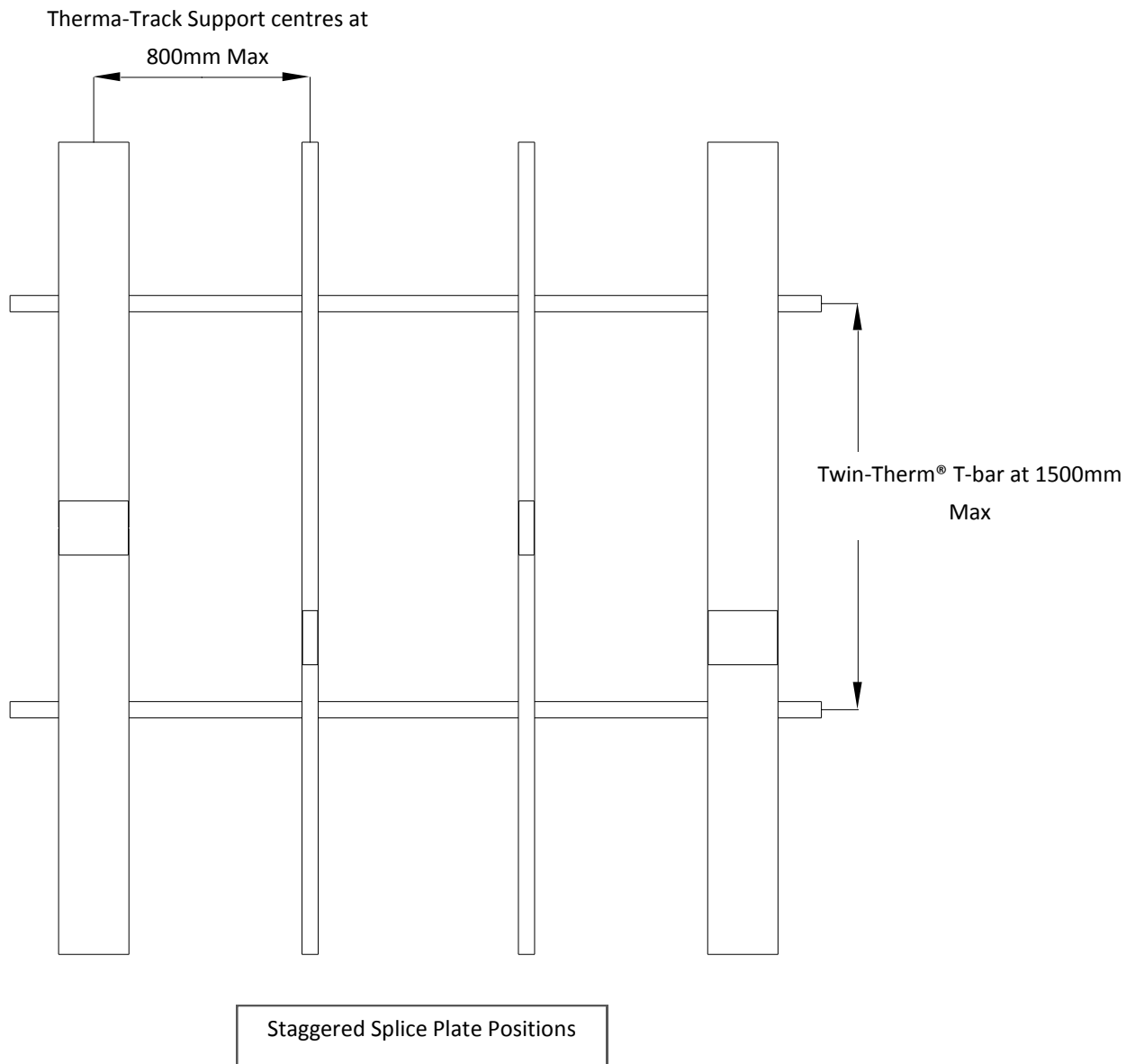
Distance Between Support Rails 700mm

Note-Above rail spacing's are based on a max loading of 1.2kN/m². Please refer to C.A. Group technical department for guidance for loadings in excess of this figure.

Rail Positioning

Therma-Tracks should be splice fixed when mounted on the Twin-Therm® system at a spacer rail position only, using a matching splice plate. Adjoining rails should be spliced in a staggered pattern as far as possible (See illustration below).

See standard detail for splice plate fixing. Where rails are to be mounted to a continuously supporting backing medium, splice plates may be omitted.



Panel Head Fixing

To allow for thermal expansion, panel should incorporate a factory punched fixing holes and slots to coincide with support centres. The centre-point of the panel is to be dead fixed, and expansion allowed equally to either side via use of slotted fixing holes. Slot lengths to be sized as follows

$$\text{Slot length (mm)} = ((\text{Panel length in m} \div 2) \times 2.5) + \text{Fixing } \varnothing$$

Example

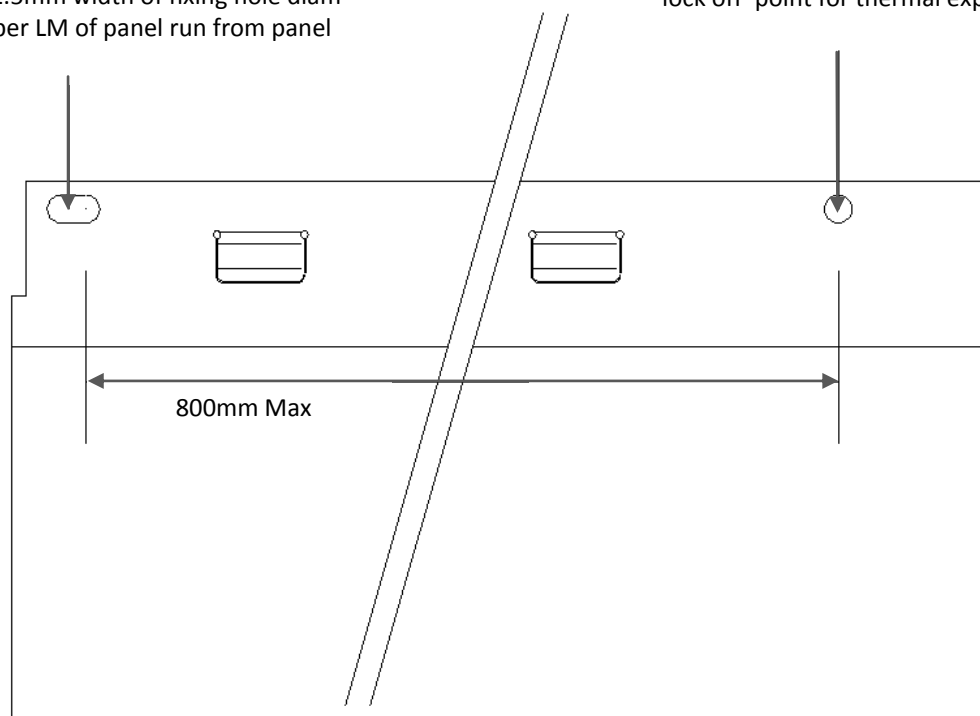
Panel length (Horz module) 3m

Fixing size \varnothing 5.5 mm

∴ $(3 \div 2) \times 2.5 = 3.75 + 5.5 = 9.25\text{mm}$ long slot required

Other fixing holes to be factory punched slots at +2.5mm width of fixing hole diam required per LM of panel run from panel centre

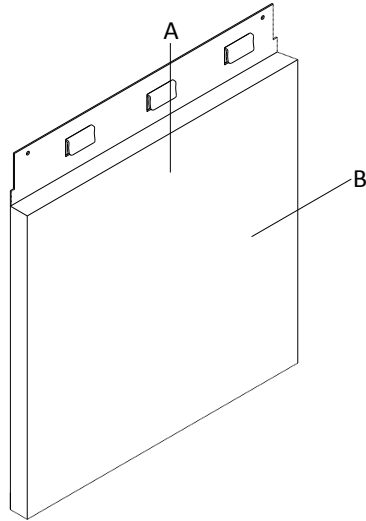
Centre hole of panel to be blind fixed as 'lock off' point for thermal expansion



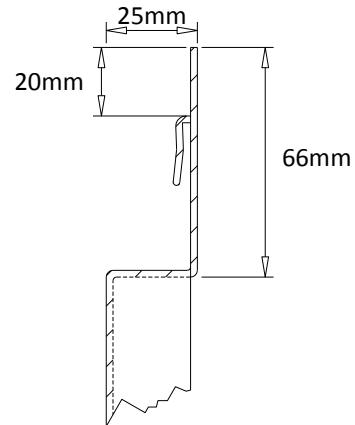
System Components

- 2.1 Plano-Therm® Panel
- 2.2 Alternative Base Panels
- 2.3 Drip Starter Panel
- 2.4 Therma-Tracks
- 2.5 CA LT 17 1000S
- 2.6 T-bar 60W
- 2.7 T-block 50
- 2.8 TQ111W Insulation
- 2.9 Component Fixings

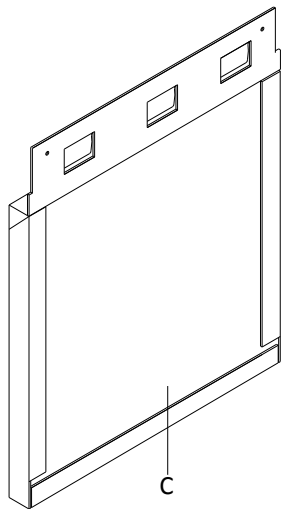
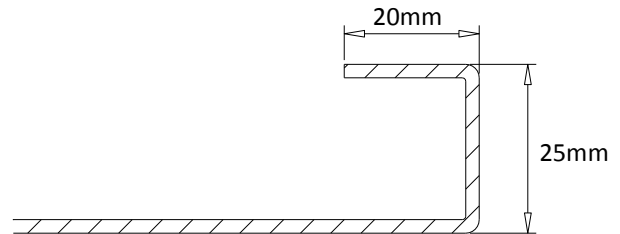
System Components—Plano-Therm® Panel



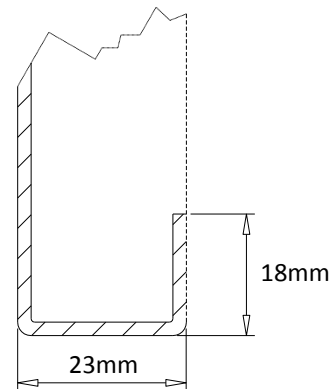
Section A



Section B

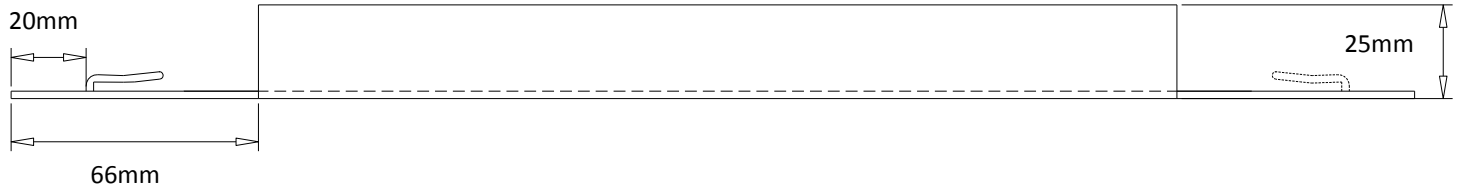


Section C



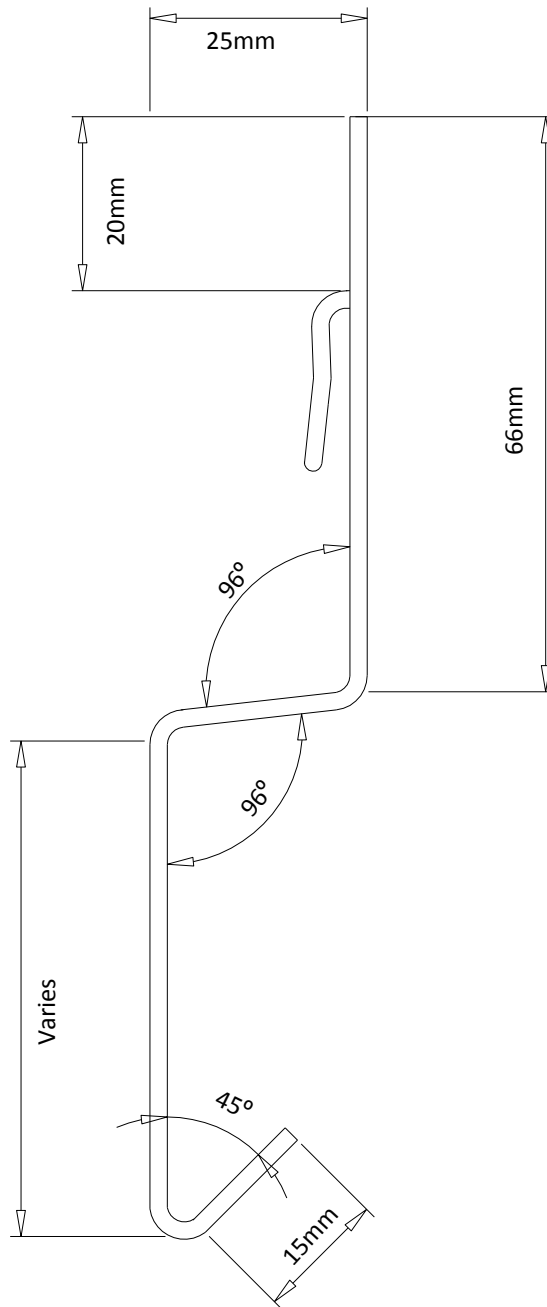
Note-All above dimensions are based on 2mm thick material

System Components—Alternative base panels

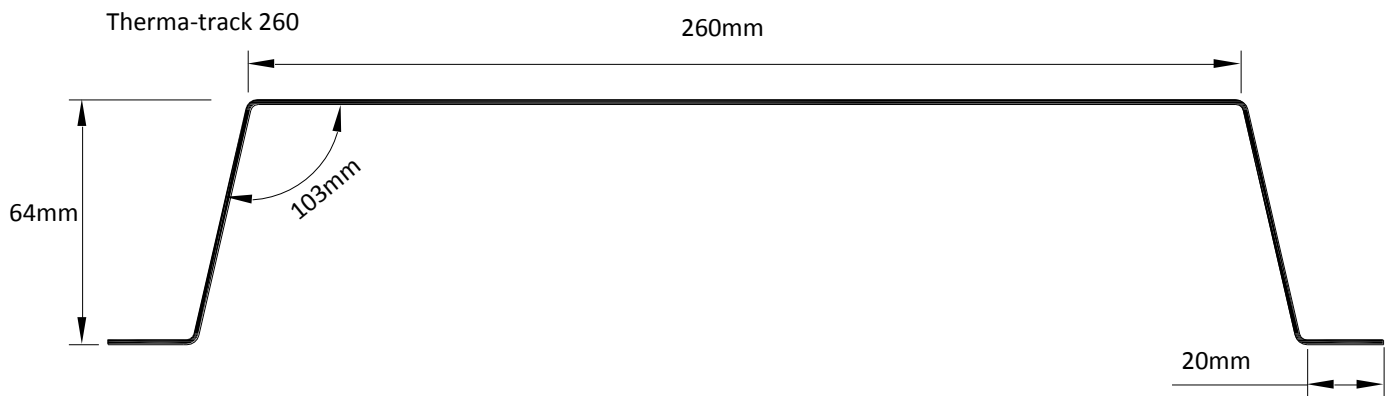


Note-All above dimensions are based on 2mm thick material

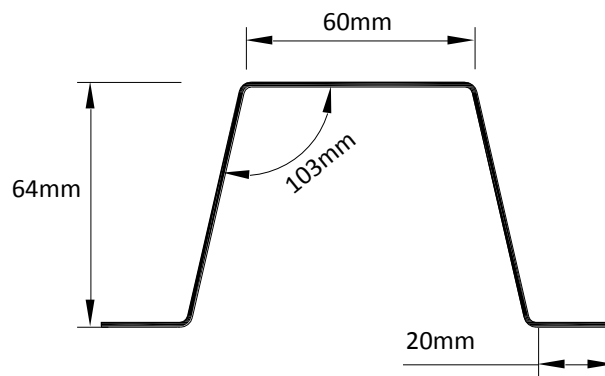
System Components—Drip Starter Panel



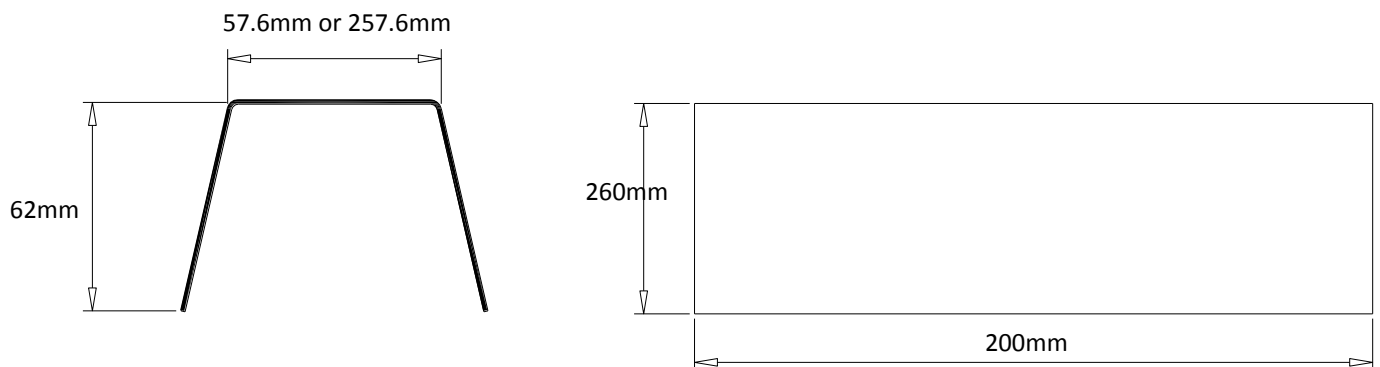
System Components—Support Tracks



Therma-track 60



Splice Plate



Therma-track 260 Material Options-

1.2mm Z45 Galv Steel PPC Coated

- 1.2mm Thick Galv Steel Membrane Coated

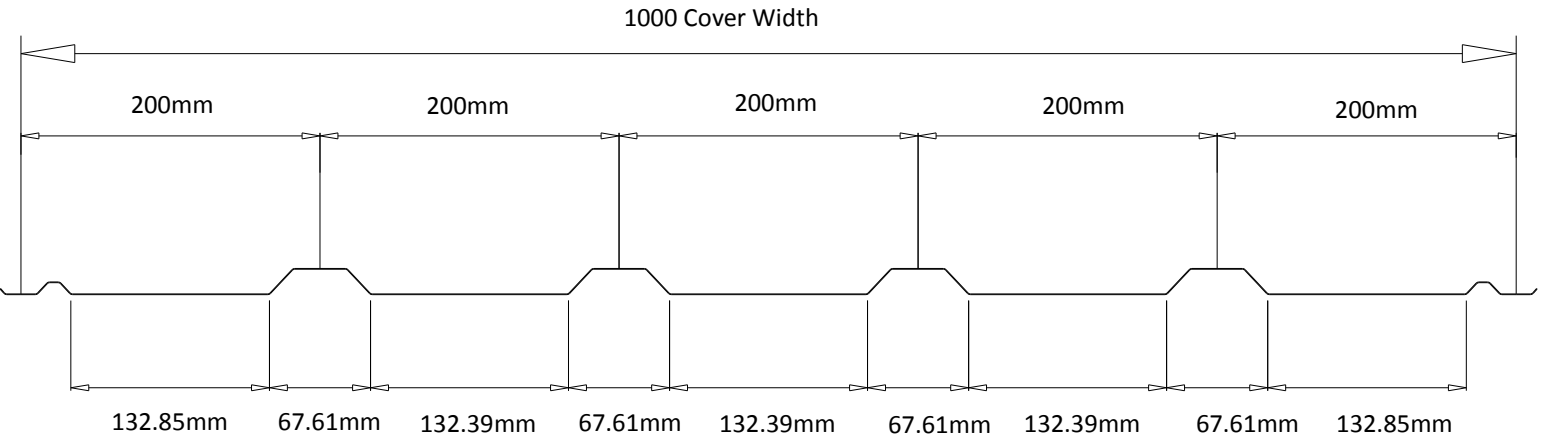
Therma-track 60 Support Material

- 1.2mm Z45 Galv Steel

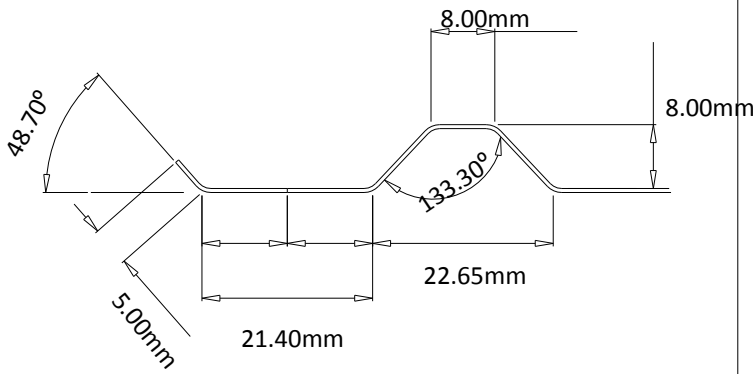
Splice Plate

- To be Fixed With 2no SSC28/16 Fixings on Either Side of Joint

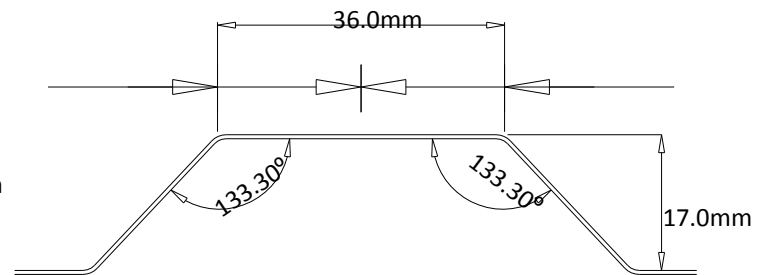
System Components—CA LT 17 1000S



Outboard Edge Detail

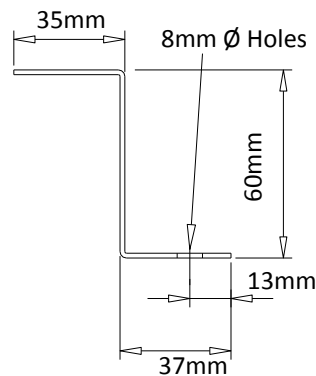
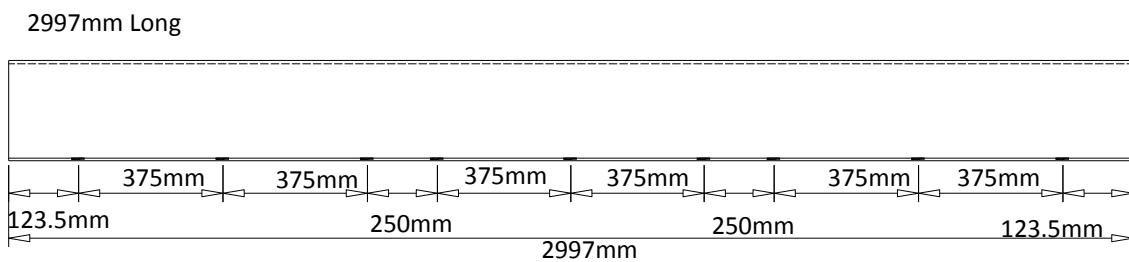
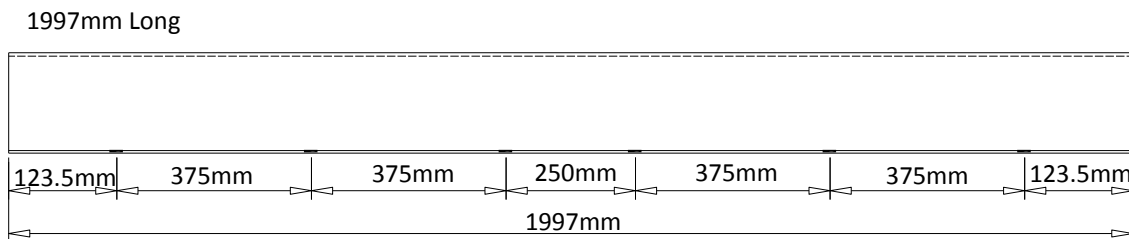
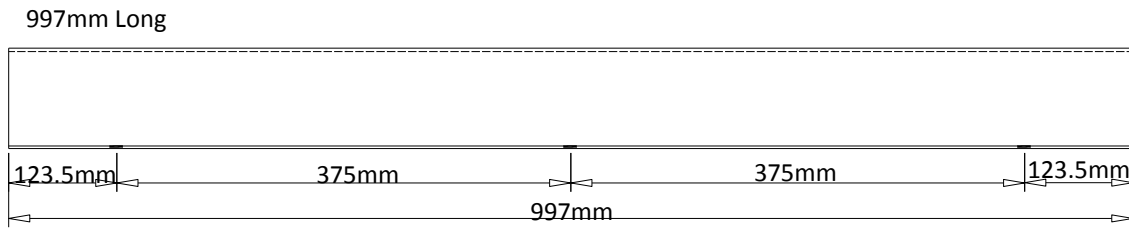


Centre Flute Detail



Material Information—0.4mm Thick Steel

System Components—T-bar 60W

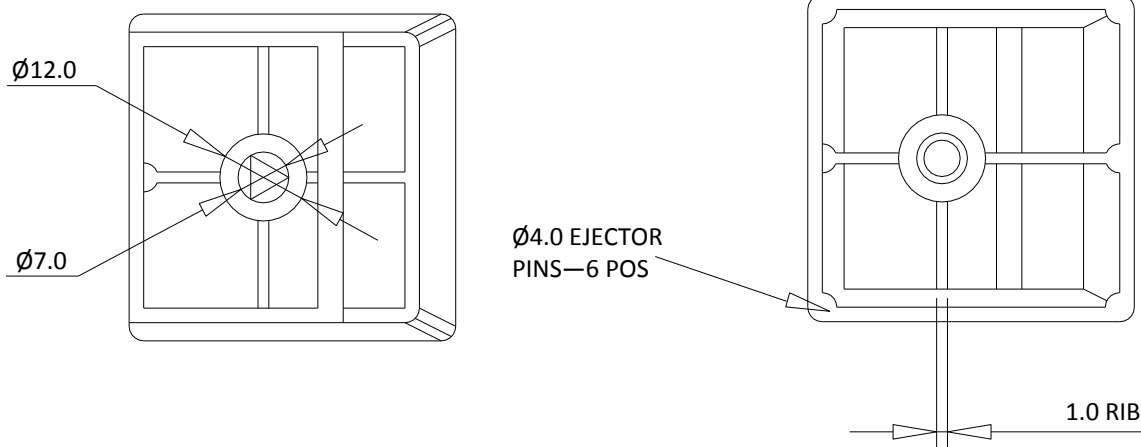
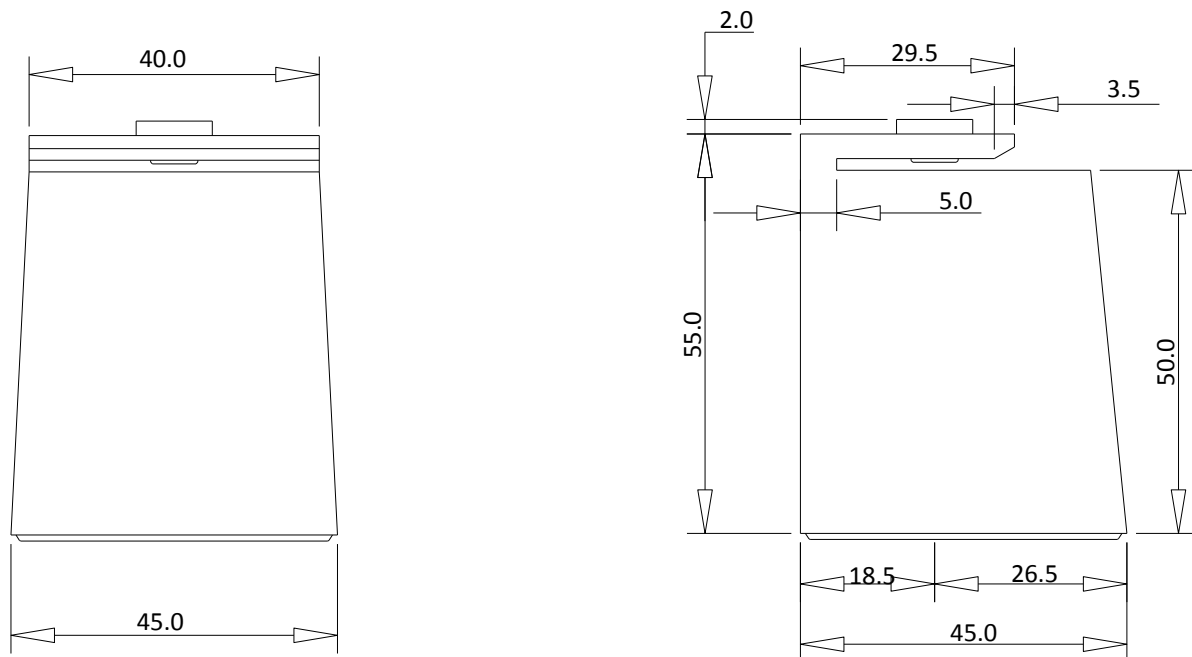


1.5mm Thick Galv Steel Z35 FE E350 G

Minimum Yield Strength - 350N/mm²

Minimum Tensile Strength - 420N/mm²

System Components—T-block 50



Material code:- co-polymer polypropylene black. melt 8-15 or equivalent.

Max regrind addition @ 10%.

Shipping length:- 58mm

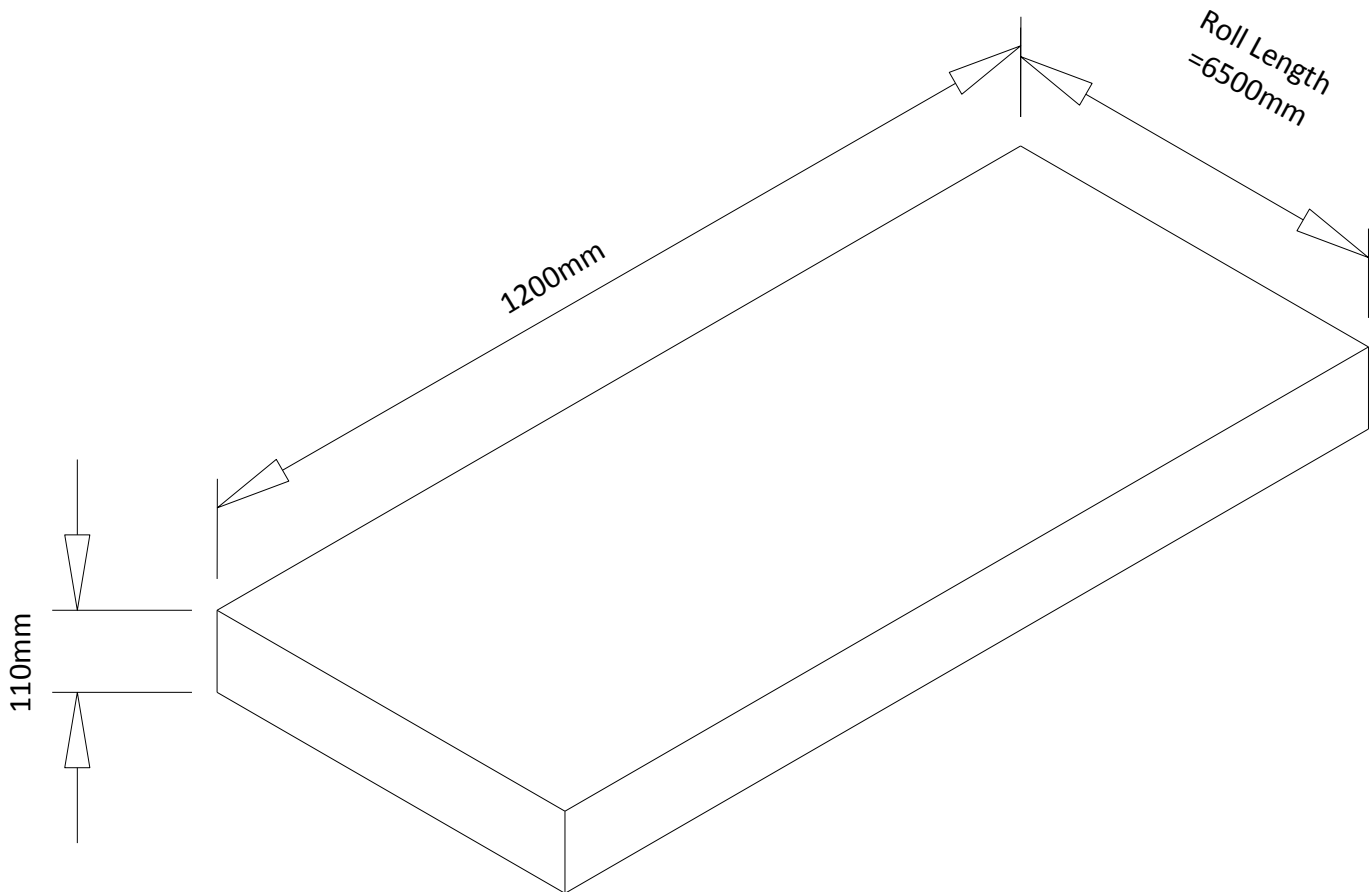
Tolerance unless stated otherwise

- Whole Dimensions ± 0.4

(in accordance with BS 308)

-Angles $\pm 0^{\circ} 30'$

System Components—TQ111W Insulation

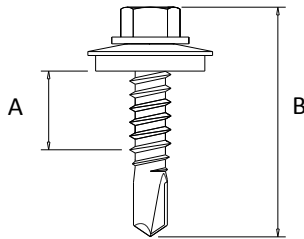


Therma-quilt TQ111W Insulation (factory compressed from 160mm to 110mm) to suit Twin-Therm® wall cladding to achieve 0.35 U-Value to suit CA LT 17 1000S liner panel assembly

Under no circumstances is this to be amended or changed without the approval of CA Building Products technical department

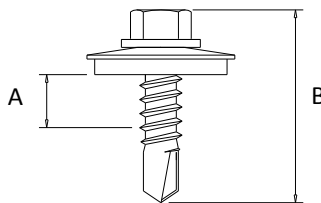
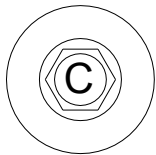
System Components—Component Fixings

1-SSC28/16



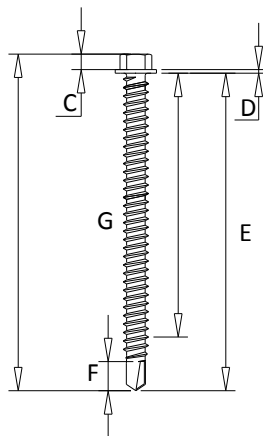
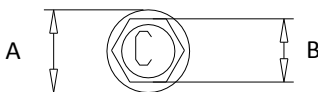
Dim Ref	Size (mm)
A	10
B	29

2- TSC20G19



Dim Ref	Size (mm)
A	5
B	25

3- TTC81



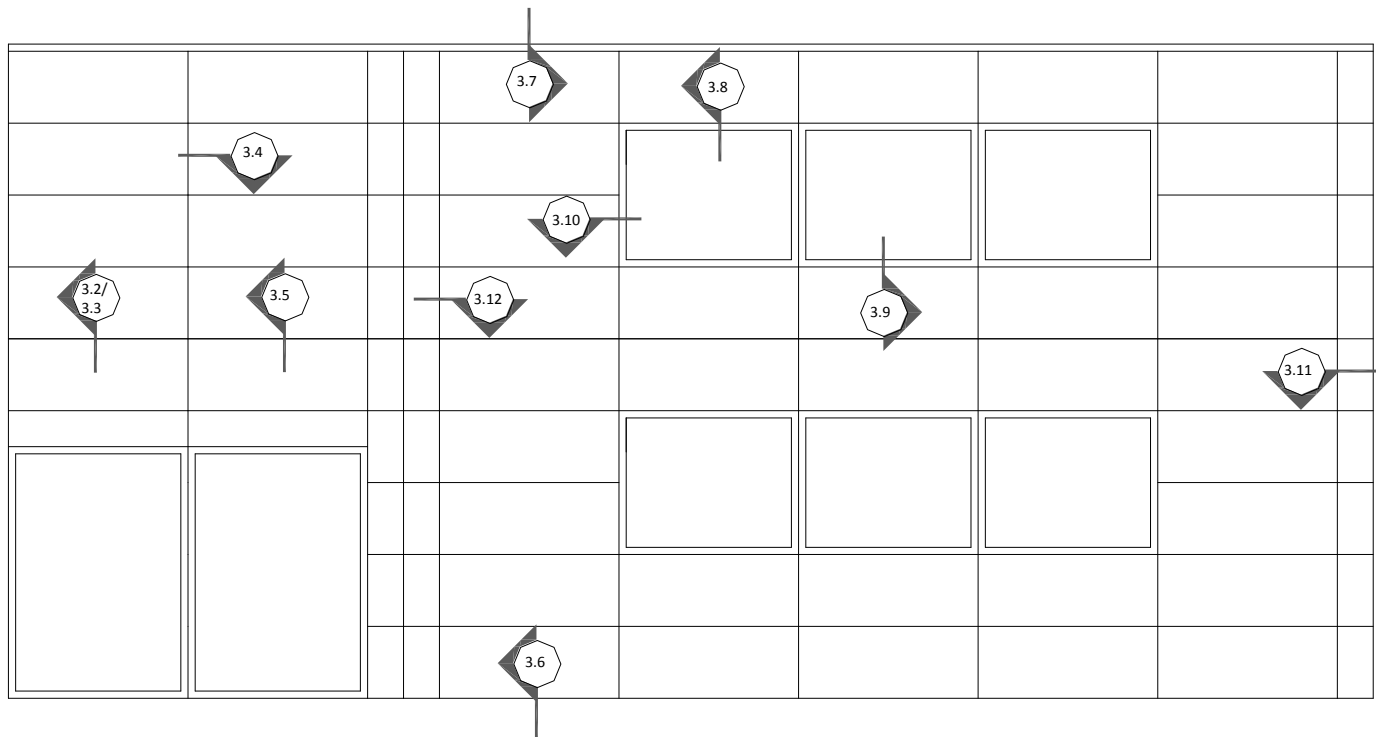
Dim Ref	Min. Size	Max. Size
A	10.2	10.9
B	7.8	7.9
C	4.3	4.7
D	0.9	1.3
E	81.0	81.5
F	12.1	12.7
G	6.1	6.25
Point dia (no 2 Point)	5.27	5.33

Reference SSC28/16 - Stainless steel fastener threadform No 12-14 TPI lead to be 1.5 x pitch, along with 16mm ϕ stainless steel and neoprene washer

TSC20G19 - Carbon steel fastener threadform No 12 - 14 TPI lead to be 1.5 x pitch, complete with 19mm ϕ Galvanised steel and neoprene washer

Reference TTC81: Carbon steel fastener threadform No 14 - 14 TPI

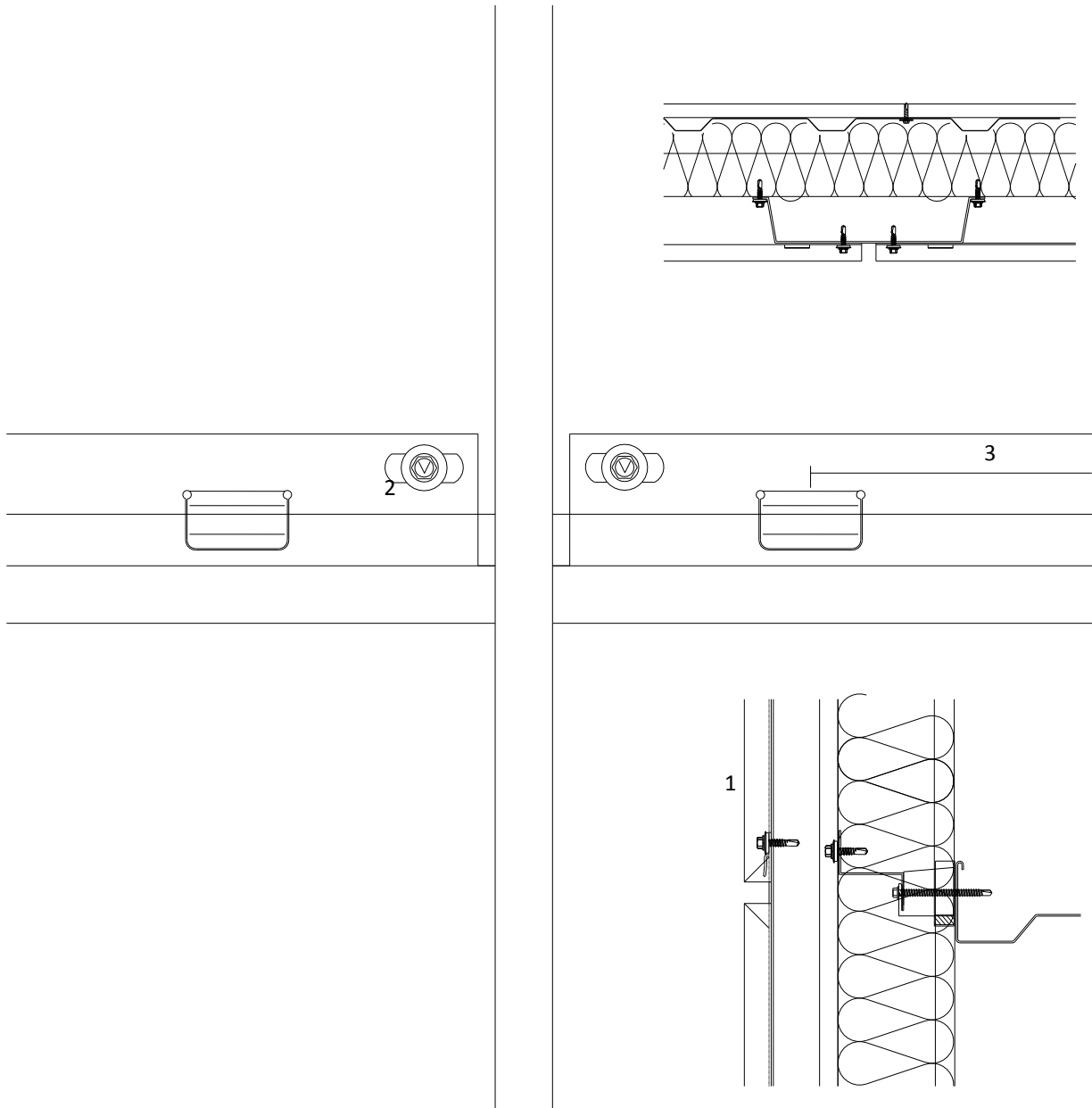
Standard System Elevation—Horizontal Panel Layout



Horizontal Panel Layout	3.1	Cross joint elevation
	3.2	Horizontal junction detail
	3.3	Horizontal junction detail with splice plate
	3.4	Vertical junction detail
	3.5	Intermediate vertical support detail
	3.6	Drip detail one / Drip detail two
	3.7	Parapet detail one / Drip detail two
	3.8	Window head detail
	3.9	Window cill detail
	3.10	Window jamb detail
	3.11	External corner detail
	3.12	Internal corner detail

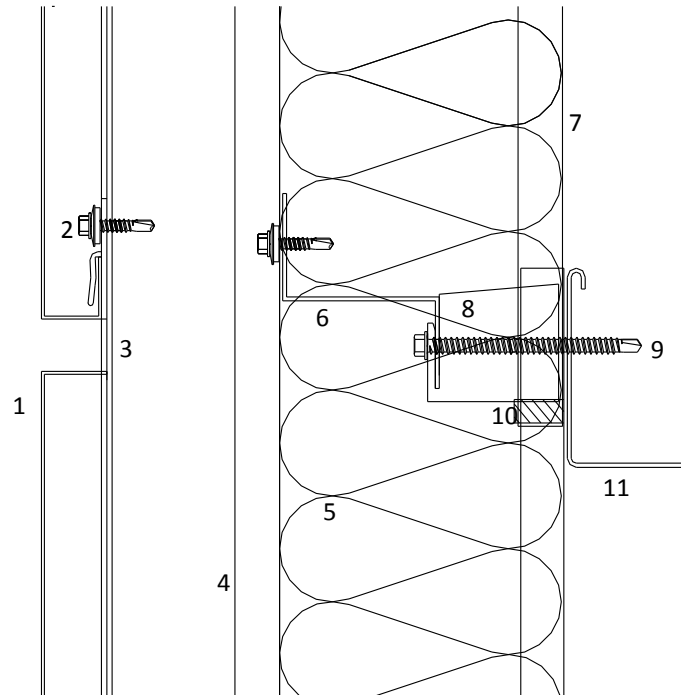
Note—All drawings are based Plano-Therm® Mounted on to Twin-Therm® to suit 0.35W/m²K U-Value

Cross Joint elevation—Horizontal Panel Layout



- 1– Plano-Therm® Panel
- 2– SSC28/16 Stainless steel fixing
- 3– 100mm Clip centres

Horizontal Joint—Horizontal Panel Layout



Plano-Therm® Components

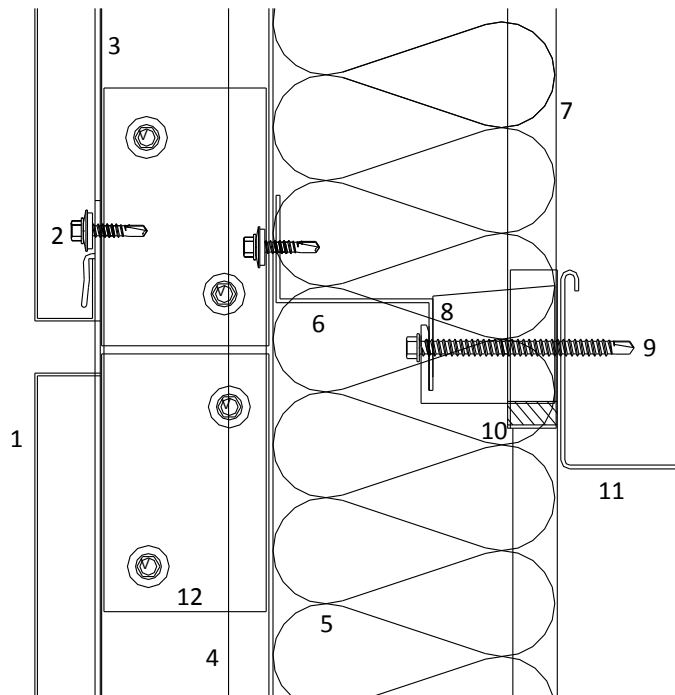
- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50
- 9-TTC81 Fastener

- 10-T-strip 9x3 sealant
- 11-Wall rail by others

Horizontal Joint With Splice Plate—Horizontal Panel Layout



Plano-Therm® Components

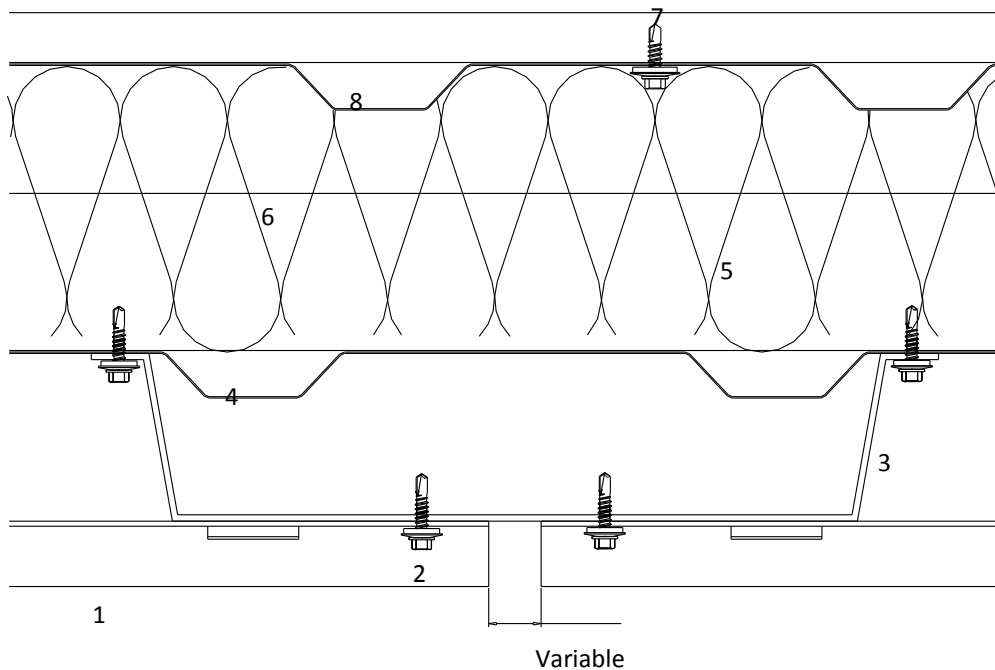
- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50
- 9-TTC81 Fastener

- 10-T-strip 9x3 sealant
- 11-Wall rail by others
- 12-Splice Plate

Vertical Joint—Horizontal Panel Layout



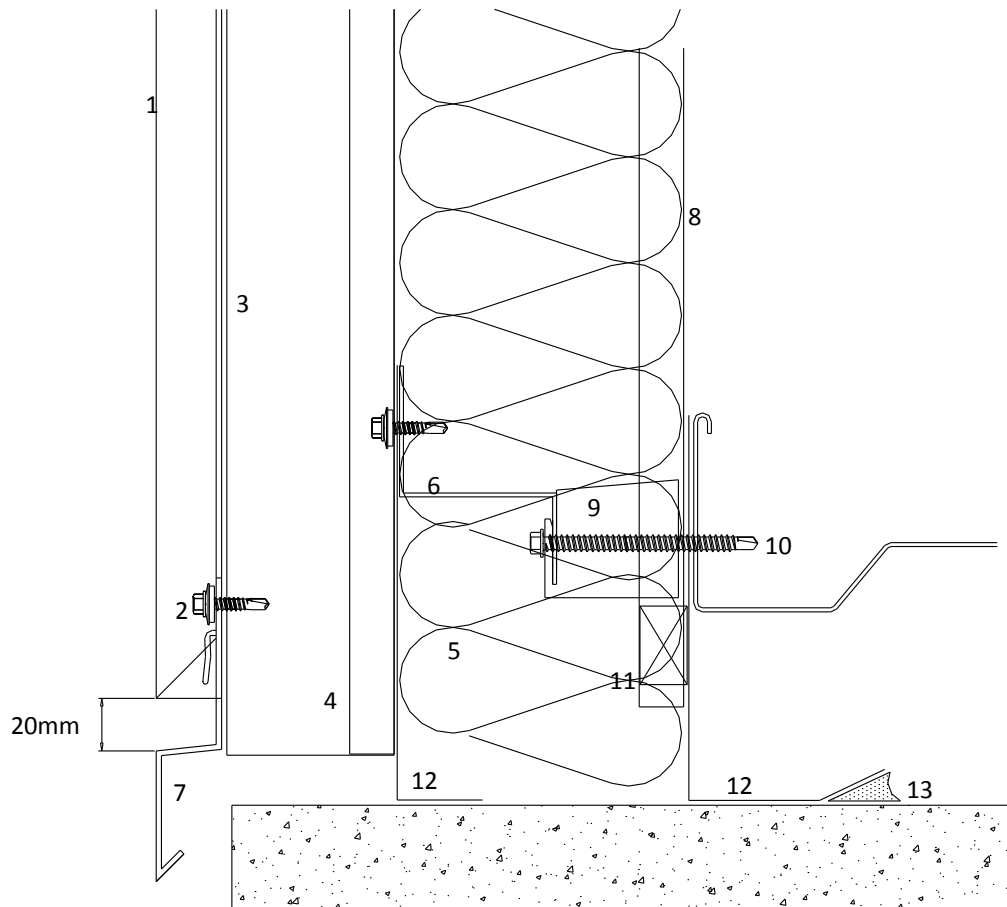
Plano-Therm® Components

- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-TSC20G19 Liner panel fixing
- 8-CA LT 17 1000S

Drip Detail One—Horizontal Panel Layout



Plano-Therm® Components

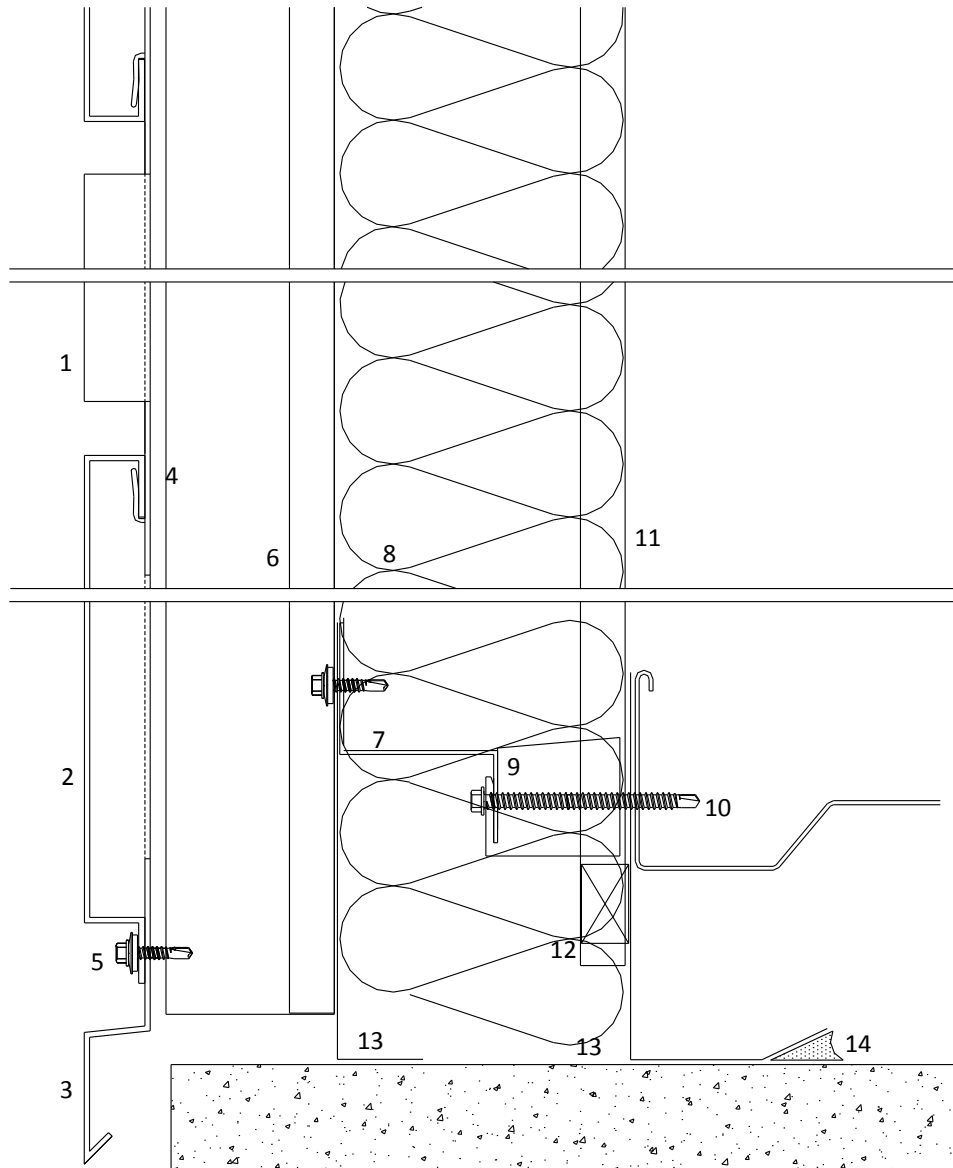
- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-Drip starter panel
- 8-CA LT 17 1000S
- 9-T-block 50

- 10-TTC81 fastener
- 11-Sealed filler
- 12-Closure flashing
- 13-Air seal

Drip Detail Two—Horizontal Panel Layout



Plano-Therm® Components

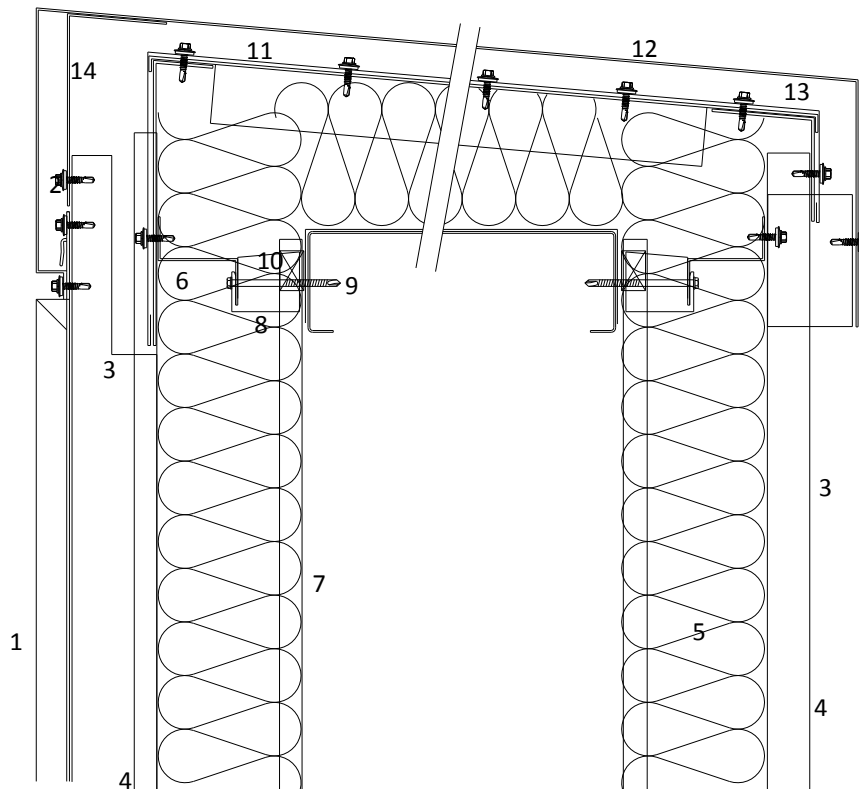
- 1-Double ended starter Panel
- 2-Removable base panel
- 3-Drip Flashing
- 4-Therma Track 260
- 5-SSC28/16 Stainless steel fixing

Twin-Therm® Components

- 6-External Twin-Therm Sheet
- 7-T-bar 60W
- 8-TQ111W Insulation
- 9-T-block 50
- 10-TTC81 Fastener

- 11-CA LT 17 1000S
- 12-Sealed filler
- 13-Closure flashing
- 14-Air seal

Parapet Detail One—Horizontal Panel Layout



Plano-Therm® Components

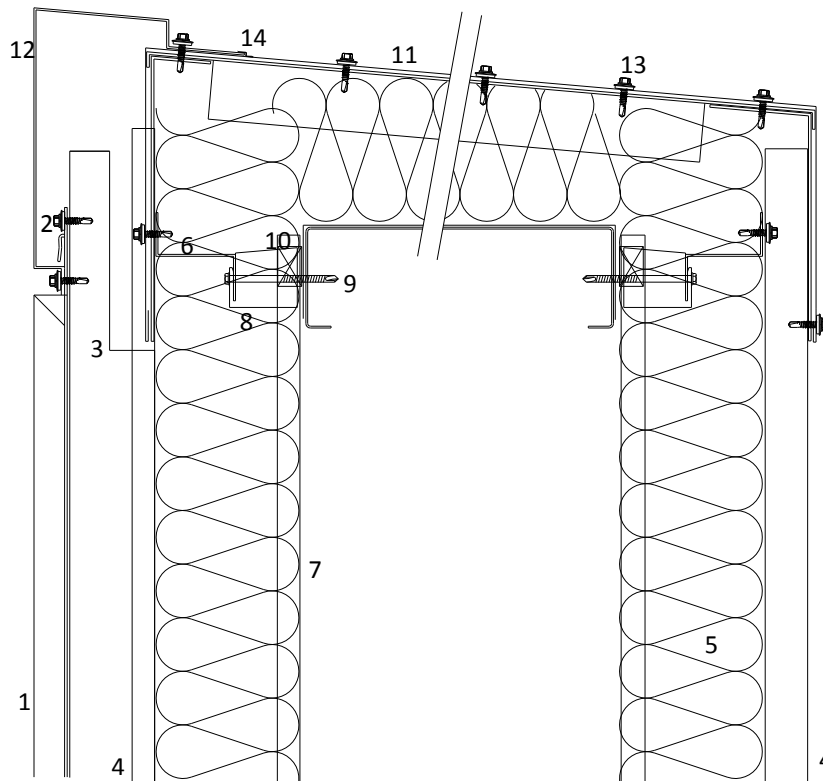
- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Notched Therma-Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50
- 9-TTC81 Fastener

- 10-Sealed profile filler
- 11-Parapet capping support
- 12-Plano-Therm® parapet capping
- 13-CSSS23/16 stitcher
- 14-Support angles

Parapet Detail Two—Horizontal Panel Layout



Plano-Therm® Components

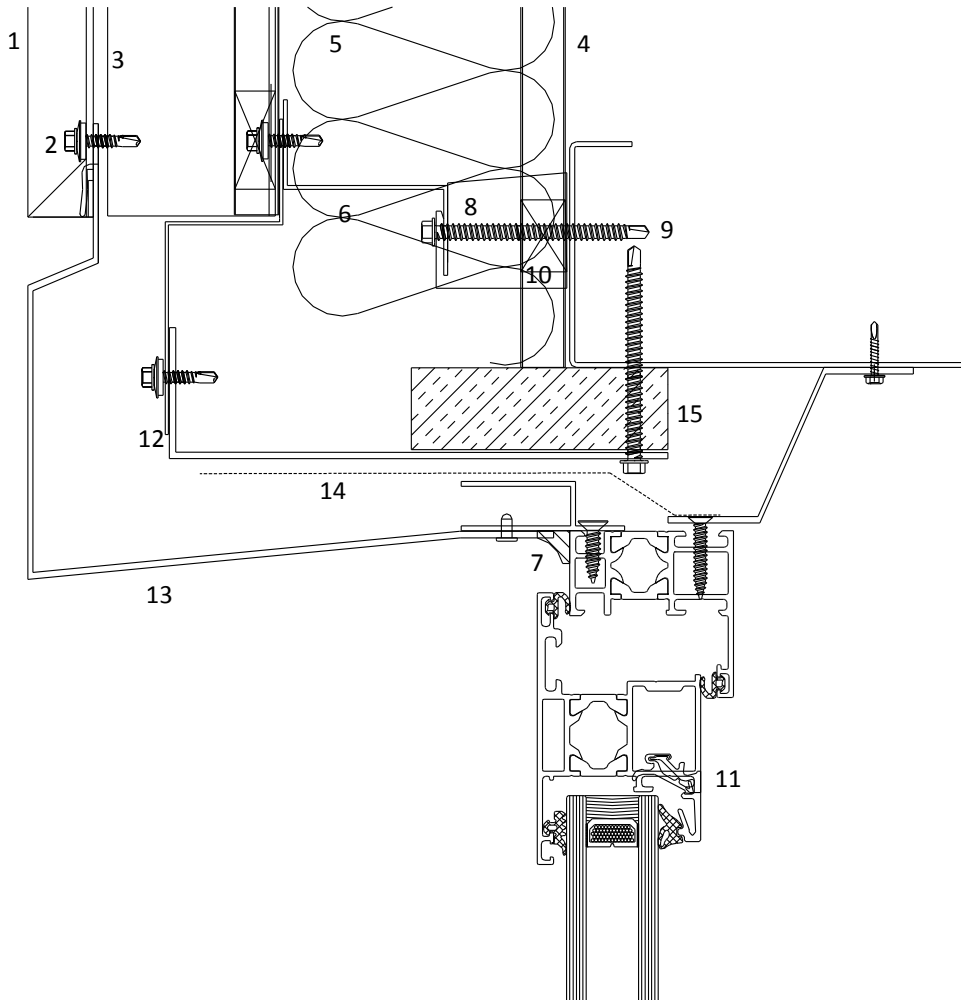
- 1- Plano-Therm® Panel
- 2-SSC28/16 Stainless steel fixing
- 3-Notched Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50
- 9-TTC81 Fastener

- 10-Sealed profile filler
- 11-Parapet Capping
- 12-Parapet capping flashing
- 13-CSSS23/16 stitcher
- 14-T-strip 9x3 sealant

Window Head Details—Horizontal Panel Layout



Plano-Therm® Components

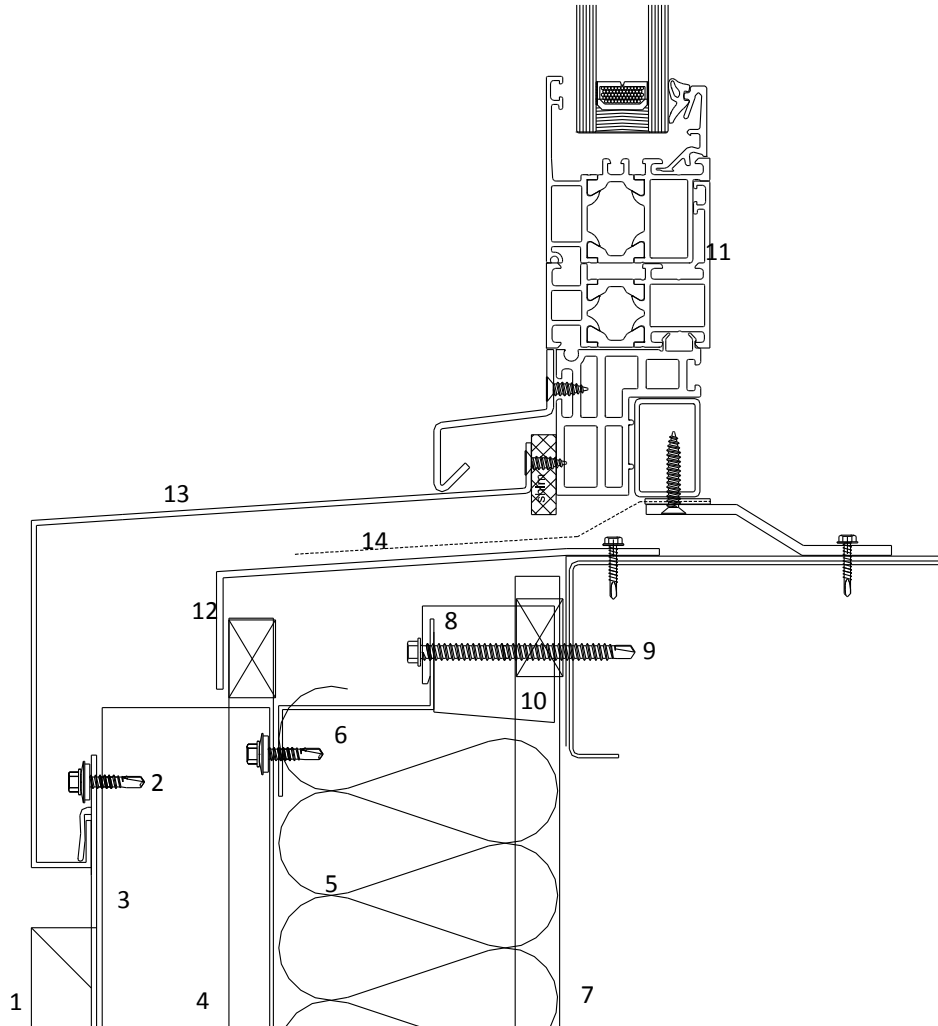
- 1-Plano-Therm® Panel
- 2-SSC28/16 stainless steel fastener
- 3-Therma Track 260

Twin-Therm® Components

- 4-CA LT 17 1000S
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-Mastic Seal
- 8-T-block 50
- 9-TTC81 fastener

- 10-Profiled filler
- 11-Window extrusion by others
- 12-Galv window sleeve
- 13-Plano-Therm® window pod
- 14-EPDM supplied by others
- 15-Insulation Board

Window Cill Details—Horizontal Panel Layout



Plano-Therm® Components

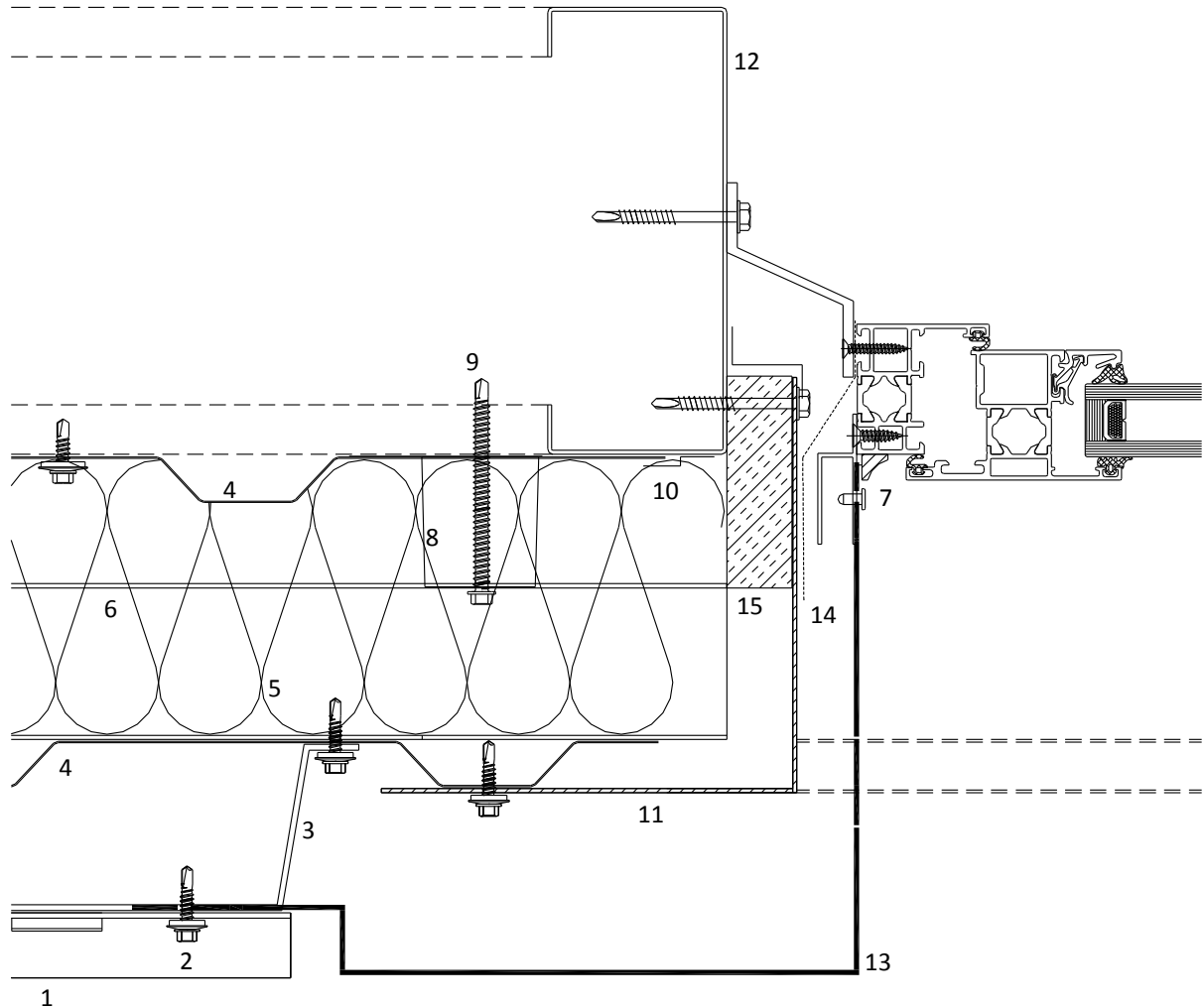
- 1-Plano-Therm® Panel
- 2-SSC28/16 stainless steel fastener
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50

- 10-Profiled filler
- 11-Window extrusion by others
- 12-Galv window sleeve
- 13-Plano-Therm® window pod
- 14-EPDM supplied by others

Window Jamb Detail—Horizontal Panel Layout



Plano-Therm® Components

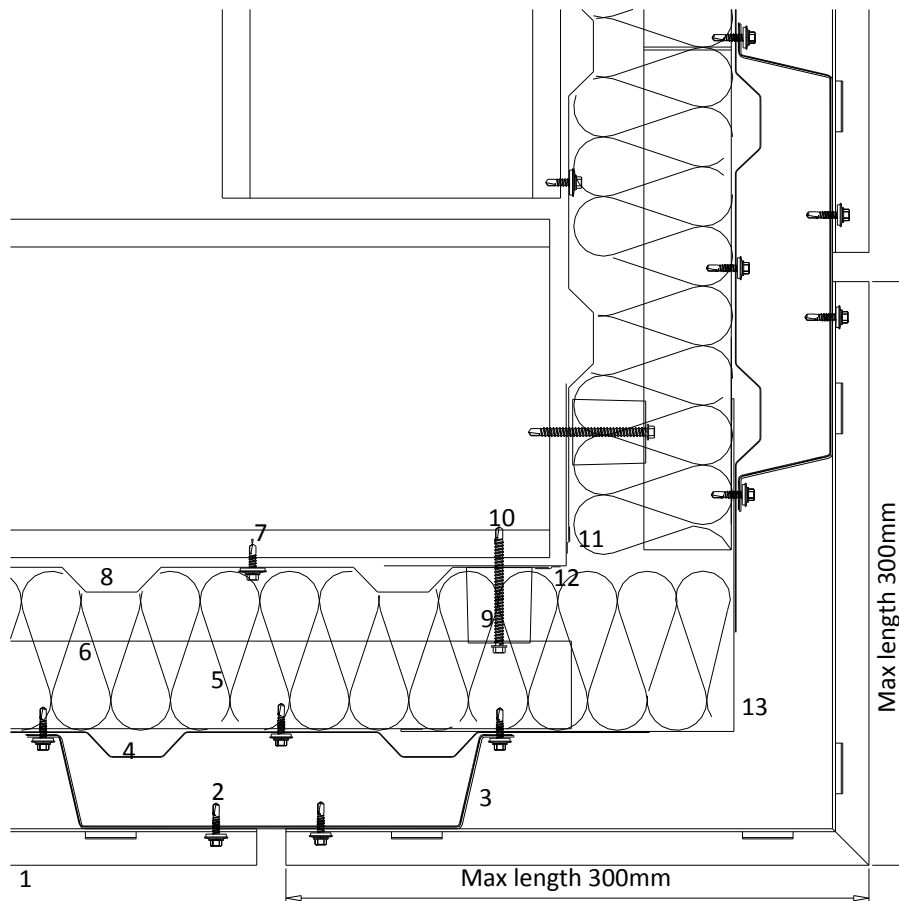
- 1-Plano-Therm® Panel
- 2-SSC28/16 stainless steel fastener
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W Insulation
- 6-T-bar 60W
- 7-CA LT 17 1000S
- 8-T-block 50
- 9-TTC81 fastener

- 10-Sealant
- 11-Galv window sleeve
- 12-Steelwork by others
- 13-Plano-Therm® window pod
- 14-EPDM supplied by others
- 15-Insulation Board

External Corner Detail—Horizontal Panel Layout



Plano-Therm® Components

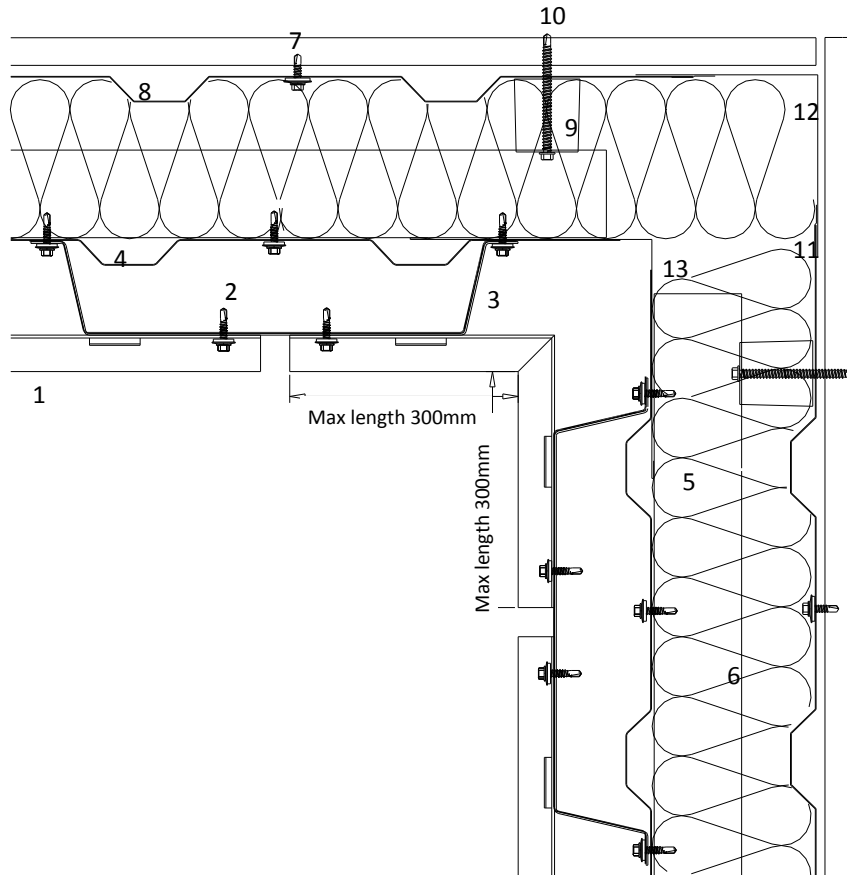
- 1-Plano-Therm® Panel
- 2-SSC28/16 stainless steel fastener
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W insulation
- 6-T-bar 60W
- 7-TSC20G19 fixing
- 8-CA LT 17 1000S
- 9-T-block 50

- 10-TTC81 block fastener
- 11-T-foil plus sealant
- 12-Internal closure flashing
- 13-External closure flashing

Internal Corner Detail—Horizontal Panel Layout



Plano-Therm® Components

- 1-Plano-Therm® Panel
- 2-SSC28/16 stainless steel fastener
- 3-Therma Track 260

Twin-Therm® Components

- 4-External Twin-Therm Sheet
- 5-TQ111W insulation
- 6-T-bar 60W
- 7-TSC20G19 fixing
- 8-CA LT 17 1000S
- 9-T-block 50

- 10-TTC81 block fastener
- 11-T-foil plus sealant
- 12-Internal closure flashing
- 13-External closure flashing