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# Trelleborg Waterproofing –Solutions Securing Values

Trelleborg Waterproofing offers water and weather protection systems for increased service life of buildings and other types of construction. We are part of the global industrial Trelleborg group, which is based on leading polymer technology and unique applications know-how in sealing, damping and protection for demanding industrial environments throughout the world.



Our vision is to offer innovative air-, sound- and water resistant products and systems, making it possible to save on energy and environment, as well as increasing the service life of buildings and other constructions.

Our core values guide us in making decisions and conducting business:

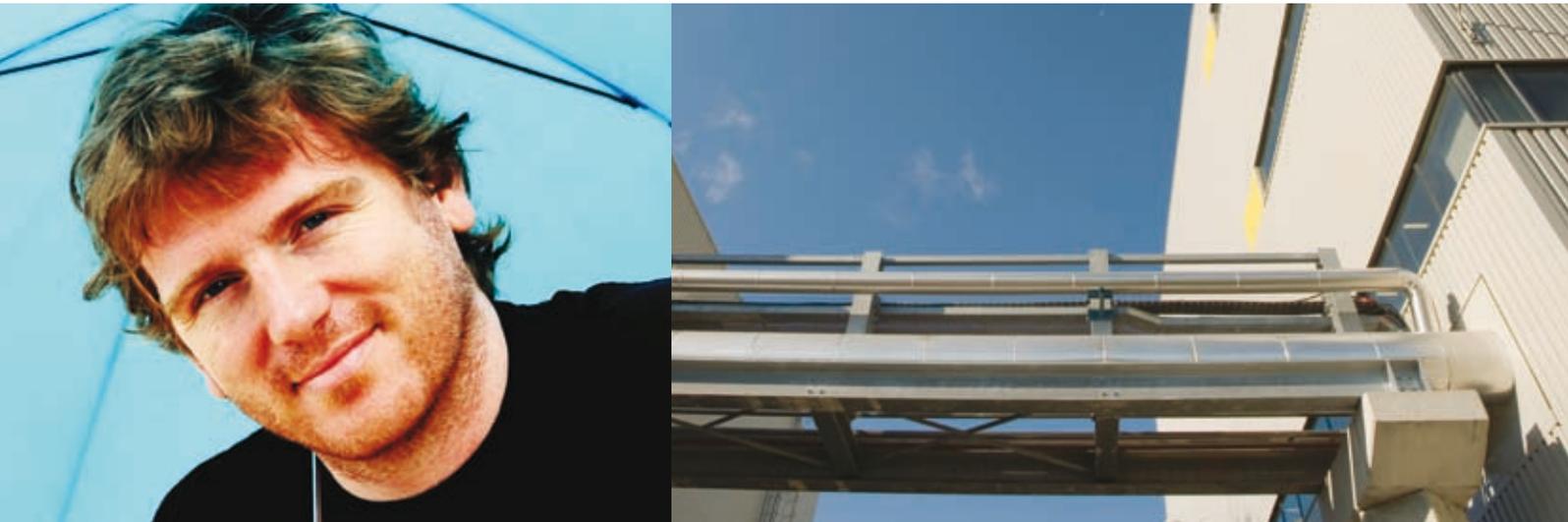
**Customer focus** All of our decisions are taken with the customer in focus. Working in partnership, we aim to add value for our customers, as well as for Trelleborg Waterproofing.

**Performance** "Performance" is not only about the results we achieve but how we achieve them.

**Innovation** We think differently and strive to apply innovative thinking and creativity to everything we do.

**Responsibility** We have a social responsibility and we carefully protect the positive image of our company.

Our customers should always feel that our products as well as our commitment correspond to their needs and expectations. This is achieved through quality driven team work where each single activity in combination with all other activities in our organization results in satisfied and returning customers.



**Trelleborg Engineered Systems** is a leading global supplier of engineered solutions that focus on sealing, protection and safety of investments, processes and individuals in extremely demanding environments.

Trelleborg Engineered Systems comprises four business segments:

**Industry:** precision components and systems in polymer coated materials, such as hoses, elastomer laminates and polymer-coated fabrics. Other special products, such as molded components to many different industry segments, printing blankets for the graphics industry, and industrial antivibration applications.

**Infrastructure Construction:** specialized solutions for infrastructure projects, for example, fender systems for harbors, tunnel seals, dredging systems, pipe seals, acoustic and vibration damping solutions for railways, bridges and buildings, and protective suits and diving suits.

**Offshore:** niche oriented products for offshore oil and gas extraction.

**Building:** Polymer and bitumen based construction products for sealing and waterproofing applications for industry and consumers.

## Protection against the elements

We supply complete systems including all component parts. Our waterproof roofing membranes comprise a range that covers virtually all needs. The materials are well proven and comply with strict environmental criteria.

### **High-tech membranes with exceptionally long service life**

It is not enough for a waterproof membrane to stay watertight, it must also be capable of withstanding frost, snow, heat and strong winds without physical or chemical changes that could shorten its intended service life. All our membranes satisfy statutory requirements and have been tested under the harshest imaginable conditions.

Every year we spend large amounts of money on research and development of



both materials and system solutions. Trelleborg membranes are the result of intensive development, often at basic research level.

They now last longer than ever; studies show that we have materials that can retain their properties for 40–50 years at a total cost which is often substantially lower than that of alternative types of roofing. That, and their minimal maintenance demand,

#### **Trelleborg Waterproofing's commitment:**

- + Scientifically designed waterproofing systems
- + Installed by trained contractors
- + Quality control plan and quality assurance checklist
- + Comprehensive warranties

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= Dependable, long-lasting waterproofing with minimum maintenance demand

## Protection against the elements

make our membranes very attractive and economical options for the user.

### **Single-ply principle and ballasted roofs**

Our waterproofing systems are based on the single-ply principle, mechanically fastened or ballasted. They are much more dependable and durable than traditional roofing systems consisting of two or more glued layers.

### **Not just roofs**

In addition to roofing, Trelleborg Waterproofing supplies a wide range of membranes and systems for waterproofing and containment. We have systems for facades, tanking, secondary containment, reservoirs and landfills.



### **Trained contractors**

A waterproofing system is no better than its weakest link, and experience has shown that damage and leaks are usually caused by faulty installation. That is why we provide all our contractors with training on our waterproofing systems: product knowledge, application methods and quality assurance.

### **A safe choice**

Buyers benefit from an extensive quality control plan that covers the whole process, from raw materials and manufacturing until the waterproof membrane is in place, so you can be sure that it will perform its function for many years to come.

Our warranty assurances and safety packages are among the most comprehensive on the market.

# Contact Details

## Trelleborg Waterproofing AB

### Company Information

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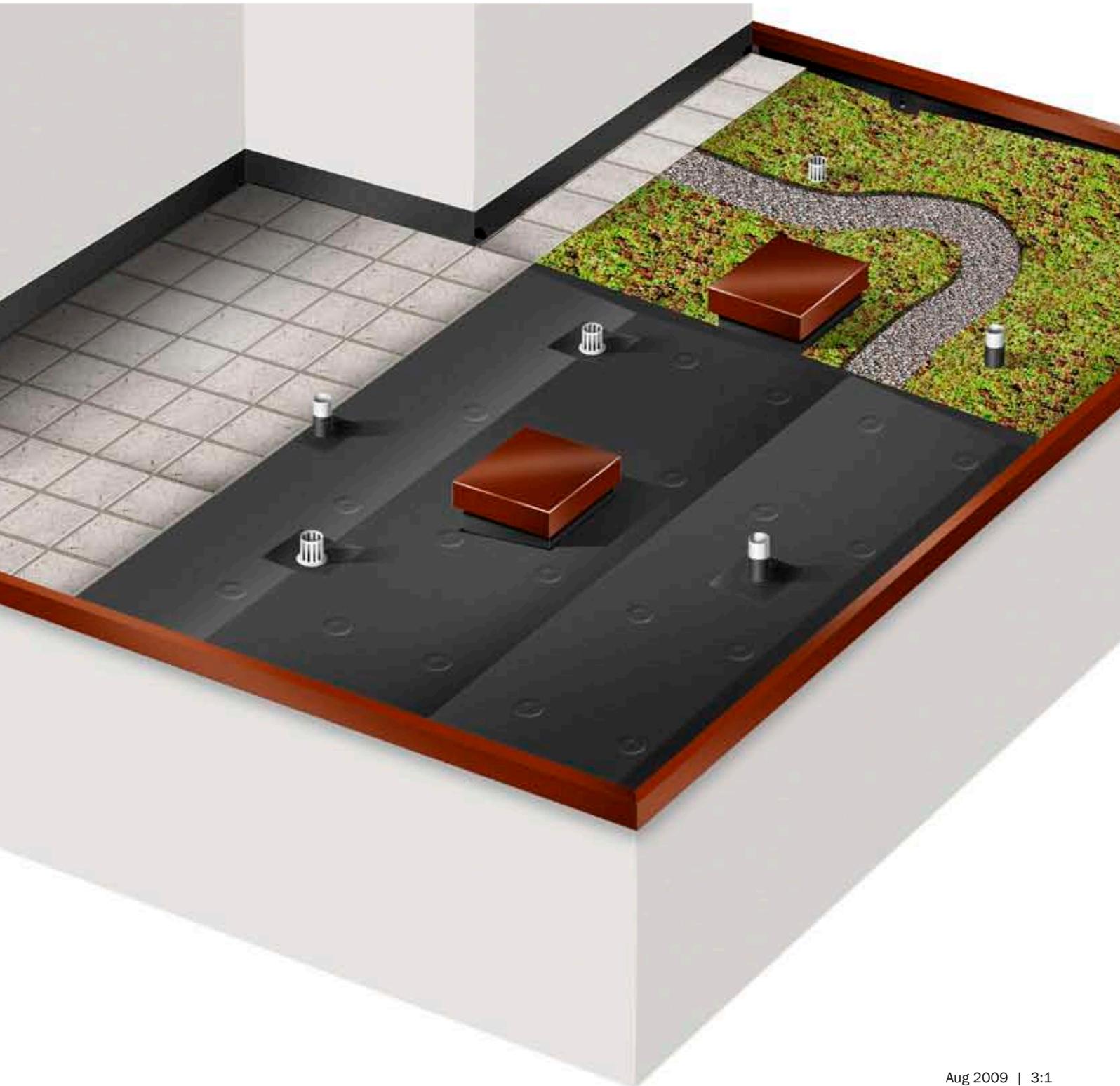
GPS coordinate: Lat: N 57° 12' 10.45"  
Long: E 14° 1' 57.50"

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For domestic payment: Bankgiro 272-9481  
IBAN: SE8050000000057461014900

General Conditions of Delivery: [www.trelleborg.com/waterproofing](http://www.trelleborg.com/waterproofing)

# Elastoseal Engineered Roofing System

## Engineered single ply membrane

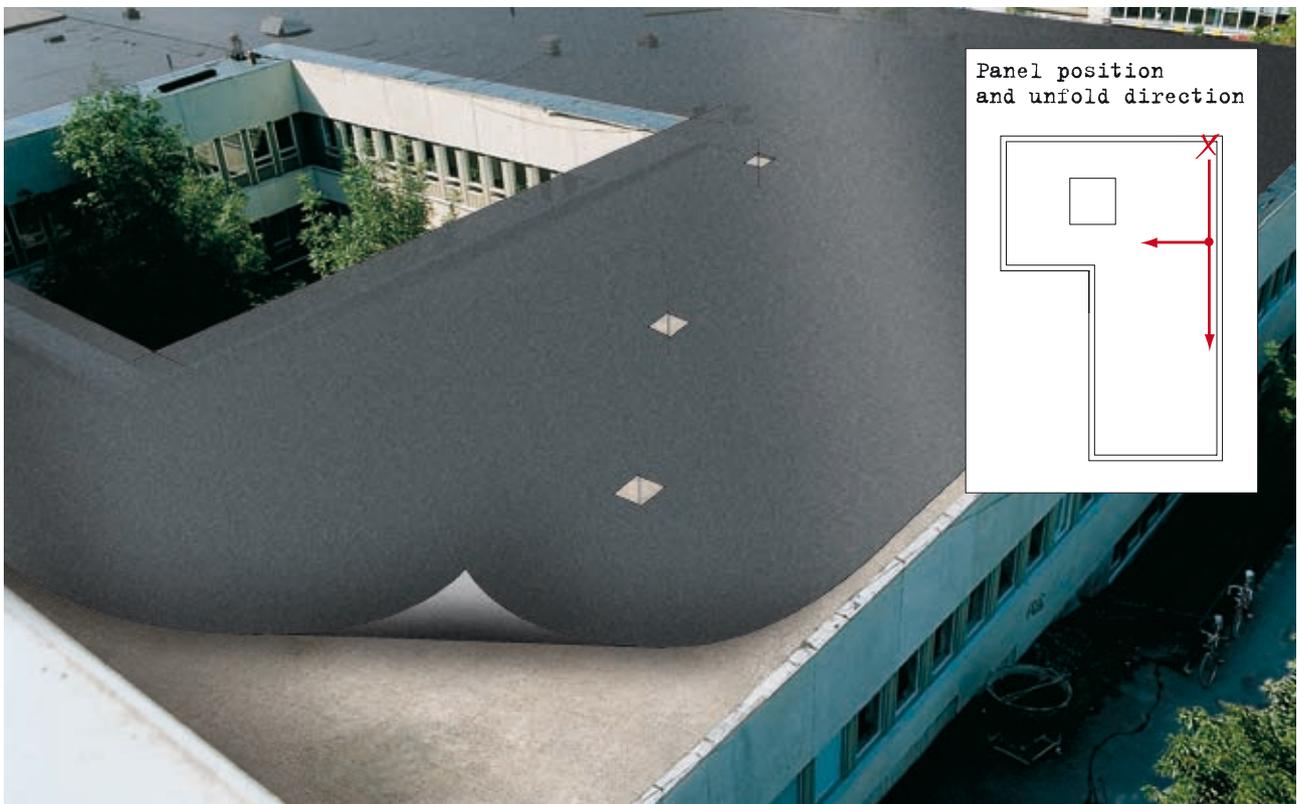


# Elastoseal Roofing System

– the perfect solution for a durable and reliable roof

Elastoseal is an exceptional roofing system with unique properties but also installation techniques that distinguish the system from traditional low slope roofing. The Elastoseal membrane is elastomeric and thermo-set providing elastic properties in broad temperature range. Elastoseal is always fit and never stressed by tem-

The Elastoseal system is suitable both for ballasted roofing system where the membrane is laid loose and secured by weight from ballast like green roof, pavers or gravel but also mechanical attached with the non penetrating fastening technique Electrobond. Electrobond is state of the art roofing using induction heating to



perature fluctuations, wind load, snow, UV-radiation, ponding water or other common phenomena's influencing the long term performance of roof waterproofing.

It is not only the quality of the material itself that decides the performance of roofing. The installation itself is also critical and has big impact. We have considered this in the development of Elastoseal and created a modern roofing system. Elastoseal is an engineered roofing system where much, or in some cases all, of the welding and detail work is done as prefabrication in a factory. The building is then dressed, similar to putting on a rain coat.

anchor the Elastoseal to the non penetrating Electrobond fasteners.

## Thermobond welding

As Elastoseal is elastomeric and based on the rubber polymer EPDM that is thermo-set, the material cannot be melted. This has challenged us to develop the welding technology Thermobond that is a patented technique. Thermobond is thermo-plastic rubber that is compatible with Elastoseal and can be melted by heat from hot air blowers or hot wedges. This is the welding techniques of the future and seams made from adhesives or open flame does not reach our quality standards.

# Elastoseal Roofing System

– the perfect solution for a durable and safe roof

## The details that make the difference

The Elastoseal roofing systems are supplied as a complete package including compatible accessories, installation instructions and technical supervision. Elastoseal is installed solely by authorized roofing contractors

who are responsible for the integrity and performance of the finished roof and who work with full access to Trelleborg Waterproofing AB know-how and technical support.

## Benefits of Elastoseal Roofing System

### Superior durability and long term economy

*Elastoseal has been tested by independent laboratory and expected service life exceeds 50 years.*

### Maintenance free

*Elastoseal does not require any maintenance for durability and performance over decades.*

### Fast and well controlled installation

*Engineered panels to roof size that even can include roof details prefabricated under well controlled conditions in a factory. A minimum of work on the roof gives a maximum of safety.*

### Environmental sustainable

*Elastoseal contains no plasticizers or additives that can be washed out and does not need any barrier in the construction that prevents emissions. Low weight in combination with long durability gives favorable Life Cycle Analysis. After use the product can be recycled or be burned to reuse the energy content.*

### Innovative techniques

*Trelleborg Waterproofing provides innovative materials as well as installation techniques. Elastoseal is an engineered roofing system incorporating techniques like Thermobond welding and Electrobond fixations.*

## System approval and certification

Elastoseal roofing system is well evaluated and fulfills the requirements of the following:

CE marking according to EN 13956 Flexible sheet for waterproofing.

Austria: ofi Kunststoffinstitut(ÖNORM B 3700)

Netherlands: BDA Intron (KOMO Attest No.CTG-408/1)

Poland: ITB (Technical approval AT-153783/2006)

USA: TRI Geosynthetic (ASTM D6134)

## Gravel ballasted roof

The Elastoseal membrane is laid loose to the substrate and secured by weight from coarse gravel.

Coarse gravel gives the roof an aesthetically appealing surface and automatically provides resistance to flame spreading of fire. The gravel layer reduces rainwater run-off so the capacity of the roof drainage system and consequently the building costs can be reduced. Leaves and litter are caught by the gravel surface so the risk of clogged strainers and roof drains is reduced.



## Inverted roof

The inverted roof is a variation of a traditional ballasted roof. Water resistant insulation made from extruded polystyrene is placed on top of the waterproofing membrane to provide an additional protection from temperature and mechanical stresses. Most commonly there is also insulation underneath the waterproofing providing good mechanical protection.

The ballast layer that can consist of pavers, gravel or green roof must be design to resist wind uplift but also the uplift forces from rainwater on the insulation.



### What is ballasted roof?

Ballasted roof is a fixation technique for low slope roofing where weight from a top layer is securing the waterproofing that can be laid loose to the substrate. The ballast must be designed to fit the requirements for fixation depending on wind influence. Ballasted roof can also give new possibilities in usage of roof area like parking space or recreation on a terrace or a roof garden



## Green roof

Roofs covered by vegetation offer aesthetic, environmental and economical benefits. The vegetation comprises hardy, short growing, self-renewing species of grass, sedum, heather, bushes that can withstand soak and drought during long periods. Care and maintenance is minimal, irrigation is not required.

Elastoseal can resist both microbiological attack and both the membrane and seam is tested to resist root penetration



### **A green roof offers the following benefits:**

- Reduces water run-off, absorbs water and increases evaporation.
- Particles of dust and dirt stick to the leaves and are rinsed down into the cultivation substrate.
- Absorbs noxious exhaust fumes and carbon dioxide, and produces oxygen.
- A living surface in alternating colors, renewed with the seasons.
- Reduces noise in the environment due to a sound absorbent surface.
- The vegetation contributes to energy conservation.

## Electrobond – non penetrating mechanical fastening

Electrobond fastening technique enables the use of engineered panels in low weight construction via non penetrating mechanical fixations. The fixation technique can be used on both cold and warm roofs and the fixations aren't puncturing the membrane.

The Electrobond washers are fixated with suitable screws to the substrate and can be placed in an optimal pattern for the actual roof as the fixation don't need to be made at membrane overlaps. When the washers are installed the engineered Elastoseal membrane is positioned and immediately large areas are made temporally waterproof. The fixation of the Elastoseal to the Electrobond washer is done in just seconds, by the means of induction, using the Centrix portable hand-held machine.

The Electrobond fixation system is covered by two separate patents and techniques, Centrix induction heating system and the other is Thermobond seaming system.



## Benefits of Elastoseal secured with Electrobond

### Quick installation and reduced risk of problems from installation

Engineered Elastoseal panels give immediate temporally waterproofing independent of weather and even after the installation is completed the time consumption is unbeatable compared to traditional systems.

### Low weight

Elastoseal panels have low weight and as ballast isn't needed the total weight of the roofing is kept to a minimum.

### Secure fixation

The design of fasteners is done individually for each specific project and optimal design is possible due to Electrobond. Elastoseal roofs secured by Electrobond simply don't give up or retire.

### Easy non destructive dismantling

If needed it is possible to dismantle the panel without destroying the membrane.

### What is induction?

Induction is an intense magnetic field created of high frequency electrical current and an induction coil. The magnetic field can be directed and induces a high current to any magnetic metal in its presence which immediately is heated. This heating method is very energy effective as only intended metal is heated and not other surrounding materials or the tool. The induction heating method is gaining more application areas like welding, cooking or in our case, roof fixation.

# Elastoseal System

## Membranes

Type of membranes	Fire classification
Elastoseal membrane in thickness 1.2 or 1.5 mm prefabricated to size.	FroofT
Elastoseal FR membrane in thickness 1.2 or 1.5 mm prefabricated to size.	BroofT1, FroofT2, FroofT3, FroofT4

Thermobond Components	Electrobond Components
<ul style="list-style-type: none"> <li>• Drains</li> <li>• Splice strips and flashings</li> <li>• Pipe boots</li> <li>• Corners</li> <li>• Hot melt sealant rod</li> <li>• Clad metal</li> </ul>	<ul style="list-style-type: none"> <li>• Electrobond Washer with or without plastic tube</li> <li>• Centrix induction machine for Electrobond washer</li> <li>• Screws</li> </ul>

Other System Components	Know How
<ul style="list-style-type: none"> <li>• Support strip to simplify welding</li> <li>• Termination bar</li> <li>• Adhesives, sealant and cleaners</li> </ul>	<ul style="list-style-type: none"> <li>• Research and development holding several patents</li> <li>• Training and authorization of contractors</li> <li>• Wind load calculations and fastener dimensioning</li> <li>• Technical and design support</li> </ul>

# Product Specification

## Elastoseal H / T

Elastoseal is an elastomeric waterproofing membrane based on the rubber polymer EPDM. The product is used for roof waterproofing and is prefabricated before being installed. The prefabrication enables quick and safe installations. Elastoseal provide very long expected service life and is an environmental friendly product.



### Technical data

Weight 1.2 mm: 1.3 kg/m<sup>2</sup>  
1.5 mm: 1.7 kg/m<sup>2</sup>

Product	Thickness (mm)	Width (mm)	Length (m)	Packaging (rolls/pallet)	Article number
<b>Elastoseal H</b> For prefabrication with Hot Bond. vulcanized seams.	1.2	1700	25	20	5930073
	1.2	1700	100	6	59300732
	1.5	1700	25	16	5930075
	1.5	1700	75	6	59300755
<b>Elastoseal T</b> For prefabrication with hot wedge, Thermobond.	1.2	1700	25	20	5330073
	1.2	1700	100	6	5330073
	1.2	5020	25	6	5330023-10
	1.5	1700	25	16	5330075
	1.5	1700	75	6	53300751
	1.5	5020	25	3	5330025-10

Elastoseal can also be delivered made to measure to fit individual roof sizes. In some markets Elastoseal with thickness 1.0 mm is applied for ballasted roofing.

### Physical properties

	Unit	Requirement	Typical value	Test methods
<b>Hardness</b>	°IRH	65±5	65	ISO 48
<b>Tensile Strength</b>	Mpa	min 9.0	9.8	ISO 37
<b>Elongation at break</b>	%	min 300	530	ISO 37
<b>Tear Strength</b>	kN/m	min 30	43	ISO 43, B
<b>Foldability at low temperature</b>	°C	max -50	-60	EN 495-5

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Approvals, Certificates & Specifications

CE: EN 13956, KOMO, Önorm, ASTM D6134, Polish technical approval. More approvals are available upon request.



# Product Specification

## Elastoseal FRH / FRT

Elastoseal FRH/FRT are elastomeric waterproofing membranes based on the rubber polymer EPDM. The products are used for roof waterproofing and is prefabricated before installation. The prefabrication provides quicker and safer installation. Elastoseal FRH/FRT are flame retardant and classified as BroofT1.

Elastoseal provide very long expected service life and is an environmental friendly product.



### Technical data

Weight 1.2 mm: 1.5 kg/m<sup>2</sup>  
1.5 mm: 1.8 kg/m<sup>2</sup>

Product	Thickness (mm)	Width (mm)	Length (m)	Packaging (rolls/pallet)	Article number
<b>Elastoseal FRH</b> For prefabrication with Hot Bond, vulcanized seams.	1.2	1700	25	20	5120073
	1.2	1700	100	6	51200731
	1.5	1700	25	16	5120075
	1.5	1700	75	6	51200751
<b>Elastoseal FRT</b> For prefabrication with hot wedge, Thermobond.	1.2	1700	25	20	5130073
	1.2	1700	100	6	51300731
	1.2	5020	25	6	5120023-1
	1.5	1700	25	16	5130075
	1.5	1700	75	6	51300751

Elastoseal can also be delivered made to measure to fit individual roof sizes.

### Physical properties

	Unit	Requirement	Typical value	Test methods
<b>Hardness</b>	°IRH	70±5	70	ISO 48
<b>Tensile Strength</b>	Mpa	min 8.0	9.0	ISO 37
<b>Elongation at break</b>	%	min 300	400	ISO 37
<b>Tear Strength</b>	kN/m	min 20	28	ISO 43, B
<b>Foldability at low temperature</b>	°C	max -40	-60	EN 495-5

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Approvals, Certificates & Specifications

CE: EN 13956, Fire classification BroofT1. More approvals are available upon request.



# Product Specification

## Thermobond R Splice Strip

The Thermobond R (Reinforced) splice strip is used for making connections between membrane and for detail works like flashings and upstands. The product is built up by a top layer of EPDM and a bottom layer of Thermobond. The recommended width of the strip for seaming of panels is 150 mm.



### Technical data

Reinforcement: Scrim of Polyester

Width (m)	Thickness (mm)	Length (m)	Weight (kg/roll)	Max roll/pallet	Article number
150	1.5	20	5.9	15x8	5320202
300	1.5	20	11.7	15x4	5320203
450	1.5	20	17.6	15x2	5320204
600	1.5	20	23.4	15x2	5320206
900	1.5	20	35.1	15x1	5320209

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Thermobond Splice Strip

The Thermobond splice strip is used for making round shaped details like pipe boots or outlets. The product is built up by a top layer of EPDM and a bottom layer of Thermobond that can be melted for splicing.



### Technical data

Reinforcement: None

Width (m)	Thickness (mm)	Length (m)	Weight (kg/roll)	Max roll/pallet	Article number
150	1.5	20	5.9	15x8	5350002
200	1.5	20	7.8	15x6	53500021
450	1.5	20	17.6	15x2	5350004
600	1.5	20	23.4	15x2	5350005
900	1.5	20	35.1	15x1	5350006

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## TPE 100 Flashing

Homogenous Thermobond flashing for making 3-dimensional details like site build corners or irregulars shaped details during roof installations. Can also be used for trouble-shooting and repairs.



### Technical data

Reinforcement: None

Width (m)	Thickness (mm)	Length (m)	Weight (kg/roll)	Max roll/pallet	Article number
150	2.0	10	4.3	24x8	5340002
300	2.0	10	8.7	24x4	5340003
450	2.0	10	13.0	24x2	5340004
600	2.0	10	17.3	24x2	5340006

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Thermobond Corner

Thermobond corners are used for covering inside/outside corners in combination with Thermobond R splice strip. The corners are spliced with hot air.



### Technical data

Product	Thickness (mm)	Size (mm)	Package (pcs/box)	Article number
Inside corner	2.5	H:100, W:225	40	5350022
Outside corner	2.5	H:100, W:100	40	5350023

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Thermobond Pipe Boot

Thermobond pipe boots are used for covering of pipe penetrations. The product has a flange for seaming to the membrane with hot air. Choose open pipe boot when the circumstances don't allow the pipe boot to be pulled over the pipe from the top.



### Technical data

Product	Diameter (mm)	Height (mm)	Flange (mm)	Article number
Thermobond pipe boot	35	250	300x300	5360035
	50	250	300x300	5360050
	70	250	300x300	5360070
	90	250	300x300	5360090
	100	250	300x300	5360100
	125	250	400x400	5360125
	150	250	400x400	5360150
Thermobond pipe boot - open	Diameter (mm)	Height (mm)	Flange (mm)	Article number
	50	250	300x300	5370050
	70	250	300x300	5370070
	90	250	300x300	5370090
	100	250	300x300	5370100
	125	250	400x400	5370125
	150	250	400x400	5370150

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Thermobond Steel Plate

Thermobond steel plate is used for perimeter profiles and can be cut and folded like ordinary galvanized steel sheets. The steel is galvanized and 0.6 mm thick laminated with a 0.3 mm Thermobond layer which makes it possible to weld other Thermobond based accessories.



### Technical data

Width (m)	Length (m)	Thickness (mm)	Weight (kg/m <sup>2</sup> )	Package (pcs/pallet)	Article number
1	2	0.9	4.6	50	5599601

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Thermobond Hot Melt Sealant

Thermobond hot melt sealant is used to level differences in height at splice areas at T-joints and Cross-joints.

### Technical data

Diameter (mm)	Roll length (m)	Article number
4	30	5540040



### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Drain PE

Roof drain equipped with a collar of Thermobond that makes it heat spli- ceable to the membrane. The drain can be used horizontally as overflow. The pipe is made of polyethylene.



### Technical data

ø, pipe (mm)	Length (mm)	Collar (mm)	Package (pcs/carton)	Article number
63	380	300x300	10	5501211
75	380	300x300	10	5501212
90	380	300x300	8	5501213
110	380	400x400	6	5501214
125	380	400x400	4	5501215

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Drain PC

Roof drain equipped with a 500x500 mm collar of Thermobond flange that makes it heat spliceable to the membrane. The pipe is 0.8 mm thick and made of Stainless Steel.



### Technical data

ø, pipe (mm)	Length (mm)	Collar (mm)	Package (pcs/carton)	Article number
60	300	500x500	5	5501195
90	300	500x500	5	5501196
110	300	500x500	5	5501197

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Thermobond

Thermobond seaming technique is unique and patented by Trelleborg Waterproofing. Thermobond is based on a thermoplastic rubber (TPE-base) that can be seamed with conventional seaming methods for plastic material like hot air or hot wedge seaming. The Thermobond material is the base for a full range of accessories that gives good system solutions combining the unique properties of an elastomeric membrane with the seaming properties of the thermoplastics.

# Product Specification

## Contact Adhesive 5000

Contact Adhesive 5000 is a ready-for-use contact adhesive for adhering EPDM and Butyl membranes to dry substrates (such as wood, concrete and metals).

### Technical data

<b>Base:</b>	Synthetic rubber and synthetic resins, dissolved in inflammable organic solvents
<b>Colour:</b>	Black
<b>Flash point:</b>	Below 0°C
<b>Viscosity (at 20°C):</b>	2500 ±500 mPa.s
<b>Solids:</b>	41±2 %
<b>Density (at 20°C):</b>	865±10 kg/m <sup>3</sup>
<b>Shelf life:</b>	max. 12 month, provided that the glue is kept in a cool place in a well-sealed container



### Article number and package

5595000	4.5 kg/can 60 cans/pallet
5595001	0.9 kg/can 432 cans/pallet

### Consumption/coverage

0.5 kg/m<sup>2</sup>

### Direction for use

Contact Adhesive 5000 is ready for use but can if necessary be thinned with Cleaning Wash 9700 (max. 10 %) or toluene. Contact Adhesive 5000 must not be thinned or mixed with other products.

The adhesive must only be processed in dry weather conditions at temperatures of at least + 5 °C. The material and the base to be glued must also be dry and clean. Contact Adhesive 5000 should be applied with a stiff brush or a finely-toothed glue spatula. Contact Adhesive 5000 should be applied to both sides.

### Suitable substrates

Contact Adhesive 5000 provides an excellent adhesion on many materials, such as EPDM/Butyl rubber, hard PVC, acrylic glass, SVS, RVS, stone, concrete, light weight concrete, lead, wood and bituminous substrates.

The substrates must be clean, free from oil and grease, and dry. Wet substrates or substrates covered with moisture must be dried by means of hot air before adhering.

### Warning

Contact Adhesive 5000 is highly flammable. Keep away from open fire.

The solvents in Contact Adhesive 5000 are extremely harmful to polystyrene foam.

Contact Adhesive 5000 is only suitable for by Trelleborg approved EPDM and Butyl membranes.

# Product Specification

## Cleaning Wash 9700

Cleaning Wash 9700 is a technical petrol used for cleaning weathered rubber membranes before installation and repair.

### Technical data

<b>Base:</b>	Naphtha (petroleum), hydrogen processed light 100%
<b>Colour:</b>	Colourless liquid
<b>Flash point:</b>	< 0°C
<b>Density (at 20°C):</b>	690-720 kg/m <sup>3</sup>
<b>Shelf life:</b>	6 months in unopened package*



### Article number and package

5597055	5 litre/plastic can
5597051	1 litre/plastic bottle

### Consumption/coverage

4-5 m<sup>2</sup>/litre

### Warning

Cleaning Wash 9700 is highly flammable. Keep away from open fire.

# Product Specification

## Sealant 5590

Neutral, elastic one-component joint sealant based on silicones. Sealant 5590 has excellent adhesion to rubber and most substrates. The sealant is used for repairs or sealing against substrates.

### Technical data

<b>Base:</b>	Silicon
<b>Colour:</b>	Black
<b>Flash point:</b>	Not applicable
<b>Density (at 20°C):</b>	1.25 g/m <sup>3</sup>
<b>Shelf life:</b>	12 months in unopened packaging in a cool and dry storage place at temperatures between +5 °C and +25 °C



### Article number and package

5595590      310 ml/cartridge  
15 cartridge/carton

### Consumption

8-12 m/cartridge

### Direction for use

Method: Caulking gun.

Application temperature: +1°C to +30°C

Clean: With Cleaning Wash 9700 immediately after use.

Resplicing: Before resplicing with Thermobond strip or Contact Adhesive 5000 all mastic should be grinded away.

### Suitable substrates

Type: All usual building surfaces.

State of Surface: Clean, dry, free of dust and grease.

Preparation: Apply Primer 9800 for applications on porous surfaces – no primer required for non-porous surfaces.

We recommend a preliminary compatibility test.

# Product Specification

## Centrix Machine

The Centrix machine is a portable hand-held induction heater for bonding Elastoseal membrane to the Electrobond Washers. Induction is a very efficient heating technique where magnetic field influence metal but not other materials.

### Technical data

<b>Voltage:</b>	110 V(220 V input possible)
<b>Current at heat cycle:</b>	12 A
<b>Weight at transport:</b>	27 Kg
<b>Weight Tool:</b>	20 Kg
<b>Magnets:</b>	10 Pcs
<b>Cable:</b>	5 m
<b>Machine setting:</b>	6.5 sec
<b>Article number:</b>	5599903



### Operating Requirements

<b>Voltage:</b>	100-120 V (200-220 V)
<b>Frequency:</b>	45-60 Hz
<b>Current:</b>	12A
<b>Environment:</b>	-15 to +45 °C, No precipitation

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Welding point

Additional to Electrobond washer a welding point for the Electrobond machine is needed. The welding points is entered as a code for the machine and is gotten by request.

### Direction of use

Follow instructions in User Guide.

# Product Specification

## Electrobond Washer

The Electrobond Washer is unique for mechanical fixation of the Elastoseal roofing systems and developed from the patented Thermobond technology. The washers should be applied according to valid wind load design.



### Technical data

Material: Galvanized steel, 15 cycles Kesternich laminated with Thermobond.

Width (mm)	Thickness (mm)	Screw hole (mm)	Weight (kg/pcs.)	Package (pcs)	Article number
80	0.7	6.5	0.03	500	5599506

### Welding point

Additional to the Electrobond washer a welding point for the Electrobond machine is needed. The welding points is entered as a code for the machine and is gotten by request.

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

# Product Specification

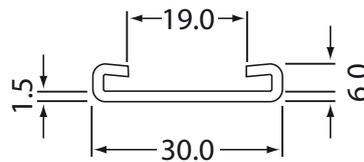
## Termination Bar

The Termination Bar is used for fixation of Elastoseal membrane at terminations. The product is recommended for covered application only when the bar is protected by membrane, clad metal or other counter flashing..

### Technical data

Material: Galvanised steel, 15 cycles Kesternich

Fixation: Holes 7 and 11 mm at 25 mm C.C.



Width (mm)	Thickness (mm)	Length (m)	Weight (kg/pcs.)	Package/pallet (pcs)	Article number
30	1.5	3	2.0	100	5599603

### Storage

Store dry in the original packaging. There are no limitations in shelf life.

# Product Specification

## Leister Handgun

Used for details splicing.

### Technical data

Voltage (V)	Power cons. (W)	Article number
230	1600	5599902



### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Direction for use

Set the heat to a temperature that is adapted for your welding speed. The Thermobond should melt but there shouldn't be any white smoke. After heating the Thermobond it should be pressed tight with silicone roller.

# Product Specification

## Brass or Silicone Pressure rolls

Used for details splicing of Thermobond accessories.

### Technical data

Product	Width roller (mm)	ø roller (mm)	Article number
Brass-roller	6	28	5591046
Silicone-roller	28	32	5591047



### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Direction for use

Heat the Thermobond and press it tight with the roller.

# Product Specification

## Grinding Equipment

Grinding machine Flex for refreshing oxidized rubber surface before splicing. The machine is delivered with adaptation rings to fit the width of the grinding disc.

### Technical data (Grinding machine Flex)

<b>Voltage:</b>	220 Volt
<b>Power input:</b>	1200 Watt
<b>Power output:</b>	700 Watt
<b>Max. tool Ø:</b>	115 mm
<b>Tool width:</b>	100 mm
<b>Tool fixture:</b>	19 mm
<b>Speed without load:</b>	1200-3700 rpm (recommended speed 2000 rpm)
<b>Weight:</b>	3.1 kg
<b>Article number:</b>	5592000



### Technical data (Grinding disc, nylon)

<b>Diameter:</b>	100 mm
<b>Width:</b>	50 mm
<b>Tool fixture:</b>	19 mm
<b>Article number:</b>	5592001

### Storage

Store cool and dry in the original packaging. There are no limitations in shelf life.

### Direction of use

Set the speed to approx. 2500 rpm. Grind the splice areas with some pressure put to the machine but without exaggerating. It is only the very surface of the membrane that should be refreshed.

# Product Specification

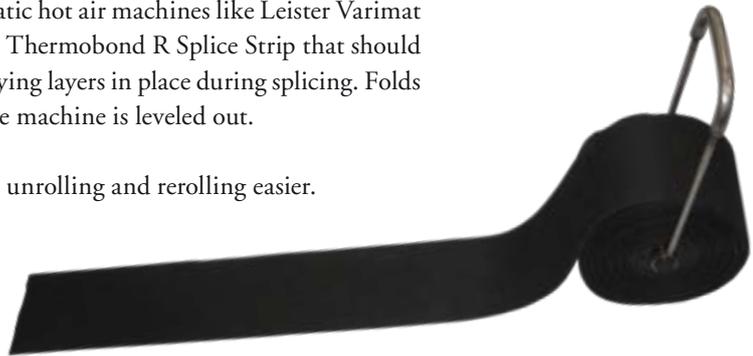
## Support Strip

The Support Strip is a reinforced EPDM strip that facilitates easier splicing of Thermobond R Splice Strip to Elastoseal membrane using automatic hot air machines like Leister Varimat or similar. The support strip is placed on top of the Thermobond R Splice Strip that should be connected to the Elastoseal and keeps the underlying layers in place during splicing. Folds in the splice are avoided as the pressure from the machine is leveled out.

The Support Strip comes with a handle that makes unrolling and rerolling easier.

### Technical data

Thickness: 1.2 mm  
Reinforcement: Scrim of Polyester  
Length: 25 m



Width (mm)	Weight (Kg)	Article Number
150	8	5593001

### Storage

There are no restrictions or limitations for storage.

# Product Specification

## Protection Tape

For the protection of splice areas from air born contamination and UV-radiation during longer abruption in the installation. Must be removed before Thermobond splicing.



### Technical data

Width (mm)	Length (m)	Package (pcs/carton)	Article number
75	33	12	5590010

### Storage

Store cool and dry in the original packaging. Maximum shelf life is 12 months.

# ELASTOSEAL H, EPDM ROOFING SYSTEM

Accompanying document, EN 13956



**0402-CPD-470301**

## Product Description

Elastoseal H is an unreinforced EPDM waterproofing membrane produced in two ply. The product comes in black colour and has a surface texture on both sides. The range of use is roof waterproofing.

## Product Data

Characteristic	Test method	Unit	Value	Expr. of result
Visible defects	EN 1850-2		Pass	Pass/Fail
Length	EN 1848-2	m	25;50;75;100	MDV -0, +5 %
Width	EN 1848-2	m	1.7	MDV -0,5 +1%
Effective thickness	EN 1849-2	mm	1.2;1.3;1.5;2.0	MDV -5 +10%
Straightness	EN 1848-2	mm	≤ 50 mm	≤ MLV
Flatness	EN 1848-2	mm	≤ 10 mm	≤ MLV
Water tightness	EN 1928 (B)		Pass	Pass/Fail
Reaction to fire	EN 13501-1		Class E	Classification
Peel strength of joint	EN 12316-2	N/50 mm	100	≥ MLV
Shear strength of joint	EN 12317-2	N/50 mm	200	≥ MLV
Tensile strength	EN 12311-2	N/mm <sup>2</sup>	9	≥ MLV
Elongation at break	EN 12311-2 (B)	%	300	≥ MLV
Dynamic penetration	EN 12691 (A)	mm	1000	≥ MLV
Static load	EN 12730	kg	20	≥ MLV
Tear resistance	EN 12310-2	N	60	≥ MLV
Root penetration	FLL / prEN 13948		Pass	Pass/Fail
Dimensional stability	EN 1107-2	%	0.5	≤ MLV
Foldability at low temp.	EN 495-5	°C	- 40	≤ MLV
Water vapour properties	EN 1931	μ	98000	MDV ± 30%

NPD = No Performance Determined

MDV= Manufacturer's Declared Value

MLV = Manufacturer's Limiting Value

Edition: 20-11-2007

# ELASTOSEAL T, EPDM ROOFING SYSTEM

Accompanying document, EN 13956



**0402-CPD-470301**

## Product Description

Elastoseal T is an unreinforced EPDM waterproofing membrane produced in two ply. The product comes in black colour and has a surface texture on both sides. The range of use is roof waterproofing.

## Product Data

Characteristic	Test method	Unit	Value	Expr. of result
Visible defects	EN 1850-2		Pass	Pass/Fail
Length	EN 1848-2	m	25;50;75;100	MDV -0, +5 %
Width	EN 1848-2	m	1.7	MDV -0,5 +1%
Effective thickness	EN 1849-2	mm	1.2;1.3;1.5	MDV -5 +10%
Straightness	EN 1848-2	mm	≤ 50 mm	≤ MLV
Flatness	EN 1848-2	mm	≤ 10 mm	≤ MLV
Water tightness	EN 1928 (B)		Pass	Pass/Fail
Reaction to fire	EN 13501-1		Class E	Classification
Peel strength of joint	EN 12316-2	N/50 mm	50	≥ MLV
Shear strength of joint	EN 12317-2	N/50 mm	200	≥ MLV
Tensile strength	EN 12311-2	N/mm <sup>2</sup>	9	≥ MLV
Elongation at break	EN 12311-2 (B)	%	300	≥ MLV
Dynamic penetration	EN 12691 (A)	mm	1000	≥ MLV
Static load	EN 12730	kg	20	≥ MLV
Tear resistance	EN 12310-2	N	60	≥ MLV
Root penetration	FLL / prEN 13948		Pass	Pass/Fail
Dimensional stability	EN 1107-2	%	0.5	≤ MLV
Foldability at low temp.	EN 495-5	°C	- 40	≤ MLV
Water vapour properties	EN 1931	μ	98000	MDV ± 30%

NPD = No Performance Determined

MDV= Manufacturer's Declared Value

MLV = Manufacturer's Limiting Value

Edition: 20-11-2007

# ELASTOSEAL FR, ROOFING SYSTEM

Accompanying document, EN 13956



**0402-CPD-470301**

## Product Description

Elastoseal FRH/FRT is an unreinforced elastomeric waterproofing membrane based on the polymer EPDM produced in two ply. The product comes in black colour and has a surface texture on both sides. The range of use is roof waterproofing.

## Product Data

Characteristic	Test method	Unit	Value	Expr. of result
Visible defects	EN 1850-2		Pass	Pass/Fail
Length	EN 1848-2	m	25;50;75;100	MDV -0, +5 %
Width	EN 1848-2	m	1.7	MDV -0,5 +1%
Effective thickness	EN 1849-2	mm	1.2;1.3;1.5	MDV -5 +10%
Straightness	EN 1848-2	mm	≤ 50 mm	≤ MLV
Flatness	EN 1848-2	mm	≤ 10 mm	≤ MLV
Water tightness	EN 1928 (A)		Pass	Pass/Fail
Reaction to fire	EN 13501-1		Class E	Classification
External fire performance	EN 13501-5		BrooT1*	Classification
Peel strength of joint	EN 12316-2	N/50 mm	50	≥ MLV
Shear strength of joint	EN 12317-2	N/50 mm	200	≥ MLV
Tensile strength	EN 12311-2	N/mm <sup>2</sup>	8	≥ MLV
Elongation at break	EN 12311-2 (B)	%	300	≥ MLV
Dynamic penetration	EN 12691	mm	1000	≥ MLV
Static load	EN 12730 (B)	kg	20	≥ MLV
Tear resistance	EN 12310-2	N	30	≥ MLV
Dimensional stability	EN 1107-2	%	-0.2	≤ MLV
Foldability at low temp.	EN 495-5	°C	- 40	≤ MLV

\*Related to specific constructions.

MDV= Manufacturer's Declared Value

MLV = Manufacturer's Limiting Value

Edition: 10-03-2009

# Preface

The information contained in this manual is a guideline to providing sound waterproofing. The base for the guideline is many years of practical and design experience obtained by Trelleborg Waterproofing. Local legislation or design practice may differ slightly from these specifications and instructions, however the information enclosed should be considered as a general guideline towards the most effective product use and application in a given situation when installing our membranes.

Since the handling and installation is beyond our control, Trelleborg Waterproofing retain no responsibility for these areas.

# Table of Installation Specification

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# Product information

Elastoseal is an unreinforced elastomeric EPDM membrane for roof waterproofing. The membrane can either be used in loose laid installation under ballast or mechanical fastened by the unique Electrobond system. Elastoseal is always prefabricated in a factory into large panels that can be quickly installed on the roof with a minimum of seams to be performed during the installation.

The maximum size of a prefabricated panel depends on available handling equipment, available transport ways and other conditions on the site. We recommend a maximum panel size of 300 m<sup>2</sup>.

Elastoseal can either be prefabricated by Trelleborg Waterproofing or an authorized partner.

Description	Thickness (mm)	Size (m)
<b>Elastoseal membrane for prefabrication</b>	1.2	1.7x25 1.7x100
<b>Elastoseal panel</b>	1.2	5.02x25
<b>Elastoseal membrane for prefabrication</b>	1.5	1.7x25 1.7x75
<b>Elastoseal panel</b>	1.5	5.02x25

In some markets Elastoseal with thickness 1.0 mm is applied for ballasted roofing. This is mostly used when the entire roof can be covered with one panel. The installation techniques describe in this manual can be difficult to apply if membrane thickness is less than 1.2 mm. When using Electrobond fixation the Elastoseal thickness should never be less than 1.2 mm.

## Materials handling and storing

Check the material as verified by specifications, shipping document and product label. Missing or damaged goods should be reported to Trelleborg Waterproofing.

Store all materials according to the product specifications.

Packages shall not be opened until the material shall be applied. If the installation work is interrupted, unprotected rolls shall be covered or put back in their packaging.

Make sure that the substrate can carry the load when material is placed on the roof (point load).

Do not allow traffic or work by other contractors until installed roof areas are satisfactory protected. Keep the work site in good order and free from construction debris, loose nails, steels sheet off cuts etc.

# Works planning

The basic behind an efficient engineered roofing and prefabrication of panels is good information about the roof measurement. This is preferably acquired by careful measuring of the roof alternatively it can be gotten from adequate drawings.

Measuring »

Panel planning »

Prefabrication »

Installation »

The roofing work as well as quality assurance becomes easier and more secure if there is a way to split the roof in smaller areas that can be finished in detail during each working period.

Do not cover a larger roof area than it is possible to finalize splicing upon during the working period.

If the work is interrupted exposed rolls must be covered or put back in their original packaging.

If Elastoseal is exposed to the sun for a longer period the surface oxidizes. This is not changing the properties of membrane but the quality and strength of the Thermobond splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after Elastoseal lay out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the Elastoseal have oxidized the splice areas must be grinded with a grinding machine and nylon grinding disc followed by cleaning. The time it takes for oxidization to start is depending on the strength of the sun. Therefore it is of particular importance to do seam test before starting regular seaming.

# Roof design

## Build Up

### Substrate

Elastoseal can be used on all common substrates like: concrete, timber or corrugated metal deck. Concrete or timber decks can be used for cold roofs without insulation but on metal deck, insulation is required. Electrobond does not work on directly on substrates of magnetic metal (steel).

The roofing substrate shall have adequate strength and rigidity to carry actual loads from ballast, wind and snow etc.

Elastoseal is not influenced by ponding water but we still recommend a slope of at least 1:100 (0.5°). Maximum slope for gravel ballasted roof is 1:10(5°).

The substrate shall be relatively even - equivalent to wood floated concrete. It shall be clean and free from water in any form as well as contaminations like oil or grease. Screws or nails must be properly entered into substrate without risking coming out. Substrates that are rougher than wood floated concrete shall be covered with a protection layer.



The smoothness of the substrate is particularly important under splice areas. Difference in level more than 5 mm must be levelled before splicing.

In heavy construction, like decks of reinforced concrete, the expansion joints and construction joints in the underlying concrete substrate must be made smooth with mortar, cement. There must also be an expansion zone between roof field and adjacent vertical to allow the deck to expand and contract.

### Protection layer

When a protection layer for mechanical abuse for Elastoseal is needed there are several design alternatives. Any of these can be chosen: Suitable insulation material, protection fabric of min. 200 g/Sq.m., plywood or synthetic board.

When a protection layer for heat during installation is needed (insulation that melts) it can be glass fabric of min. 150 g/Sq.m, bitumen felt, rubber or plywood.

### Separation layer

For separation we recommend a fabric of min. 100 g/Sq.m.

### Insulation

Elastoseal can be installed upon any type of insulation without risk of migration. The chosen insulation must be suitable for low slope roofing and adapted to the requirements of the roof design.

For a ballasted roof the insulation must be able to resist long term pressure and handle the actual weight for each specific project. Besides the long term compression strength designed for the actual build up we require a minimum compression strength at 10% deformation of 60 kPa (60 kN/m<sup>2</sup>) to assure a proper installation.



Install insulation suitable for the roof in accordance with the guidelines of the supplier.

Polystyrene insulation can be melted and damaged by the heat from hot air machinery. For this reason we recommend that the insulation is covered by a heat protecting layer like an extra layer of Elastoseal, a mineral wool board or bitumen felt around details. Automatic welders do normally not melt the insulation.

Heat from the Centrix machine can also damage insulation that can't resist heat. This can be avoided by adding a protection layer on top of the insulation. Note that the foil on foil faced insulation is insufficient as heat protection.

Keep Contact Adhesive 5000, Cleaning Wash 9700 away from insulation that cannot resist solvents.

Insulation suitable together with Contact Adhesive 5000 must be chosen at details where adhesive is required. Mineral wool or polystyrene insulation is example of insulation that requires facing.

Avoid getting fibres from mineral wool in the splice areas and try to keep fibres from sticking to the backside of the membrane to a minimum when using Electrobond fasteners. Do not drag the panel so that it slides over the insulation but unroll it in its final position.

# Roof design

## Build Up

### Vapour barrier

When installing a new warm roof a suitable vapour barrier must be applied under the insulation and it should be installed to be air tight over the entire surface.

At roof terminations, and connections to walls, the vapour barrier shall be brought up over the thermal insulation. At penetrations, the vapour barrier shall be connected air tight with construction tape.



### Membrane fixation - Ballast

Elastoseal is laid loose to the substrate and secured by proper weight from ballast. For this reason the ballast should be applied shortly after membrane installation. Example of suitable ballast is: gravel, vegetation (green roof), pavers, concrete or timber.

In many cases different ballast is suitable for different areas on the same roof. Pavers are most suitable at areas with regular foot traffic. Gravel is extra suitable around drainage details for paver ballasted or green roofs.

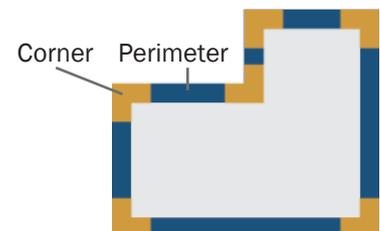
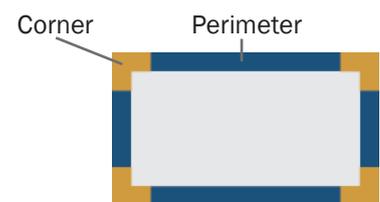
The weight of the ballast must be adapted for each building and be based upon local conditions and requirements. Example that influence the needed load from ballast are: wind zone, terrain, height and shape of building and height of parapets. There is also different legislation in different countries. The weight of the ballast should however never be less than 50 Kg/m<sup>2</sup>.

The influence from wind load is always bigger in the corners and at perimeters of the roof than in the field. Therefore gravel ballast should be applied with thicker layer in corner and perimeter zone than in the field.

A general guide to designing gravel thickness can be:

- ◇ Thickness x 1 in Field Zone.
- ◇ Thickness x 2 in Perimeter Zone.
- ◇ Thickness x 3 in Corner Zone.

The ballast should be applied with care so that the membrane isn't damaged.



# Roof design

## Build Up

### Membrane fixation - Electrobond mechanically attachment

Elastoseal is laid loose to the substrate and secured by Electrobond fixations that are fixed to the substrate prior to membrane lay-out. When installed on a warm roof the Electrobond fixations also secures the insulation. The Electrobond fixation shall be fixated to the membrane shortly after membrane installation.

The wind load calculation and design of fixation pattern must be done by Trelleborg Waterproofing or associated partners. It is critical that proper information about the project is given so that proper dimensioning of fasteners can be obtained. The information should be given via standardized form for wind load calculation. Additional to membrane fixation suitable fixation pattern for chosen insulation must also be considered.

The admissible load used for wind load calculations for Electrobond fixations with Elastoseal are:

Elastoseal H / T 1.2 mm	400 N / Fastener
Elastoseal H / T 1,5 mm	453 N / Fastener
Elastoseal FRH / FRT 1.2 mm	453 N / Fastener
Elastoseal FRH / FRT 1.5 mm	517 N / Fastener

In addition to the Electrobond fixations there should be a base tie-in of the membrane around the perimeters and around details in the field that is 500 mm or larger. The base tie-in should be done as a linear fixation with Termination bar or fixed under clad metal, both alternatives fixed with cc max 200 mm.

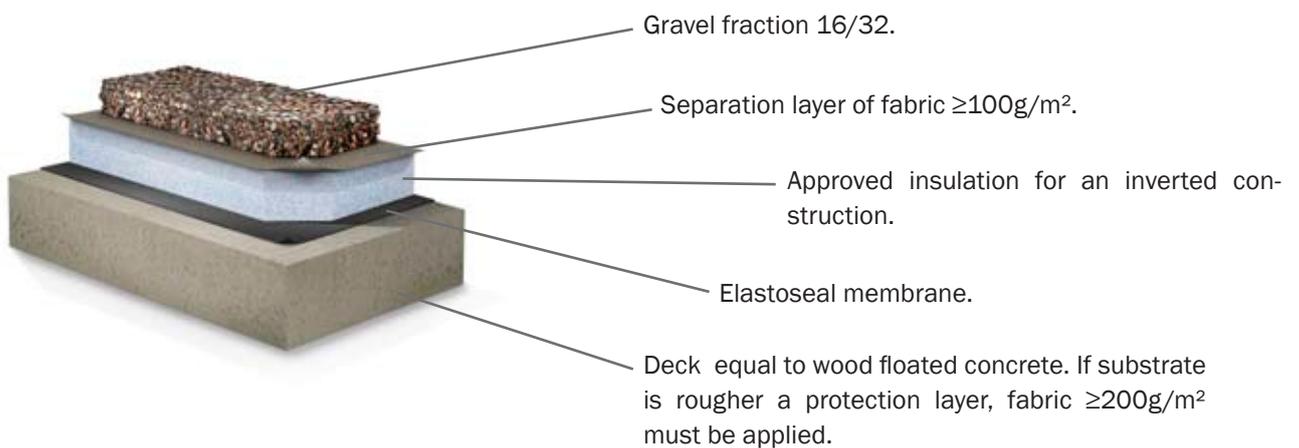
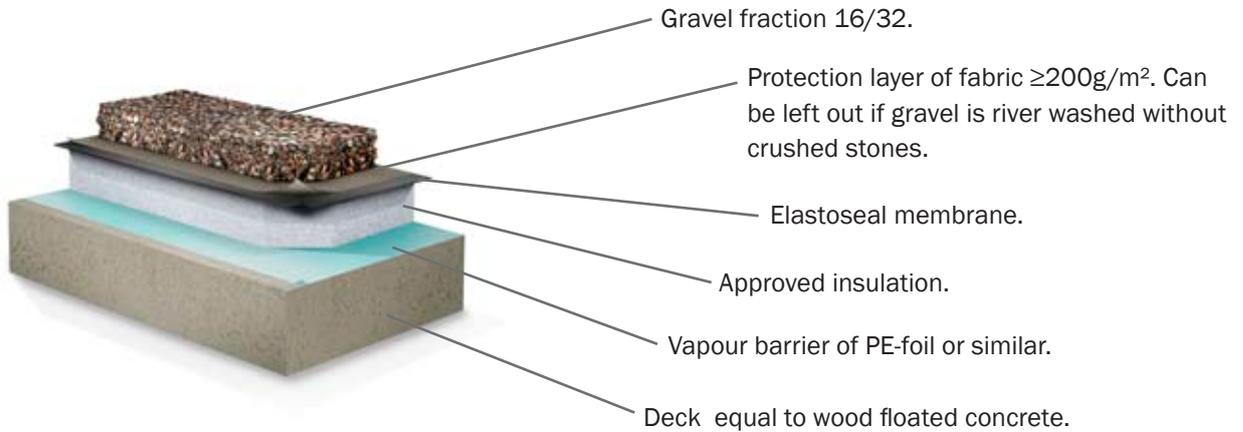
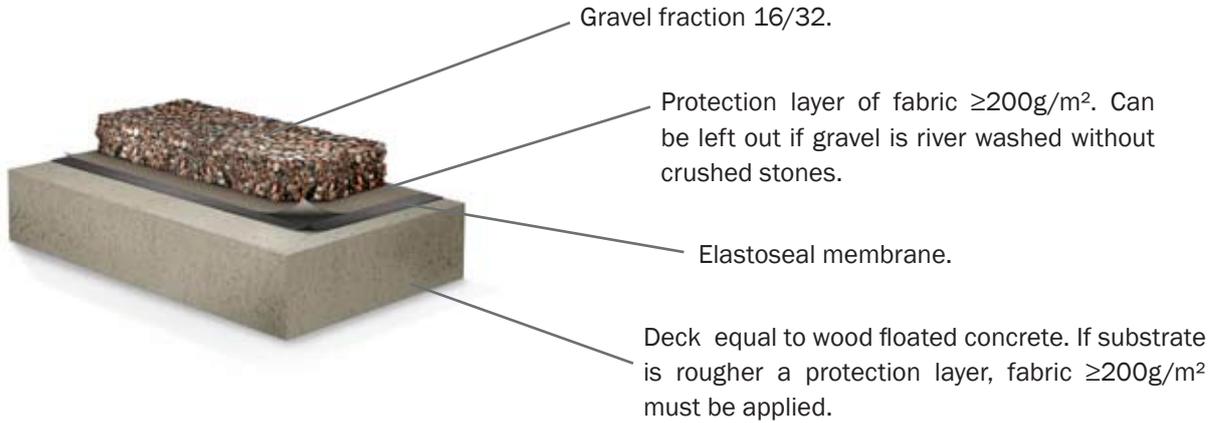
When refurbishing an existing roof using Electrobond fixation a pull out test on the actual roof must be carried out and documented.

Make sure to control that the build up and products chosen is compatible with the local fire legislations.

# Roof Design

## Build Up - Gravel Ballasted

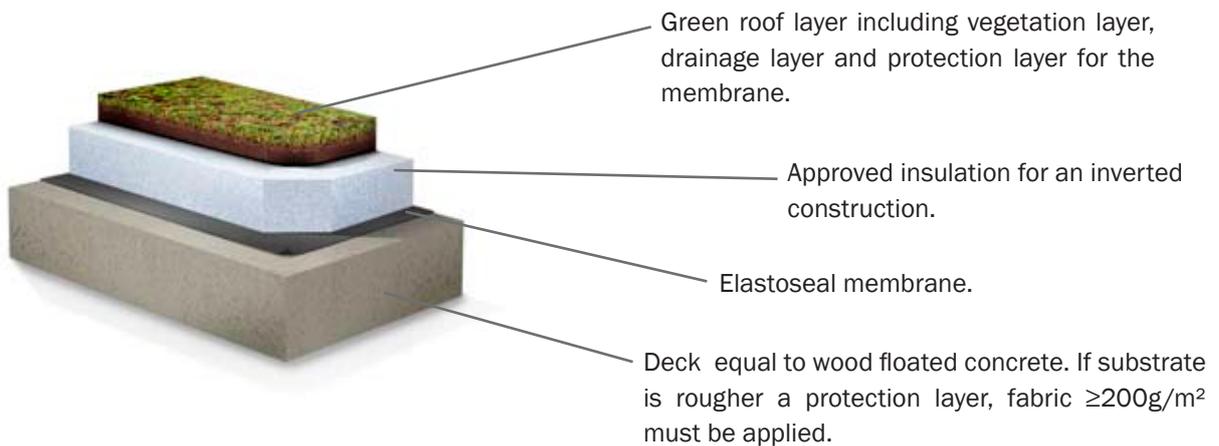
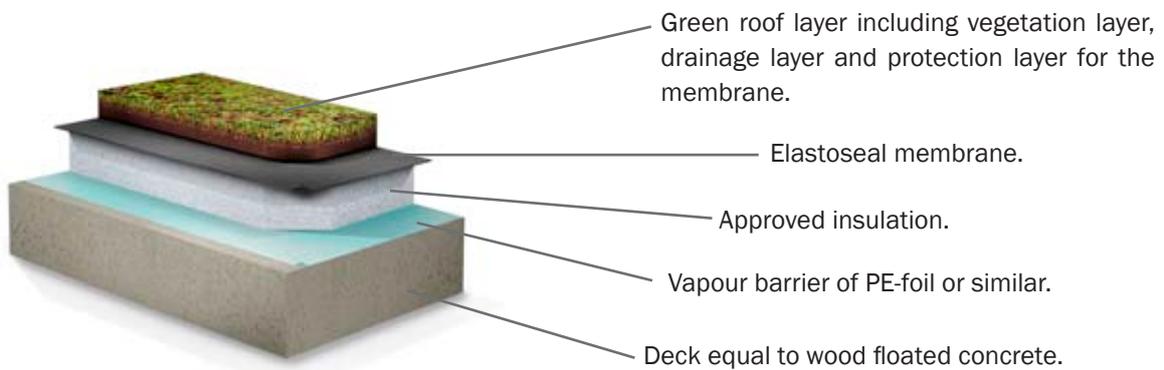
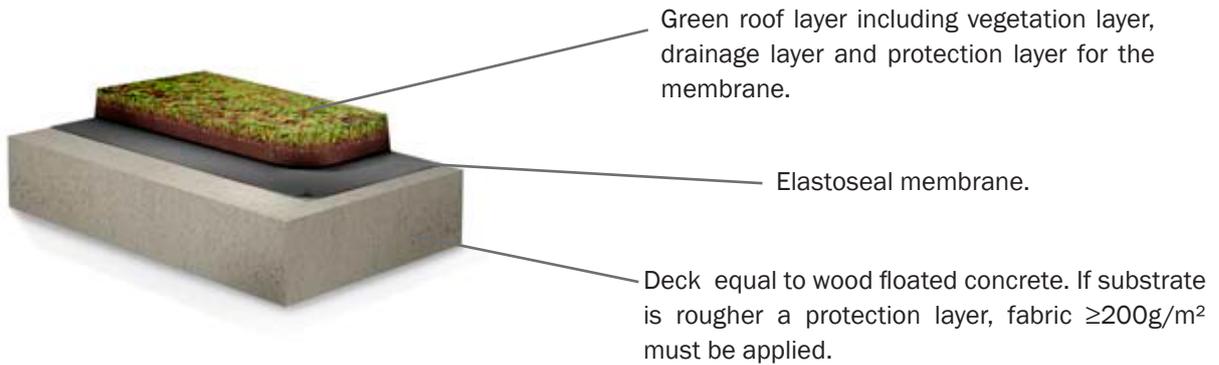
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# Roof Design

## Build Up - Green Roofs

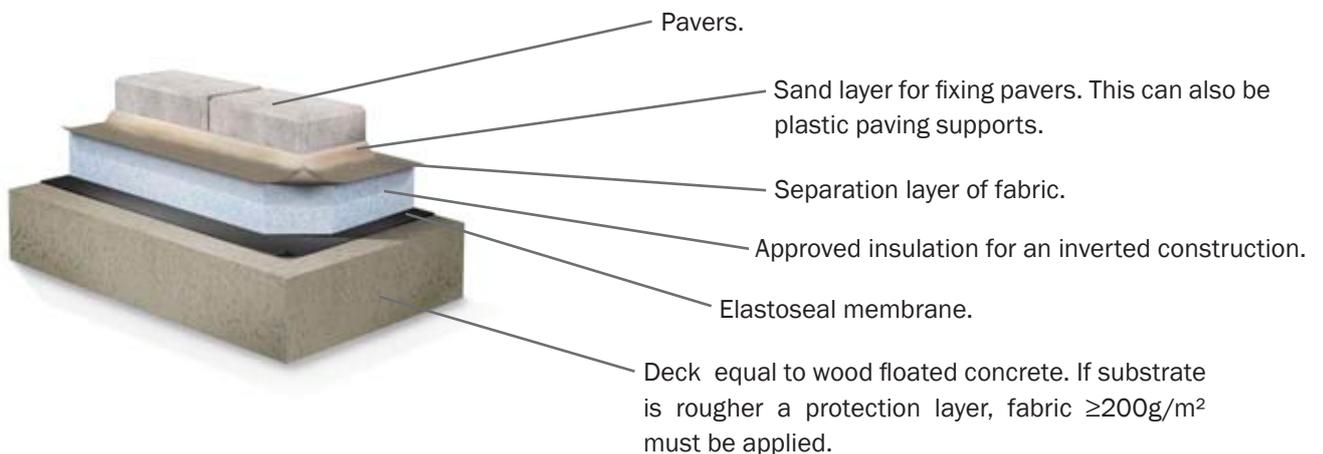
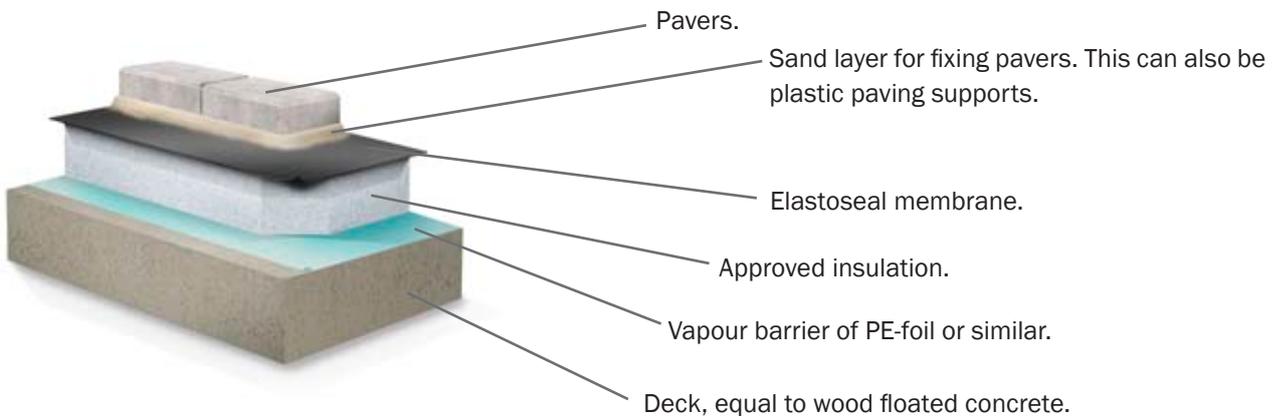
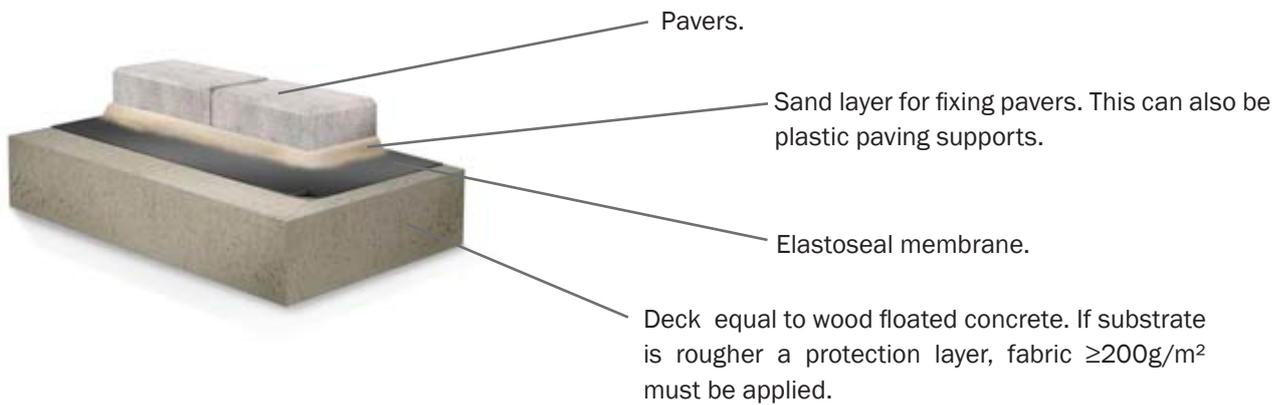
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# Roof Design

## Build Up - Paver Ballasted

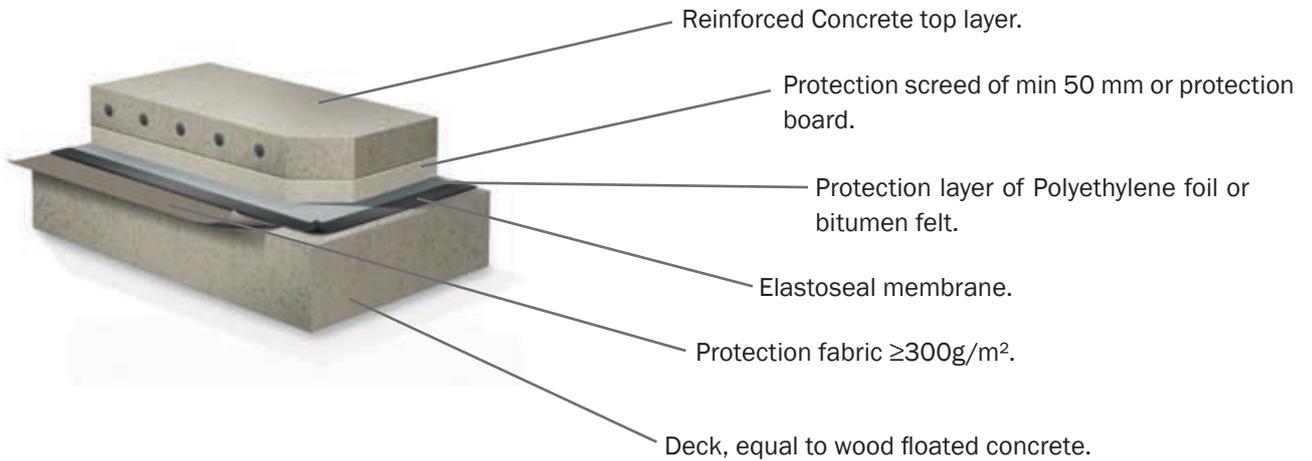
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# Roof Design

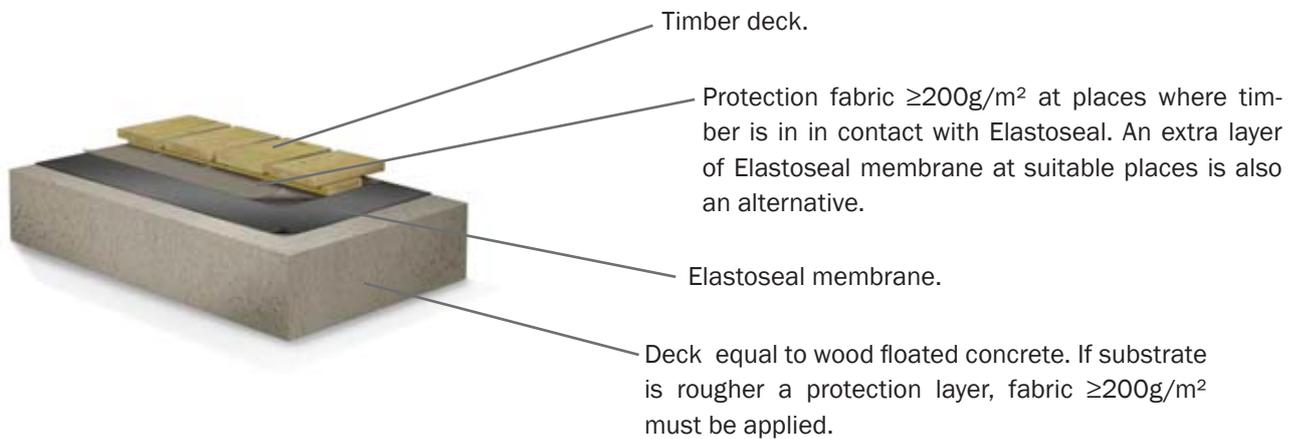
## Build Up - Concrete ballasted

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## Build Up - Timber Deck

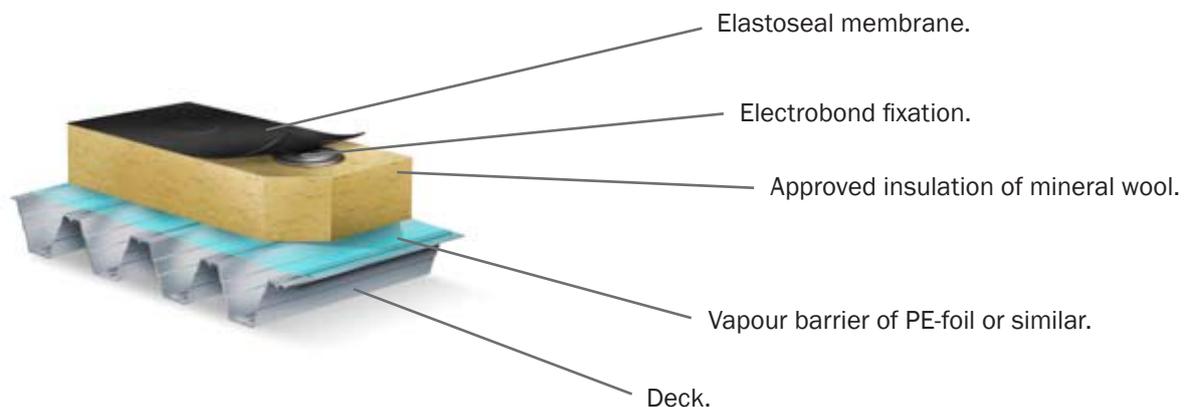
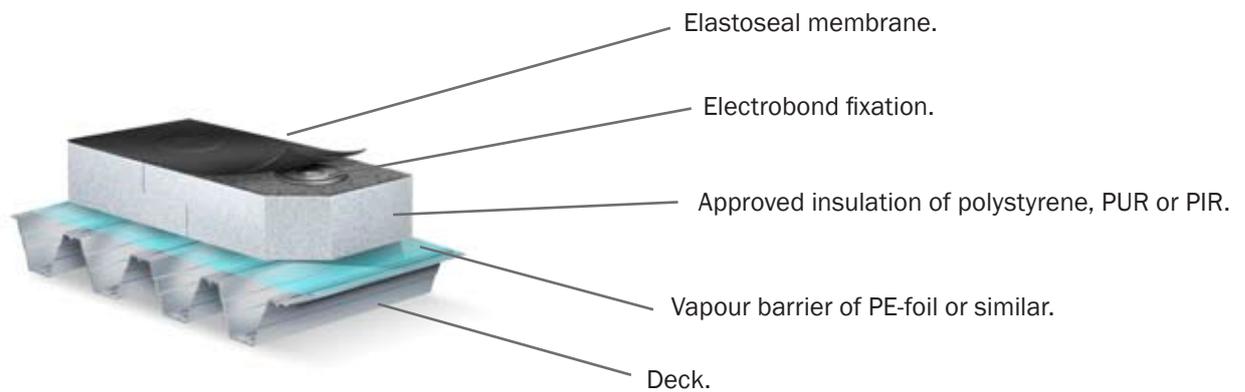
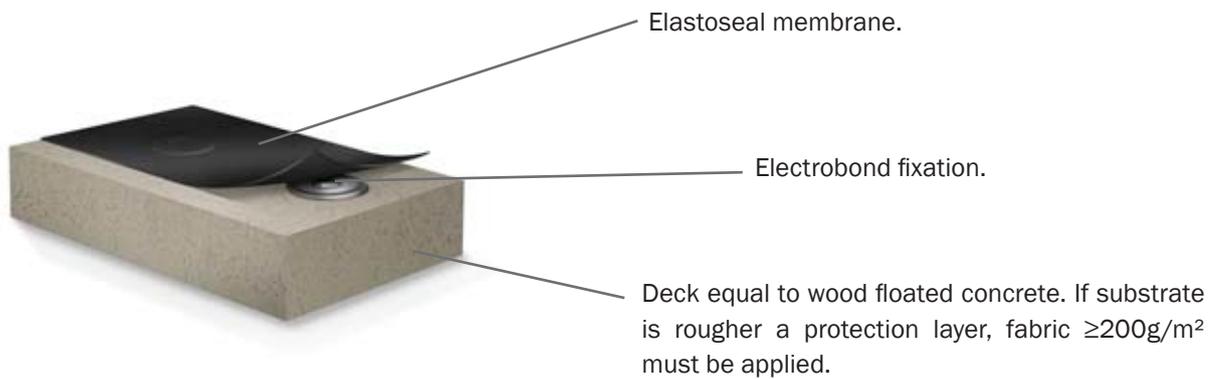
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# Roof Design

## Build Up - Electrobond Mechanically attached

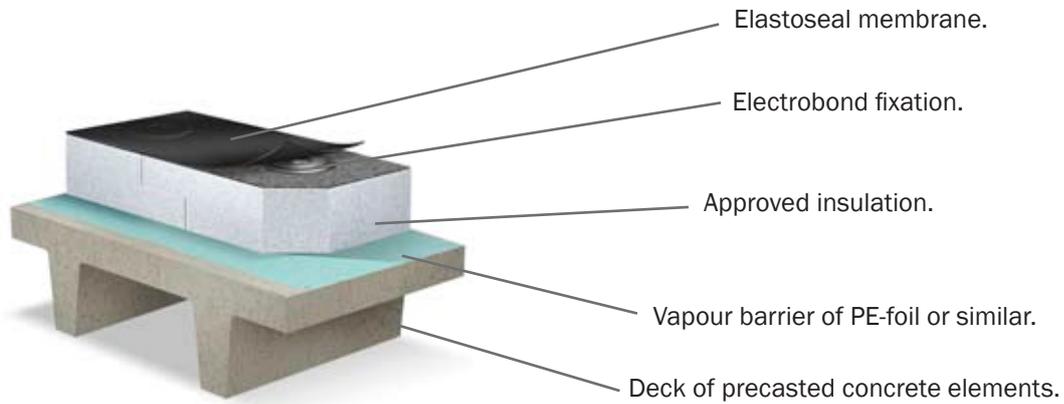
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# Roof Design

## Build Up - Electrobond Mechanically attached

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# Roof design

## Details - Upstands

All places where the substrate makes a change in angle greater than 15° should be considered as an upstand and treated accordingly. Exception to this is details in the roof surface measuring max. 500 mm (side or diameter).

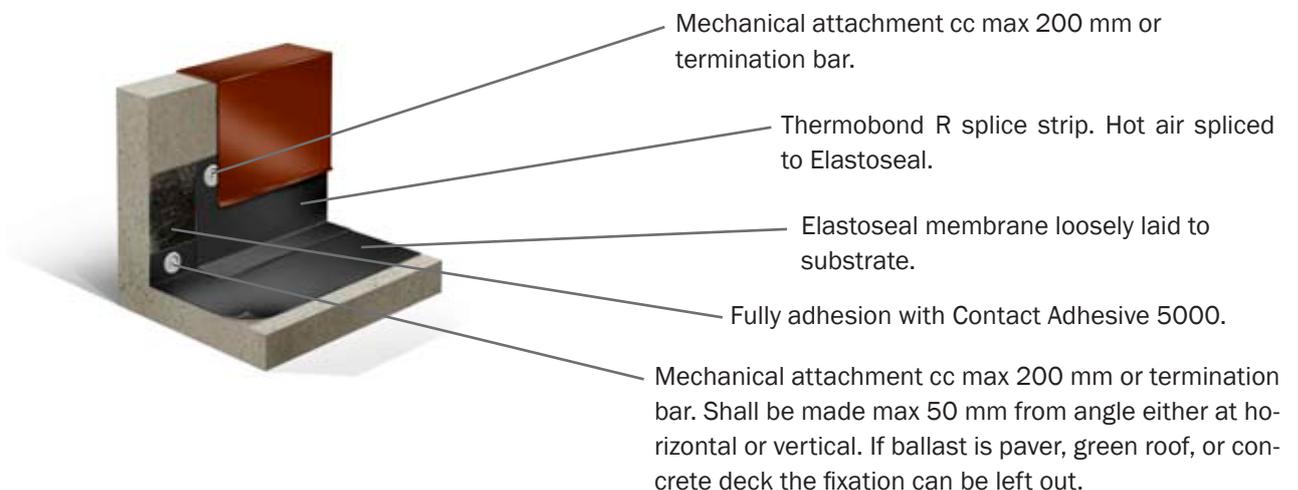
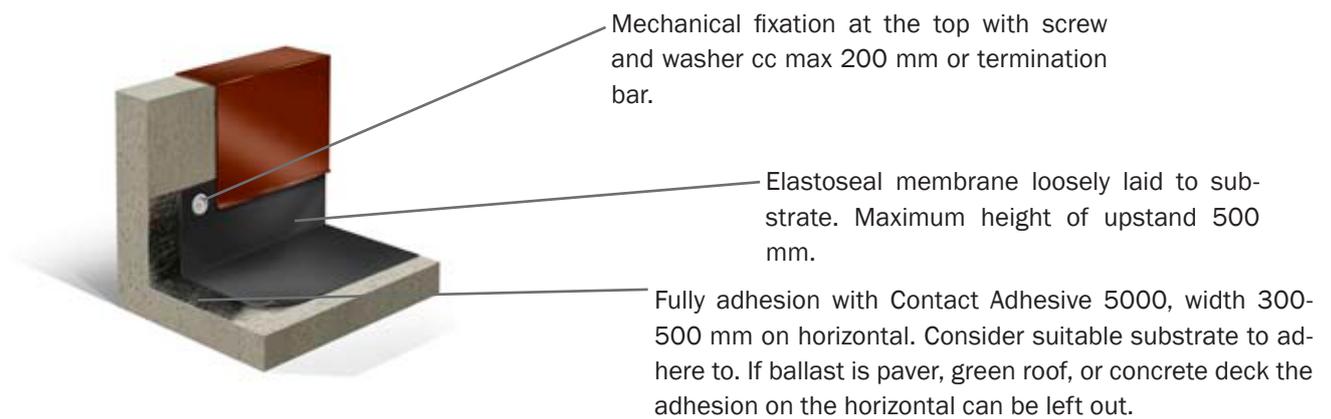
The height of an upstand should be minimum 200 mm over the top layer of the roof.

The Elastoseal membrane can be used for making upstands up to a height of 500 mm. Higher upstand must be done with Thermobond R splice strip. These solutions is uniform for all type of upstands like connection to wall, curb, skylight, roof vents etc.

When connecting to a curb our preference is that the membrane is terminated on the outside of the curb but termination at the top or the inside is also allowed.

### Upstand for ballasted roofs

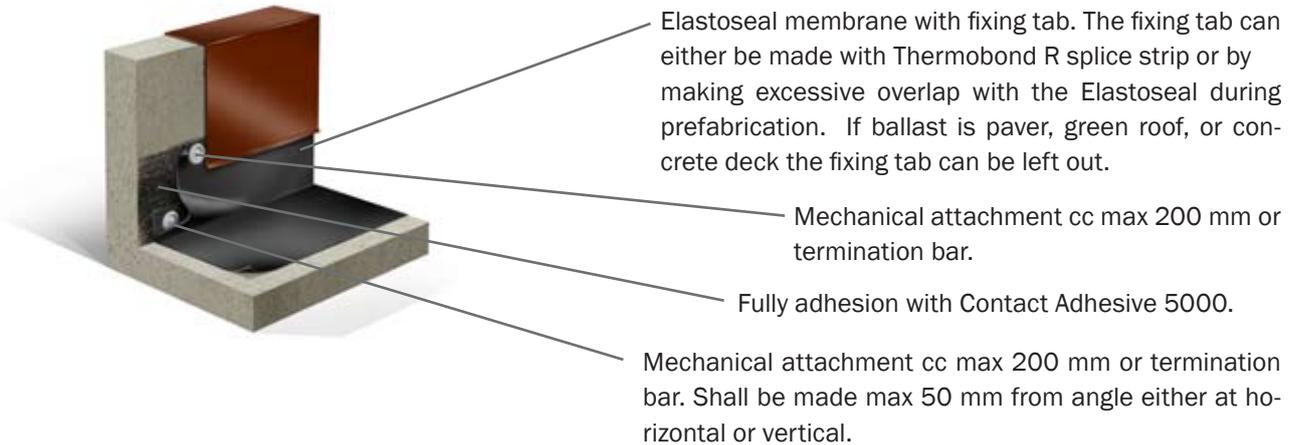
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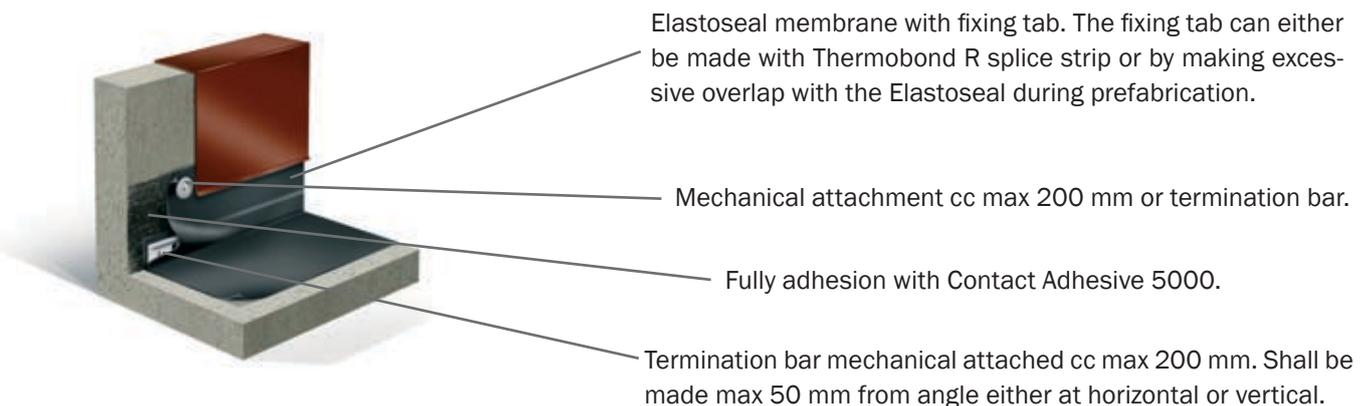
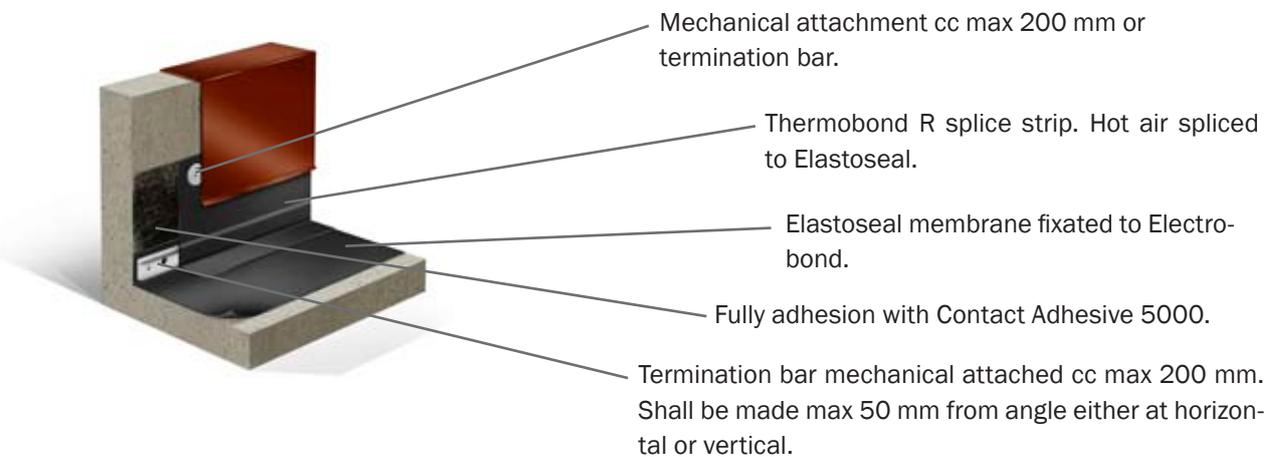
# Roof design

## Details - Upstands

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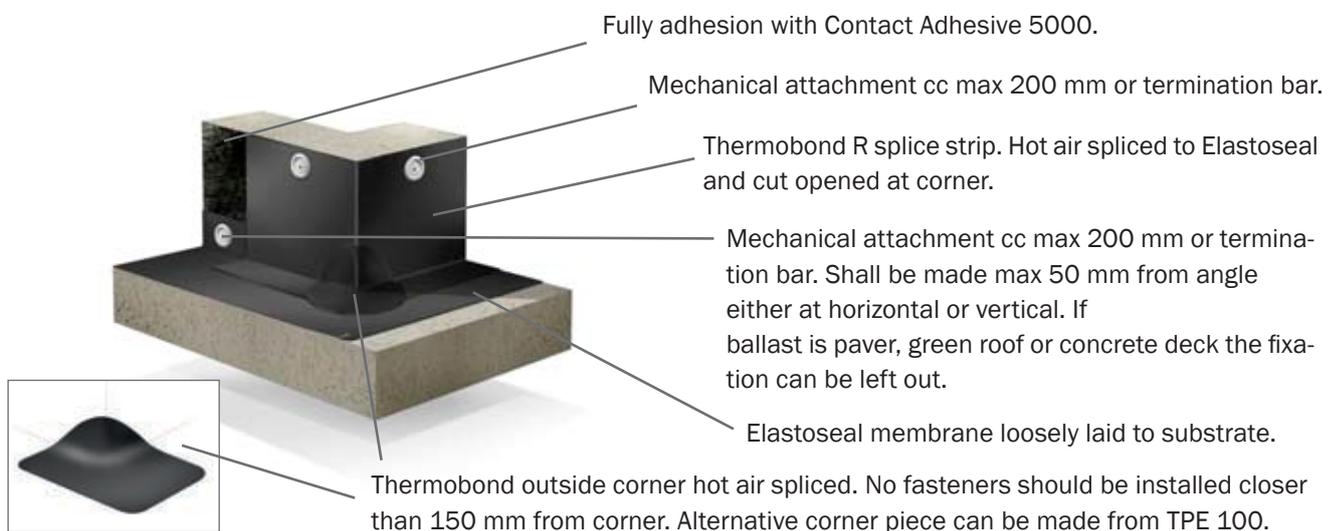
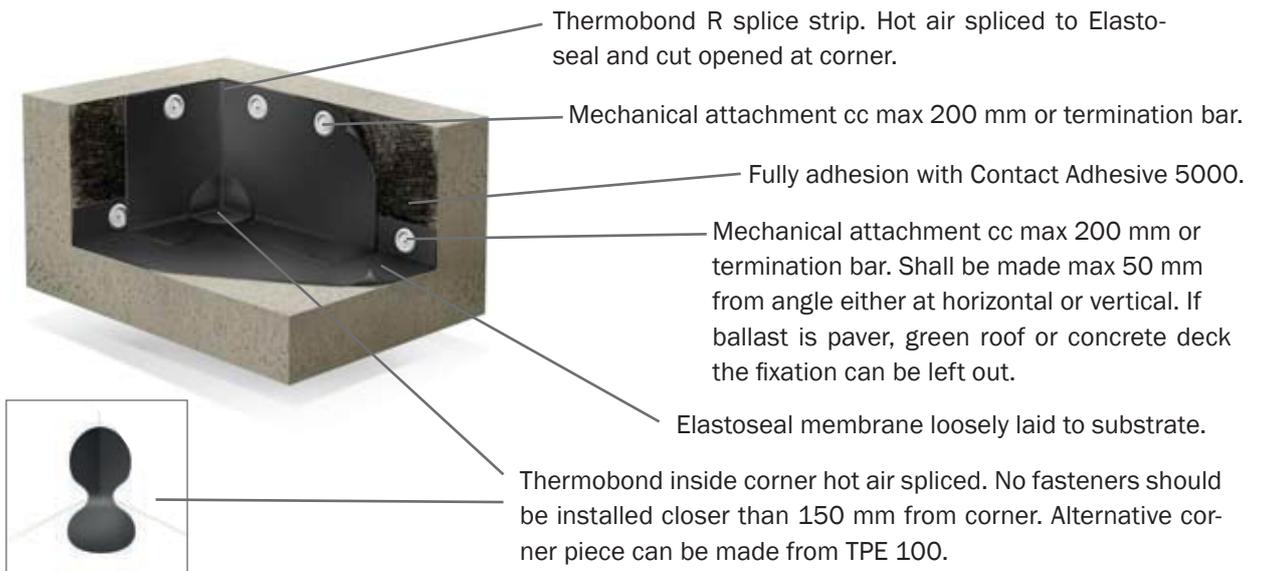
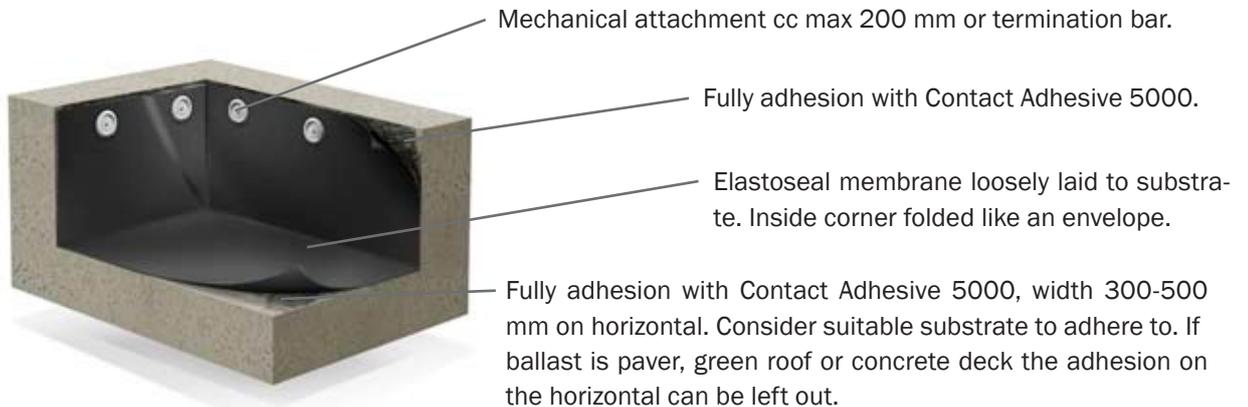
### Upstand for Electrobond mechanically attached



# Roof design

## Details - Corners

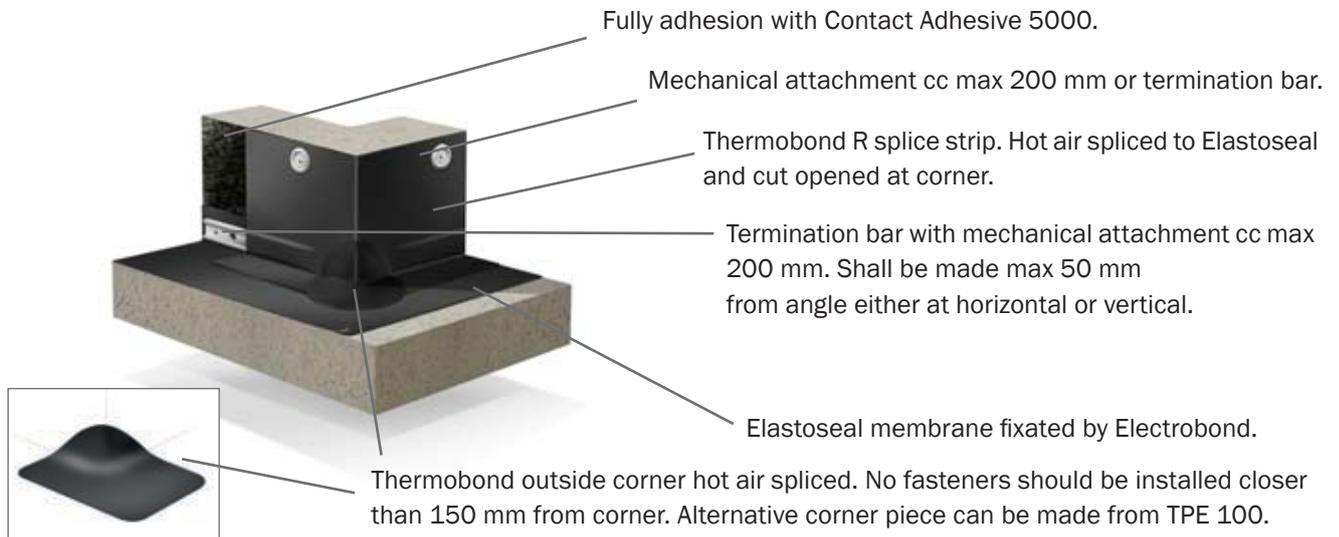
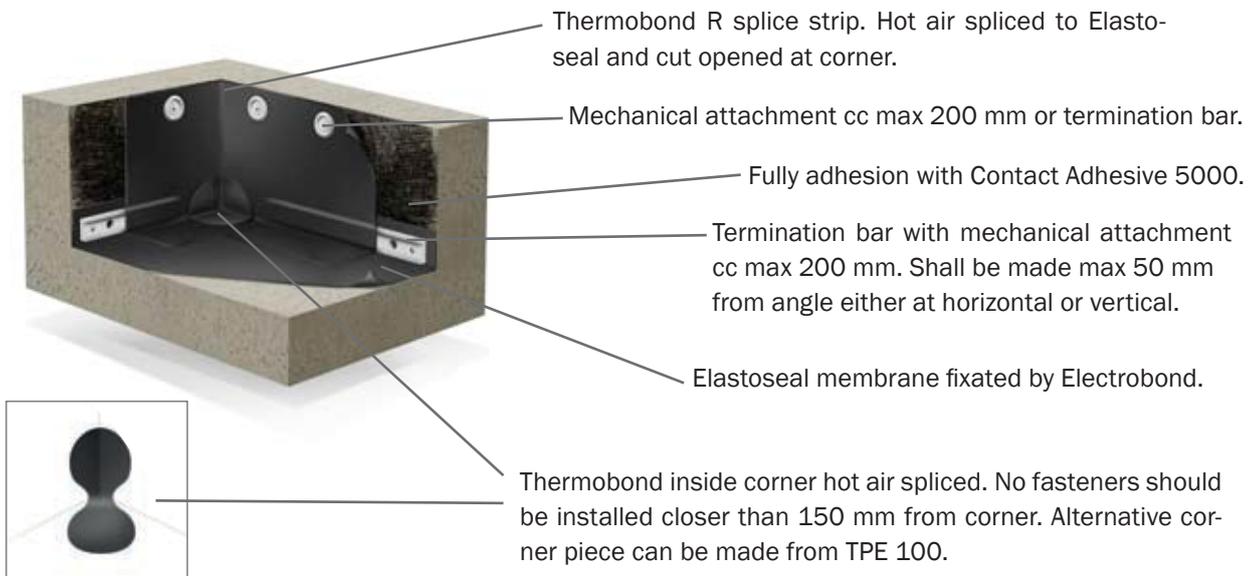
### Corners for ballasted roofs



# Roof design

## Details - Corners

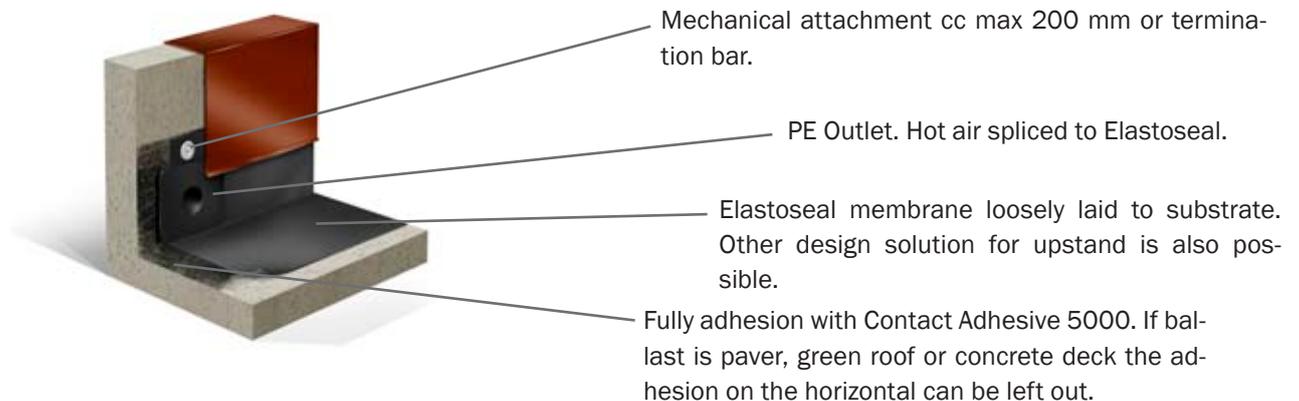
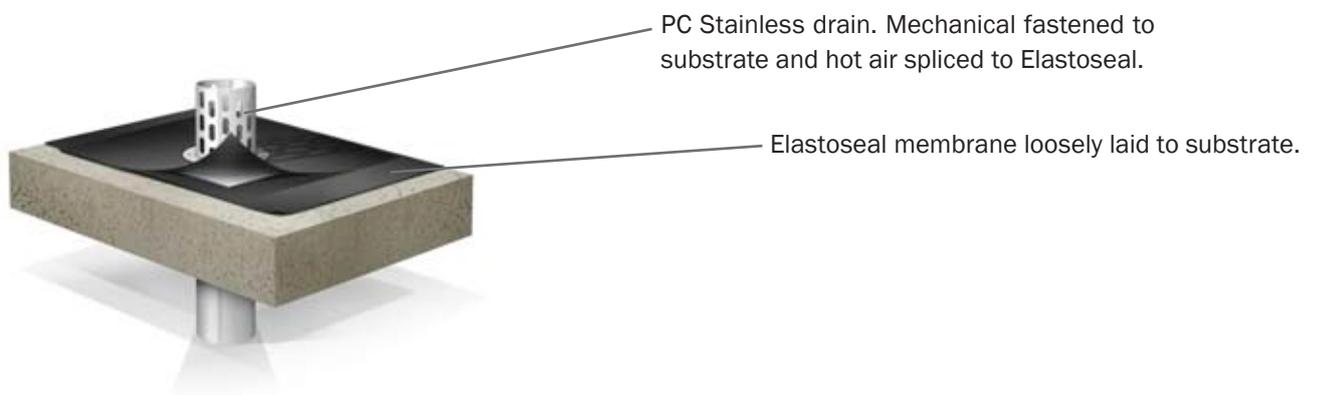
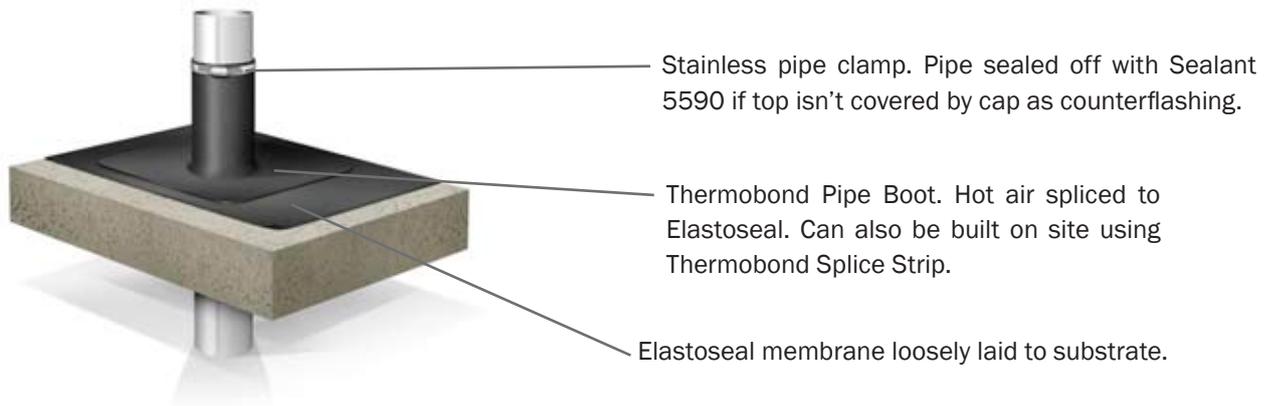
### Corners for Electrobond mechanically attached



# Roof design

## Details - Pipe Penetrations

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**Note!** This build up is valid for ballasted roofs only. The PE outlet can be used for Electrobond mechanically attached roof also with upstand constructed as our recommendations.

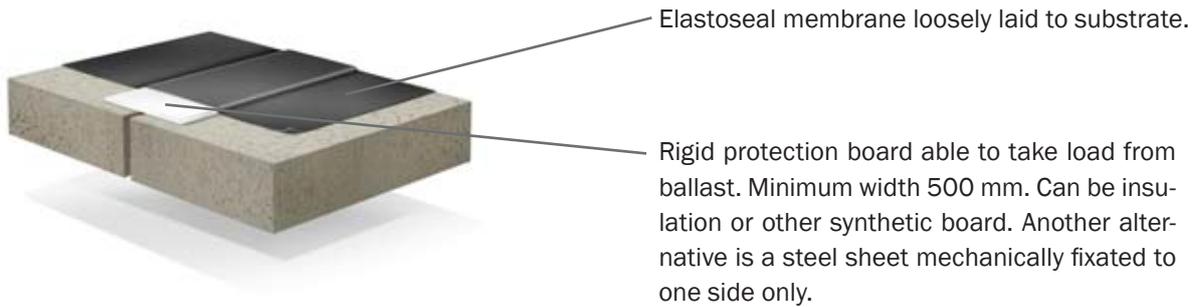
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# Roof design

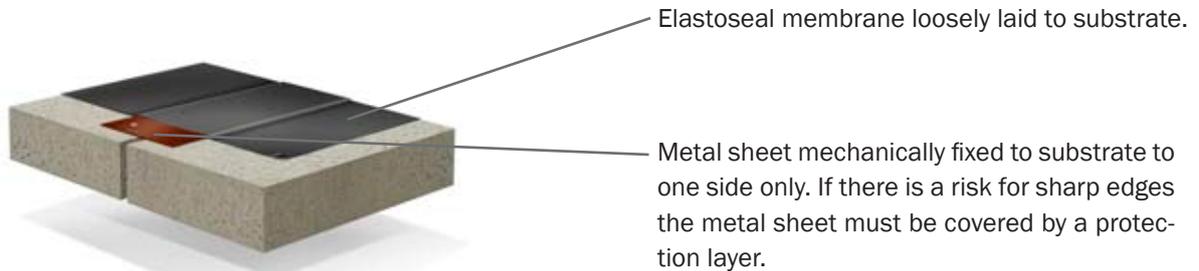
## Details - Expansion joint

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### Expansion joint for ballasted constructions



### Expansion joint for ballasted or Electrobond mechanical attached constructions

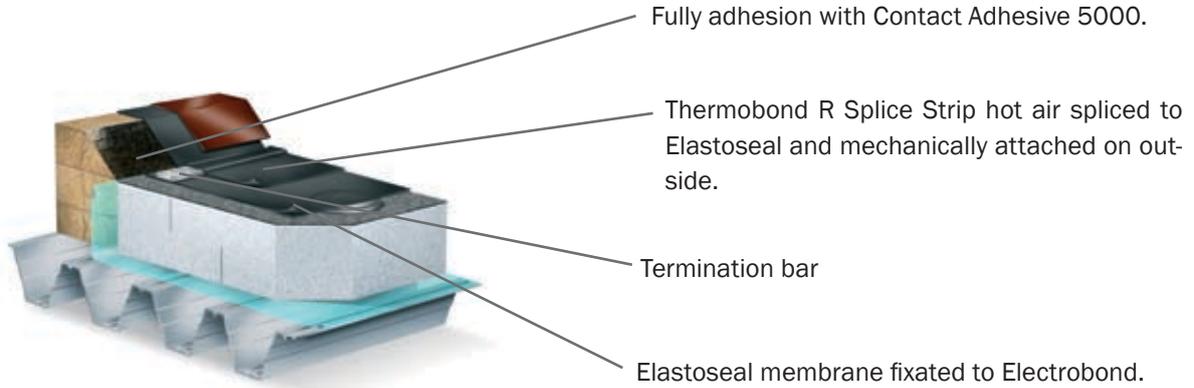


# Roof design

## Details - Edge details for Electrobond mechanical attached

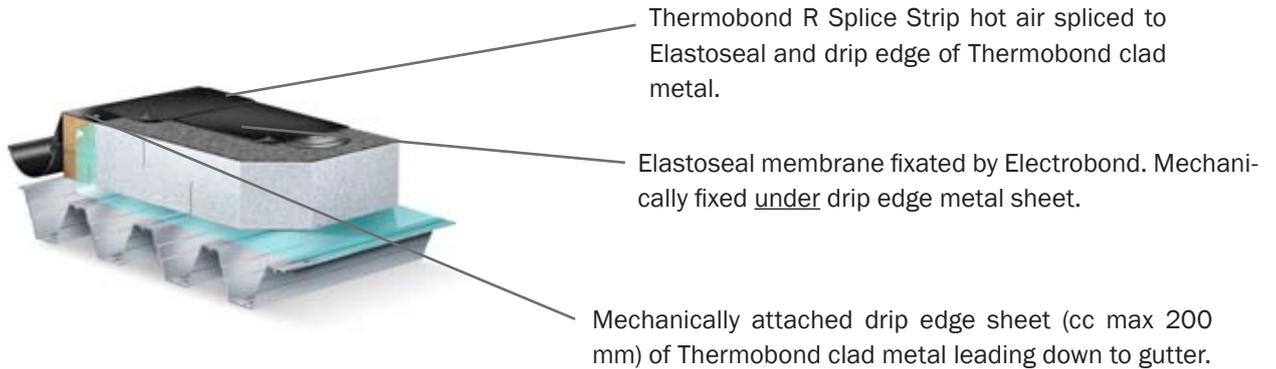
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### Termination at curb



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### Termination at drip edge



When prolonging the drip edge sheet of Thermobond clad metal the sections should be placed with a gap of 5 mm where the gap is bridged with duct tape and sealed off by welding a cover strip of Thermobond R splice strip.

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# Membrane installation

## Panel positioning

Place the panels on the roof so close to their final position as possible and make sure that the substrate can carry the point load of the packed panels.

Unfold and unroll the membrane carefully so that as little tension as possible is brought to the membrane. The panel can be moved by waving so that air comes underneath and then move it around.

Before any seaming, cutting or fixation of a panel is done it must be allowed to relax for a minimum of 30 minutes in intended position.

Fixation of Elastoseal with ballast or Electrobond should be applied directly after installing the membrane. If this isn't possible temporarily ballast for fixation during the installation should be applied.

Some wrinkles in the membrane are normal and indicates that the installation have been done in the right way. This does not damage the function of the membrane. Elastoseal shall never be over stretched in order to get rid of every wrinkle.

We recommend that all cuts and overlaps for splicing should be properly marked with a caulk line before execution. Straight line for cuts and splice is crucial for easy installation and good appearance.

Panels should be positioned so that no Electrobond fixation is positioned under seam area.

### Connection of panels

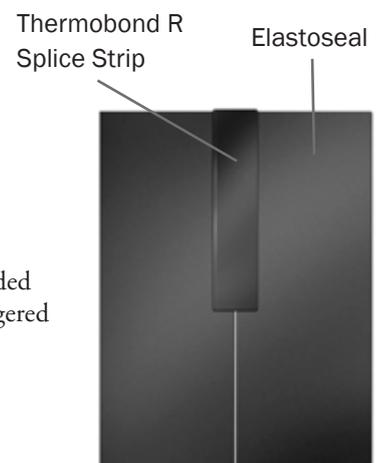
If connections between panels are needed the Elastoseal panels are preferably positioned butt jointed without overlaps and welded with a cover strip of Thermobond R splice strip.

### Multiple layers

More than three layers waterproofing (Elastoseal or Thermobond R splice strip) shall be avoided when installing. This can be done by planning work so that panels and details are made staggered or at an extreme to cut off lower layer.

### Gutters

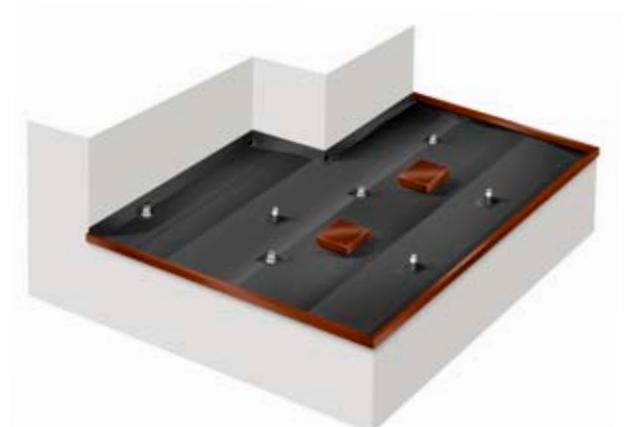
If possible panels should be laid in the directions of the gutters to avoid splice perpendicular to water runoff. It is however allowed and no problems to lay panels cross the gutter. When Elastoseal is fixed with Electrobond there must be an Electrobond fixation along the low point of the gutter.



Connection of panels.

### Panel tailormade to size in one piece

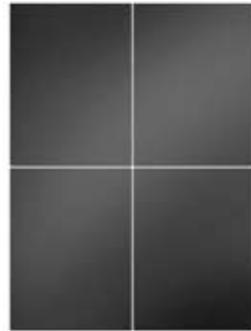
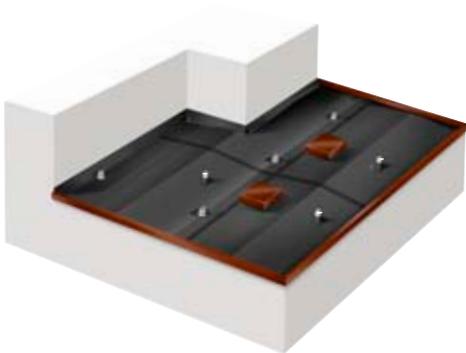
If the roof area isn't bigger in size than a panel that is practical to handle it is advisable to make the panel in one piece. How big that is practical to handle depends on circumstances for the project but we recommend a maximum size of 300 m<sup>2</sup>.



# Membrane installation

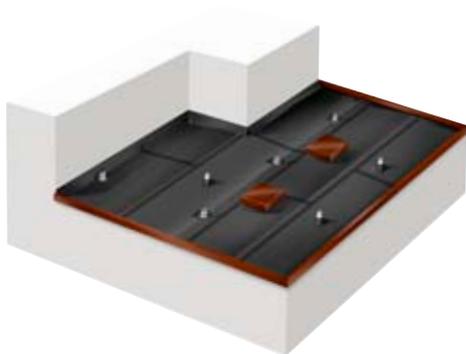
## Panel positioning

### Panel installed in grid



When Elastoseal is installed as a grid with four panel corners connecting the panels must be installed butt jointed without panel overlap. The lower Thermobond R splice strip must be sealed off with hot melt sealant at the intersection point of the upper strip to level the different in height. The Thermobond hot melt sealant shall be applied so that it stretches minimum 10 mm at each side under the upper strip.

### Panel installed staggered

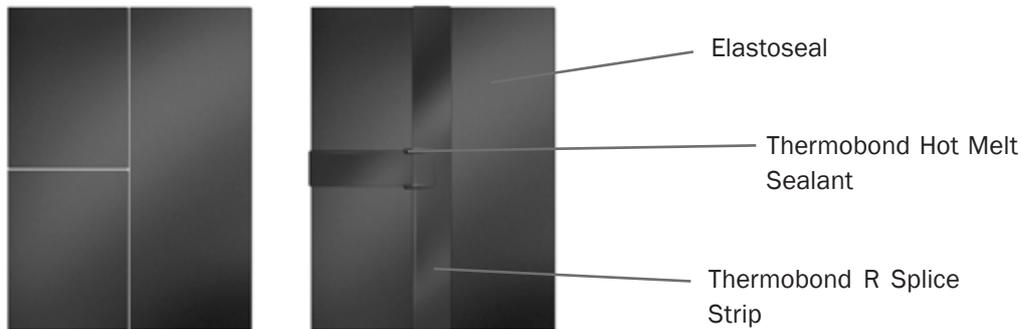


When Elastoseal is installed with staggered length it is possible to overlap the Elastoseal panels if required even if we recommend keeping the panels butt jointed.

# Membrane installation

## Details

### T-joints



All T-joints should be levelled in height by applying the Thermobond hot melt sealant before the upper layer is installed. The hot melt sealant is applied with hand held hot air blower and silicone roller and the sealant shall stretch minimum 10 mm outside the upper layer. Directly after the upper Thermobond R strip is spliced it shall be pressed to the hot melt sealant using a brass pressure roller.

**Note! T-joint for prefabricated splice should be treated with Thermobond hot melt sealant as the splices made on site.**

### Visible corners

Visible corners in the top layer shall be rounded to a radius of approx 30 mm.

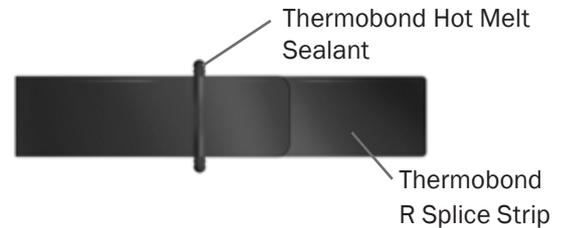


# Membrane installation

## Details

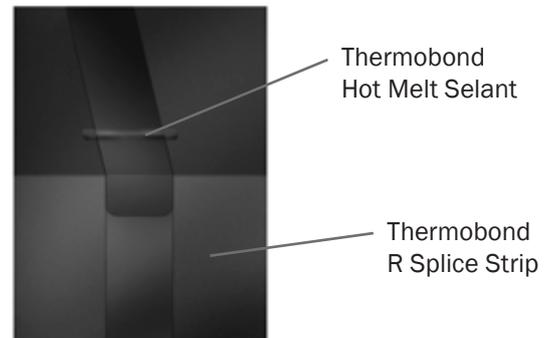
### Prolongation of cover strip

When Thermobond R splice strip needs to be prolonged this is done by overlapping the strip minimum 50 mm and welding them to each other. Visible corners to be rounded off at upper layer.



### Cover strip passing over angles

All places where the Thermobond R splice strip are used as a cover strip (not as flashing!) passes over an angle  $\geq 15^\circ$  it shall be broken with the underlying part passing the break line with min 50 mm. The upper Thermobond R splice strip should overlap min 100 mm and be seamed in place. Visible corners to be rounded off.



# Splicing

Prefabrication splicing into Elastoseal roof panel is made by Trelleborg Waterproofing or associated partners. This can be done with Hotbond or Thermobond splicing techniques. Both these are welding techniques created by heat and not adhesives or solvents.

For the onsite seaming during the installation the Thermobond hot air seaming technique is applied. Automatic welders like Leister Varimat and Variant or similar should be used on all places where it is possible to do so. Handheld Leister Triac in combination with silicone or brass pressure roll is used for detail work and at locations with narrow space.

Connections between panels are made by welding a Thermobond R Splice Strip as cover strip on top of the Elastoseal.

## Recommended machinery

Machine	Application	Settings
<b>Leister Varimat</b>	Connection between panels, Upstands with Thermobond R Flashing.	Temperature: 620°C Speed: 1,5-3 m/min Pressure: +15 Kg
<b>Leister Variant</b>	Connection between panels, Upstands with Thermobond R Flashing.	Temperature: 10 Speed: 1,5-3 m/min Pressure: +15 Kg
<b>Leister Triac</b>	Detail work: corners, pipe boot, repairs	Temperature: 6-8 Speed and pressure: To be adopted Nozzle: 40 mm

## Environment

Thermobond heat splicing can be made in ambient temperature in the range -20 to+50°C.

Thermobond seaming should not be done during precipitation, in the presence of excessive moisture, in areas of ponding water or during excessive winds.

## Membrane

The splice areas of the membrane must be smooth clean and free from wrinkles.

It is of major importance that both areas that should be seamed together are heated before the contact areas are joined.

No stress should be build into a Thermobond seam.

## Support Strip

We strongly recommend the use of our product Support Strip when splicing with automatic welders. The support strip is placed on top of the Thermobond R Splice Strip that should be connected to the Elastoseal and keeps the underlying layers in place during splicing. As the pressure from the machine is levelled out folds in the splice areas are avoided.

## Splice Properties

Recommended splice width is 40 mm with automatic hot air machinery and 50 mm when splicing with hand machine and silicone roller. Minimum seam width is 30 mm.

Note that the Thermobond seam doesn't reach full strength until it has cooled down.

Temperature-Speed settings are correct when the Thermobond is melted into a pasty consistence without development of white smoke.

A test weld should always be done at start-up of each working shift. The sample should be examined and tested to assure good quality.

## Oxidization

If Elastoseal is exposed to the sun for a longer period the surface oxidizes. This is not changing the properties of membrane but the quality and strength of the Thermobond splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after Elastoseal lay out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the Elastoseal have oxidized the splice areas must be grinded with a grinding machine and nylon grinding disc followed by cleaning. The time it takes for oxidization to start is depending on the strength of the sun. Therefore it is of particular importance to do seam test before starting regular seaming.

# Electrobond fixing

The Electrobond washers should be installed according to design pattern as specified by valid wind load calculation and also be adopted to proper fixation pattern for chosen insulation.

When working on soft insulation a plastic tube that ensures that the screw don't penetrate the membrane is needed.

The Electrobond washer should never be fixed to deep into the insulation. The bonding areas must be above the insulation to assure proper bond.

The Electrobond washers should be covered with Elastoseal as soon as possible after they are fixated and never later than the same day. The welding of the fixations must not be done immediately even if this is advisable.

Electrobond fixation should never be positioned directly under Elastoseal seam.

Electrobond washer could not be installed closer than 100 mm from obstacles that prevent Centrix tool to reach centre of washer.

An Electrobond fixation can be loosen by reheating it and this can be used for adjustments or dismantling. It is however not acceptable to reuse an Electrobond washer once it has been loosened.

## Recommended machinery

Electrobond should be fixated by the means of Centrix machine only and the machine setting should be set to 6.5 seconds operating time. Follow the guidelines of Centrix machine.

Welding with hot air is not acceptable.

## Operation

The Electrobond washer can be detected visually or by using a magnet. Fine positioning of the tool is made by the guidance diodes on the handle that indicates how to position the tool. When the tool finds its position it automatically starts welding. Apply some pressure with one hand on the tool during welding. Do not move tool until the machine beeps and the welding stops.

Immediately after the Electrobond have been welded a magnet should be placed on top of Elastoseal to assure pressure during cooling. The magnet must be left until the membrane has cooled down so that it can be touched without discomfort. If cooling is limiting the speed of installation we recommend using more magnets.



## Environment

Electrobond fixing can be made in ambient temperature in the range -15 to +45°C.

Electrobond fixing should not be done during precipitation, in the presence of excessive moisture, in areas of ponding water or during excessive winds.

## Membrane

The Elastoseal membrane that should be bonded must be smooth clean and free from wrinkles.

No stress should be build into an Electrobond fixation and the membrane should never be stretched to be fixated.

## Quality assurance

A test bond with Electrobond should be performed at start up of the working shift. Quality assurance of the system should be made as outlined under Quality Assurance and Control.

# Quality Assurance and control

Quality control and assurance are essential elements in the installation of Elastoseal Roofing System.

As the quality of the waterproofing is highly dependent upon the workmanship of the installer only contractors that are trained and certified by Trelleborg Waterproofing are allowed to do installations.

## Documentation

Each installation should be carefully documented including data on membrane, prefabrication information and a plan over the roof areas giving possibilities to trace material from production to installation.

## Visual control

Visual controls of the work and the quality should be done throughout roof installations. Problems and faults should be detected and fixed as early as possible. Controlling aspect should be:

- ◇ That correct material are being used and installed with the right equipment.
- ◇ That the material is installed according to the guidelines of Trelleborg Waterproofing, local regulations and in accordance with good workmanship practice.
- ◇ That the material isn't risking mechanical abuse.

## Splice control

Test splices shall be carried out with every hot air machine at the beginning of each working period as well as longer interruptions.

The Thermobond shall be seamed with the intended machine settings to minimum length 200 mm and width 40 mm.

When the splice has cooled down to 35-40° C the splice is peeled by pulling the two sheets apart.

When the splice is peeled, it shall delaminate leaving Thermobond material on each membrane surface.

If the splice doesn't pass this test the equipment must be controlled, adjusted and a new test performed. Regular site splicing is not allowed until an approved test splice has been allowed.

## Splice strength testing

The splice strength is controlled by destructive testing of a seam from the roof area.

A sample of min. 200x200 mm is taken centrally over the splice. The hole shall be repaired according to our guidelines.

The test samples are tested by peel according to EN 12316-2 and should reach peel strength of minimum 100N/50 mm, typical value in peel is 150-200N/50 mm.

## Splice tightness testing

The tightness of the seam shall be tested by running and applying some pressure with a blunt object like a screwdriver or similar along the seam. Extra attention should be addressed at corners, T-joints, penetrations and the roof perimeter.

An alternative tightness test is to use the air lance test method. This is executed by blowing compressed air perpendicular to the seam. If the seam has some deviation it will show and also the sound that the compressed air creates will change.

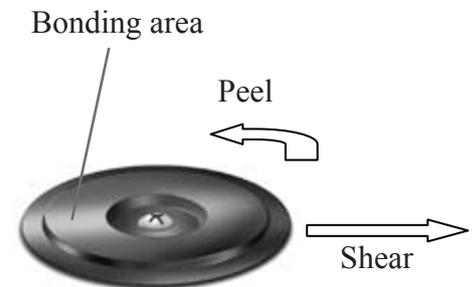
All deviation should be marked and repaired in suitable manner.



# Quality Assurance and control

## Electrobond verification

Test bonding of Electrobond should be performed at start-up of each working period. The visual control should show a bond over the whole contact area. After the material have cooled down the membrane should be cut to a sample of approx 25 mm in width and pulled in shear. Proper bond should give break in membrane. Thereafter the membrane should be peeled of the Electrobond washer leaving a clear membrane imprint over the bonding area alternatively pulling the laminated foil from the metal.



# Supervision & Maintenance

The Elastoseal membrane is maintenance free and has excellent durability without any sort of treatment.

We recommend that the roof is inspected by an authorized roofer on a regular base and also after extreme weather like storms or excessive precipitation. During the inspection the function of the roof is evaluated and deviations should be handled. Details in the roof are of higher importance than the surface and should be carefully examined: skylights, ventilation, curbs, connections to walls, drains, and pipe penetrations.

To maintain good functionality of the roof it should be cleaned on a regular basis. All objects that aren't belonging on the roof should be removed like contaminations, vegetations and leaves. It is of extra importance to keep the drainage free so that dewatering can function as intended.

Elastoseal should never be exposed to aromatic hydrocarbons like oil, diesel or fat. If this type of chemicals should leak to the roof it must be removed immediately or it will damage the membrane.

Regular walking on the membrane should be kept to a minimum. If there is regular traffic this should be considered in the design by adding walkways or pavers in that area.

## Leakage

If a leakage into a building is detected there can be several reasons and a careful investigation must be done. Leakages does not necessary mean that there is a problem with the Elastoseal membrane. Finding the problem includes considering:

- ◇ Mechanical damage of the membrane?
- ◇ When did the leakage first show?
- ◇ Weather conditions prior to leakage?
- ◇ Clogged drains or bad piping?
- ◇ Bad roof windows or ventilation shafts?
- ◇ Bad cladding in connection to the roof or the façade?
- ◇ Condensation from within due to wrong construction?
- ◇ Under what conditions does the leakage start/stop or does it constantly leak?
- ◇ Point of leakage in comparison to the slope of the roof (drained area)?

Trelleborg Waterproofing can assist in and have well developed techniques for finding leakages.

# Repairs

Start by locating the damage and try to find out the reason for it: installation failure, mechanical damage etc. When the reason is established it's easier preventing similar damages to occur.

Measure the size of the damage and cut Thermobond R splice strip to the size required. If the damage area is bigger it can be repaired by applying an Elastoseal membrane that is spliced to the existing membrane with a Thermobond R splice strip as a cover strip. The overlap between the existing membrane and the repair must be at least 50 mm.

The surface of the existing membrane must be grinded with grinding machine (2500 rpm) and nylon disc before splicing. After grinding the surface must be cleaned with water or cleaning wash 9700 and be left to dry. Splicing is done according to regular methods for Thermobond splicing.



# Refurbishment requirements

Before initiating a refurbishment of a roof an investigation should be performed. This should include finding the reason for the refurbishment and if some circumstances have led to shorten life span of the waterproofing than expected.

It is also importance to evaluate which components of the roof that can be reused and which that needs to be changed. Ballast is one thing that normally is possible to reuse. Vapour barrier, insulation and clad metal are other aspects that must be checked if they must be replaced or not. A roof fixated with Electrobond fixation is possible to dismantle without tearing of the membrane by heating the washers with the machine.

When connecting to an existing membrane other than Elastoseal out on a surface a curb detail should be constructed. Both the Elastoseal and the other membrane should be terminated at the top of the curb and be covered by suitable coping.

## **EPDM**

No specific action needs to be taken. Only inspection and treatment of troubled areas needs to be done like, sharp edges from metal details, nails and screws properly entered into substrate etc.

## **BITUMEN**

Old bitumen felt roofs must be swept clean, sealed and levelled. Stones and sharp objects shall be removed i.e. with a steel scraper. Wrinkles, blisters, waves and loose felt shall be cut off and repaired. If possible the panels should be positioned parallel to the lay out direction of the bitumen felt. All differences in height under Elastoseal seam areas should be levelled to be smooth. If the bitumen felt have rough slates it must be covered with a protection layer.

## **PVC**

During renovation of PVC roofs we recommend that the old PVC should be removed from the roof. A minimum requirement is that the PVC is cut loose at perimeters, at details and in sections over the roof and that a protection layer is installed.

# Table of Construction Drawings

## COPING DETAILS

<b>ELA-001</b>	Coping detail for a warm roof with a paver ballast -1 option
<b>ELA-002</b>	Coping detail for an inverted roof with a gravel ballast - 1 option
<b>ELA-003</b>	Coping detail for an inverted roof with a paver ballast - 1 option
<b>ELA-004</b>	Coping detail for a cold roof with a timber deck- 1 option
<b>ELA-005</b>	Coping detail for a cold roof with a gravel ballast - 1 option
<b>ELA-006</b>	Coping detail for a cold roof with a paver ballast - 1 option
<b>ELA-007</b>	Coping detail for a warm roof with a gravel ballast - 1 option
<b>ELA-008</b>	Coping detail for a warm roof with a paver ballast - 2 option
<b>ELA-009</b>	Coping detail for an inverted roof with a gravel ballast - 2 option
<b>ELA-010</b>	Coping detail for an inverted roof with a paver ballast - 2 option
<b>ELA-011</b>	Coping detail for a cold roof with a timber deck- 2 option
<b>ELA-012</b>	Coping detail for a cold roof with a gravel ballast - 2 option
<b>ELA-013</b>	Coping detail for a cold roof with a paver ballast - 2 option
<b>ELA-014</b>	Coping detail for a warm roof with a gravel ballast - 2 option
<b>ELA-015</b>	Coping detail for a cold roof with a timber deck- 3 option
<b>ELA-016</b>	Coping detail for a cold roof with a gravel ballast - 3 option
<b>ELA-017</b>	Coping detail for a warm roof with a gravel ballast - 3 option

## PIPE DETAILS

<b>ELA-201</b>	Pipe detail for a warm roof with a paver ballast
<b>ELA-202</b>	Pipe detail for an inverted roof with a gravel ballast
<b>ELA-203</b>	Pipe detail for an inverted roof with a paver ballast
<b>ELA-204</b>	Pipe detail for a cold roof with a timber deck
<b>ELA-205</b>	Pipe detail for a cold roof with a gravel ballast
<b>ELA-206</b>	Pipe detail for a cold roof with a paver ballast
<b>ELA-207</b>	Pipe detail for a warm roof with a gravel ballast

# Table of Construction Drawings

## DRAIN DETAILS

<b>ELA-301</b>	Drain detail for an inverted roof with a paver ballast - 1 option
<b>ELA-302</b>	Drain detail for a cold roof with a timber deck- 1 option
<b>ELA-303</b>	Drain detail for a cold roof with a gravel ballast - 1 option
<b>ELA-304</b>	Drain detail for a cold roof with a paver ballast - 1 option
<b>ELA-305</b>	Drain detail for a warm roof with a gravel ballast - 1 option
<b>ELA-306</b>	Drain detail for a warm roof with a paver ballast - 2 option
<b>ELA-307</b>	Drain detail for an inverted roof with a gravel ballast - 2 option
<b>ELA-308</b>	Drain detail for an inverted roof with a paver ballast - 2 option
<b>ELA-309</b>	Drain detail for a cold roof with a timber deck- 2 option
<b>ELA-310</b>	Drain detail for a cold roof with a gravel ballast - 2 option
<b>ELA-311</b>	Drain detail for a cold roof with a paver ballast - 2 option
<b>ELA-312</b>	Drain detail for a warm roof with a gravel ballast - 2 option
<b>ELA-313</b>	Drain detail for a cold roof with a timber deck- 3 option

## EXPANSION JOINT DETAILS

<b>ELA-401</b>	Expansion joint for an inverted roof with a paver ballast Plywood or synthetic bridge
<b>ELA-402</b>	Expansion joint for an inverted roof with a gravel ballast Plywood or synthetic bridge
<b>ELA-403</b>	Expansion joint for a cold roof with a timber deck Plywood or synthetic bridge
<b>ELA-404</b>	Expansion joint for a cold roof with a gravel ballast Plywood or synthetic bridge
<b>ELA-405</b>	Expansion joint For an inverted roof with a paver ballast - metal bridge
<b>ELA-406</b>	Expansion joint for an inverted roof with a gravel ballast - metal bridge
<b>ELA-407</b>	Expansion joint For a cold roof with a timber deck - metal bridge
<b>ELA-408</b>	Expansion joint for a cold roof with a gravel ballast - metal bridge

## WALL FLASHING DETAILS

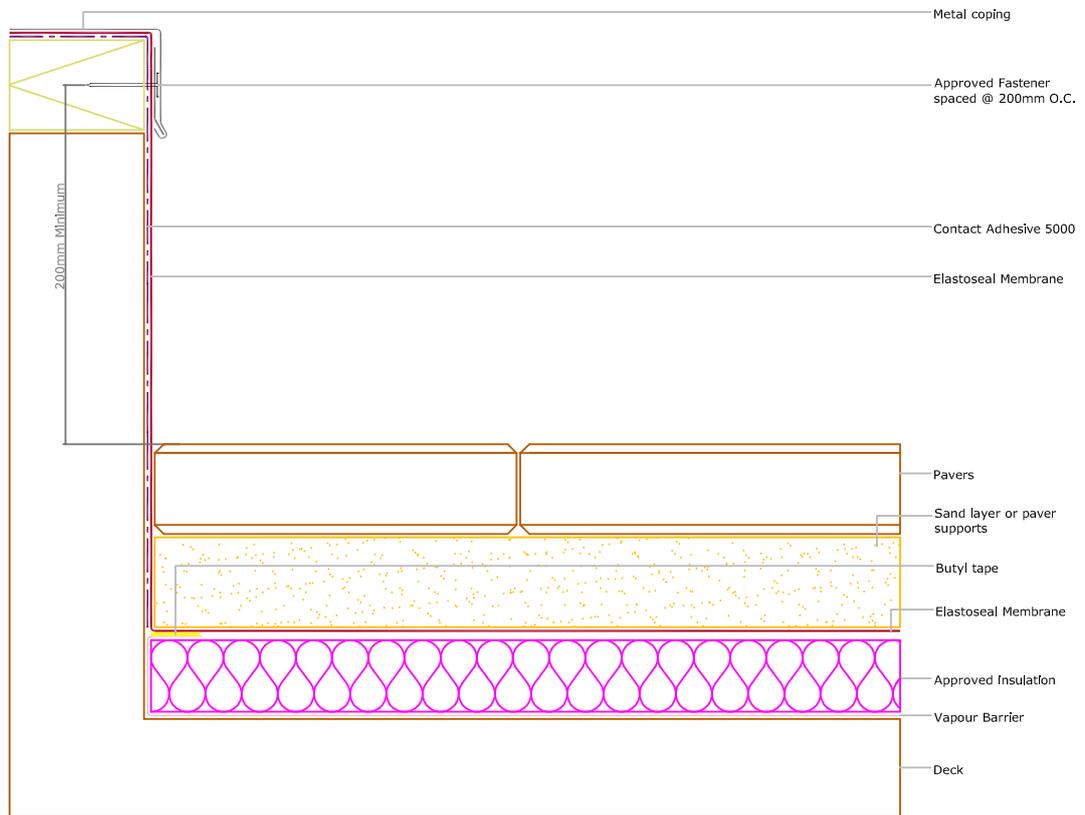
<b>ELA-501</b>	Reglet counterflashing
<b>ELA-502</b>	Surface mounted counterflashing
<b>ELA-503</b>	Clad Wall panel system counterflashing

## MULTI SYSTEM ROOF TIE-IN DETAILS

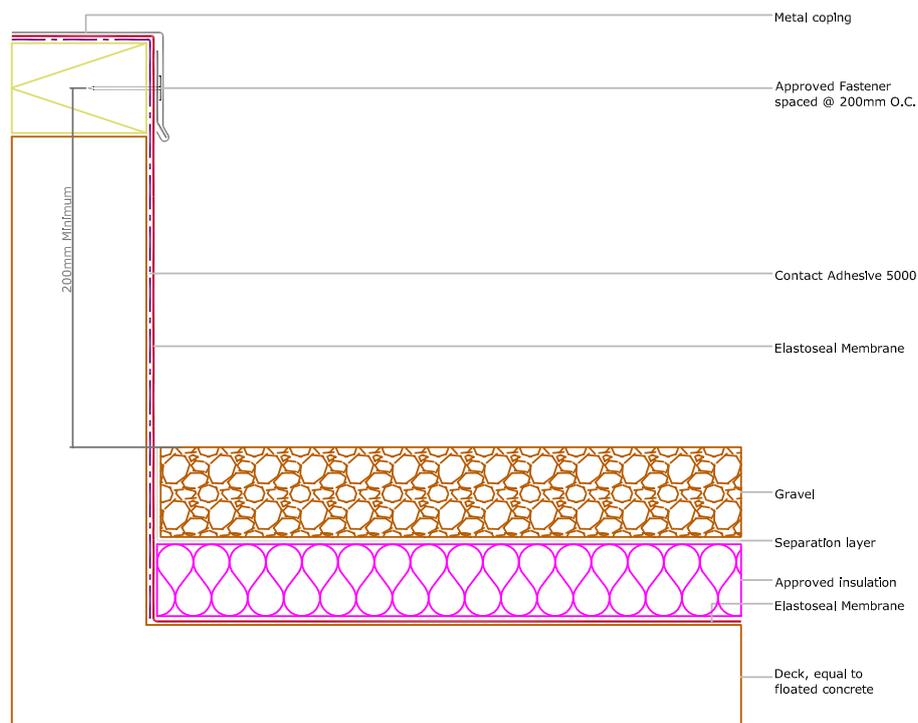
<b>ELA-601</b>	Multi - System Roof tie-in
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**COPING DETAILS**

**ELA-001 Coping detail for a warm roof with a paver ballast -1 option**

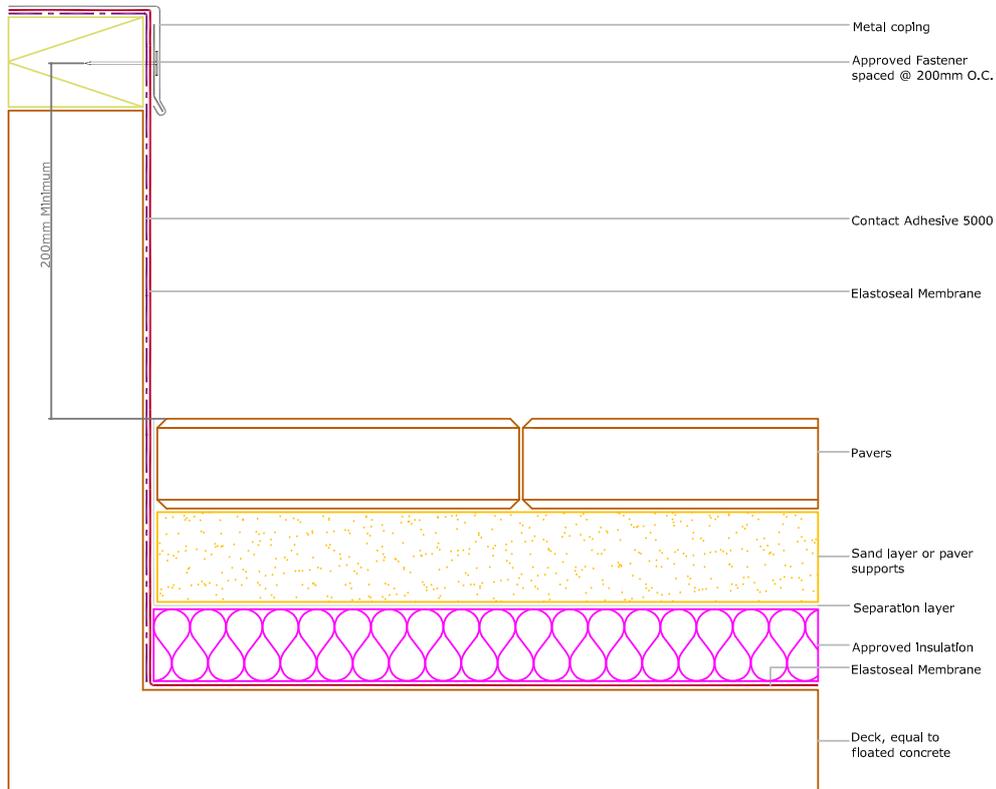


**ELA-002 Coping detail for an inverted roof with a gravel ballast - 1 option**

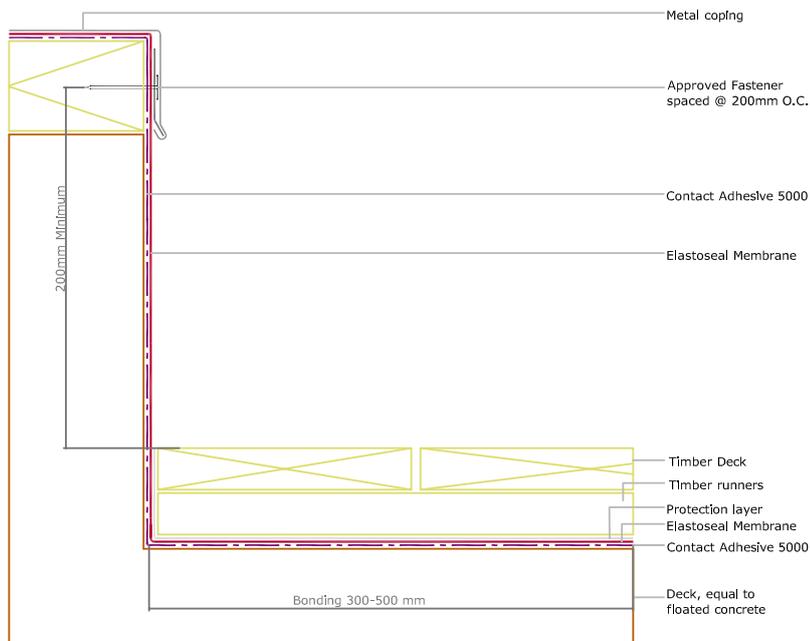


**COPING DETAILS**

**ELA-003 Coping detail for an inverted roof with a paver ballast - 1 option**

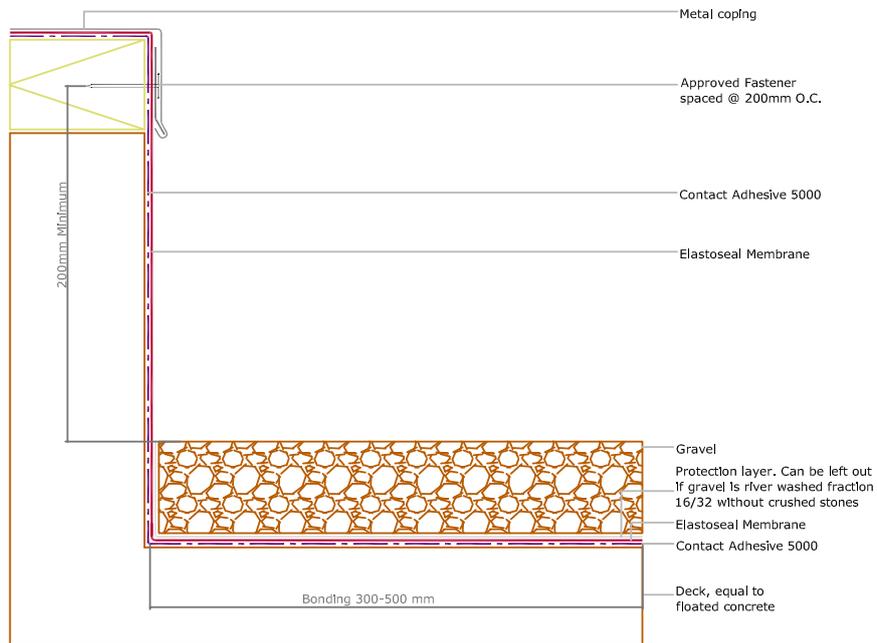


**ELA-004 Coping detail for a cold roof with a timber deck - 1 option**

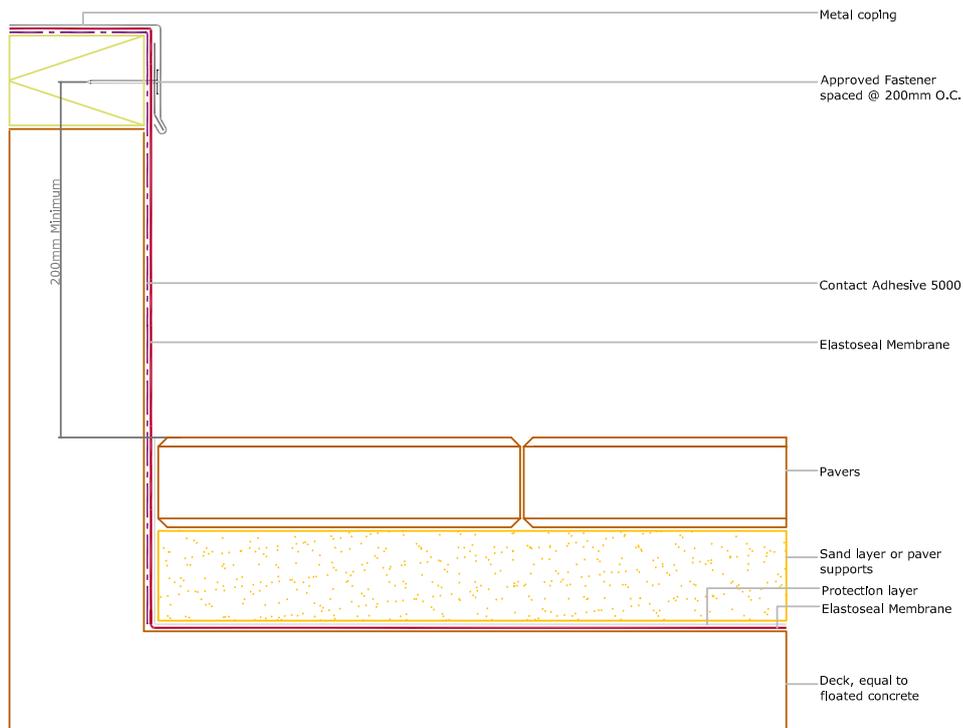


COPING DETAILS

**ELA-005 Coping detail for a cold roof with a gravel ballast - 1 option**

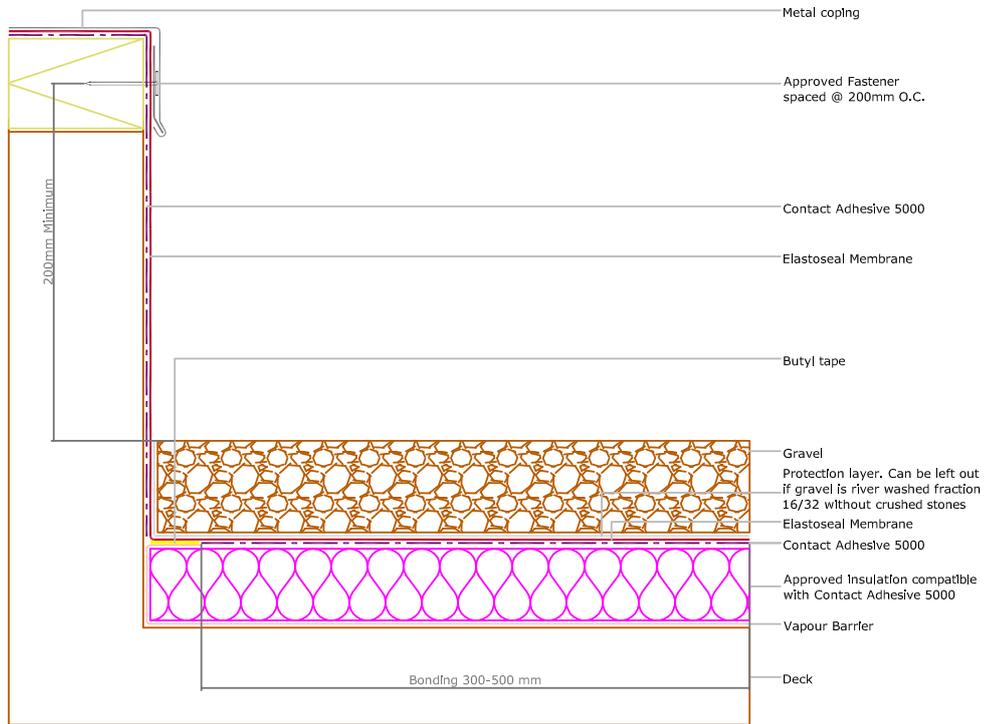


**ELA-006 Coping detail for a cold roof with a paver ballast - 1 option**

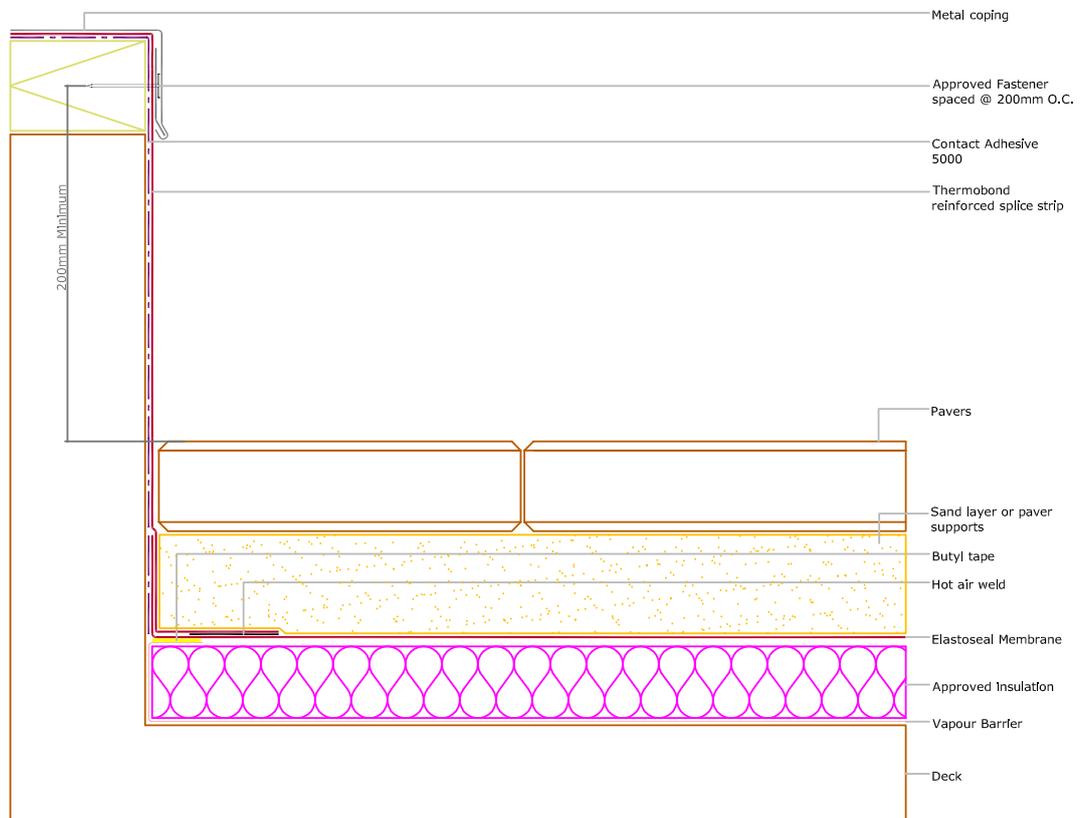


COPING DETAILS

**ELA-007 Coping detail for a warm roof with a gravel ballast - 1 option**

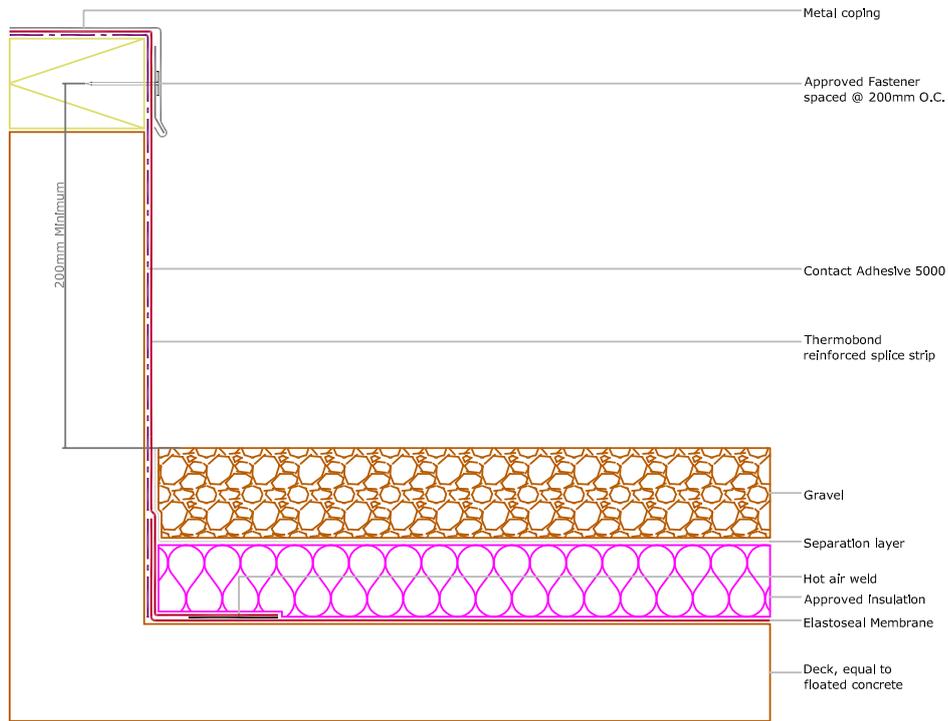


**ELA-008 Coping detail for a warm roof with a paver ballast - 2 option**

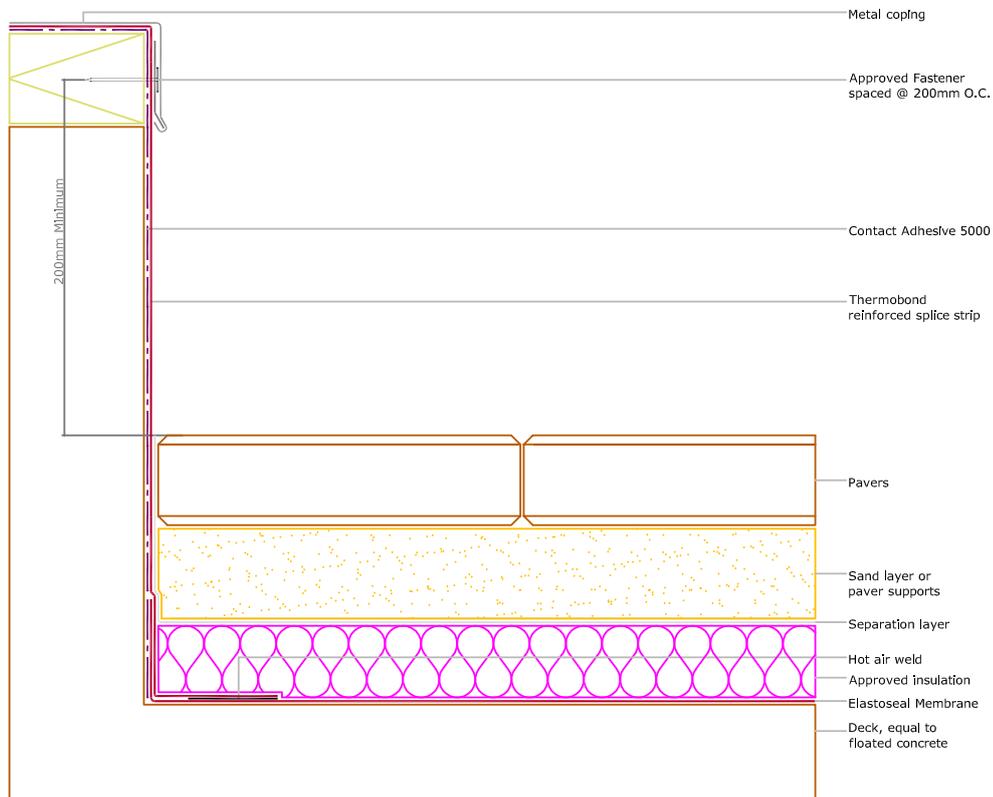


**COPING DETAILS**

**ELA-009 Coping detail for an inverted roof with a gravel ballast - 2 option**



**ELA-010 Coping detail for an inverted roof with a paver ballast - 2 option**

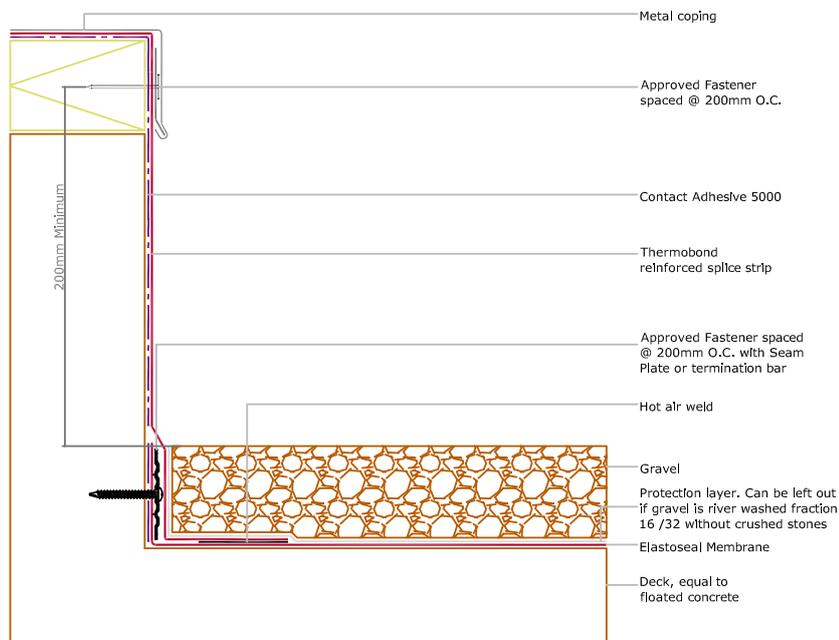


**COPING DETAILS**

**ELA-011 Coping detail for a cold roof with a timber deck- 2 option**

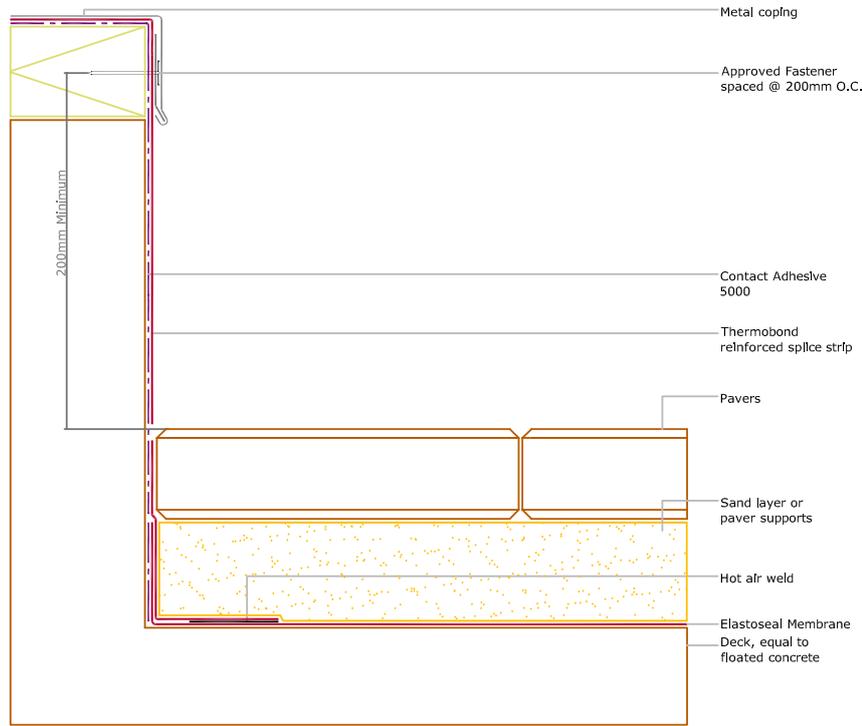


**ELA-012 Coping detail for a cold roof with a gravel ballast - 2 option**

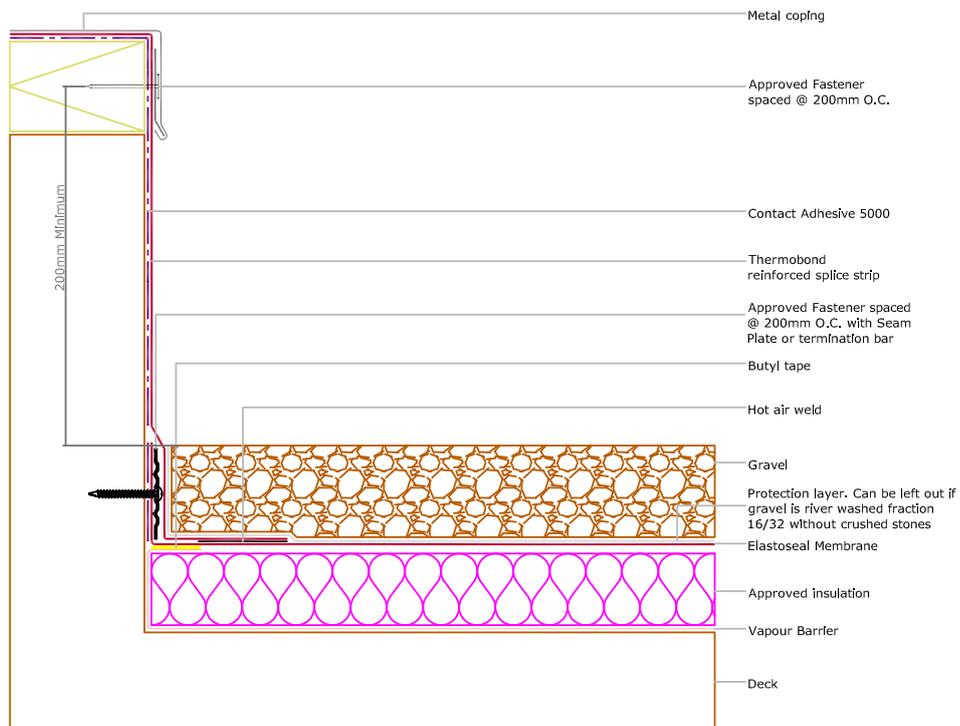


**COPING DETAILS**

**ELA-013 Coping detail for a cold roof with a paver ballast - 2 option**

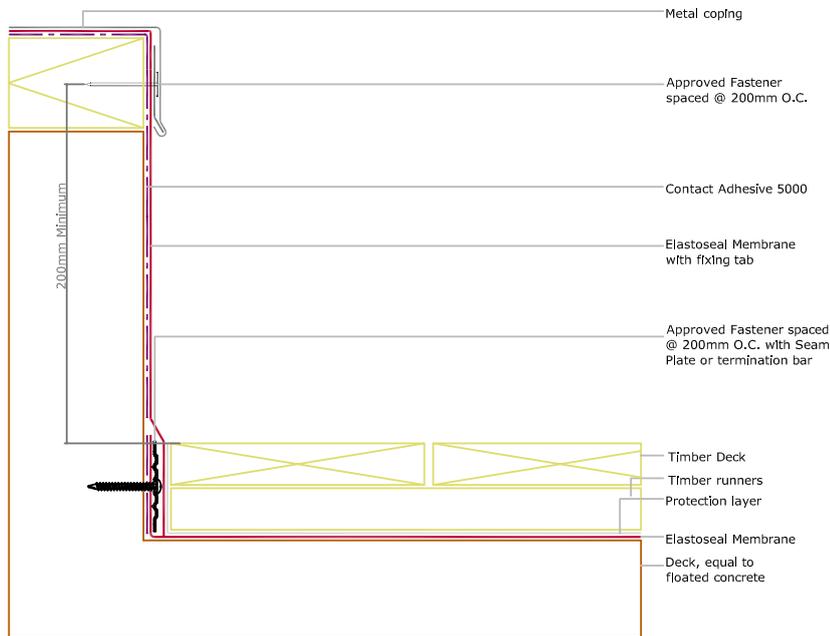


**ELA-014 Coping detail for a warm roof with a gravel ballast - 2 option**

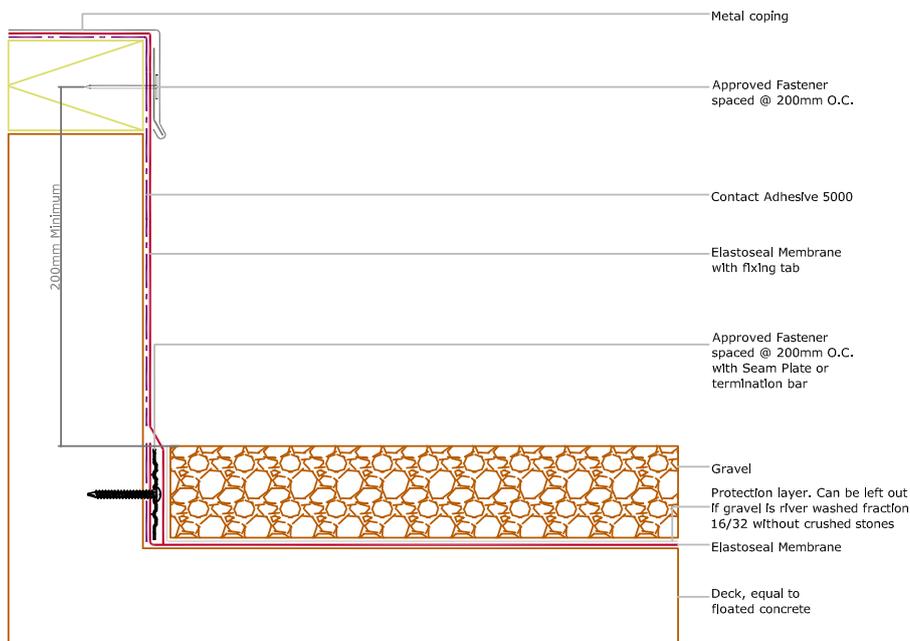


COPING DETAILS

**ELA-015 Coping detail for a cold roof with a timber deck- 3 option**



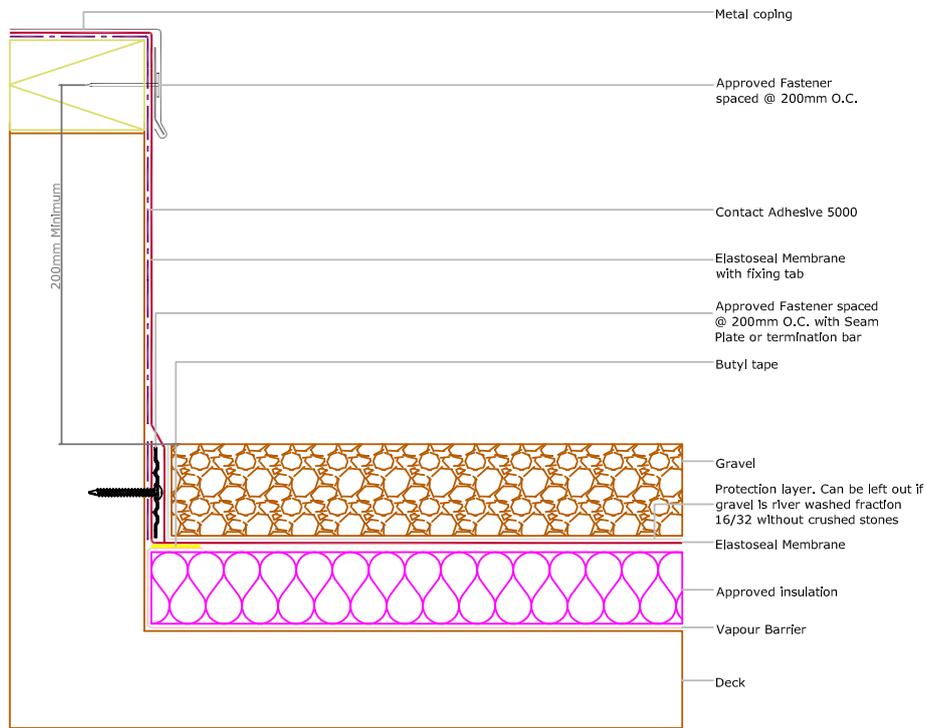
**ELA-016 Coping detail for a cold roof with a gravel ballast - 3 option**



## COPING DETAILS

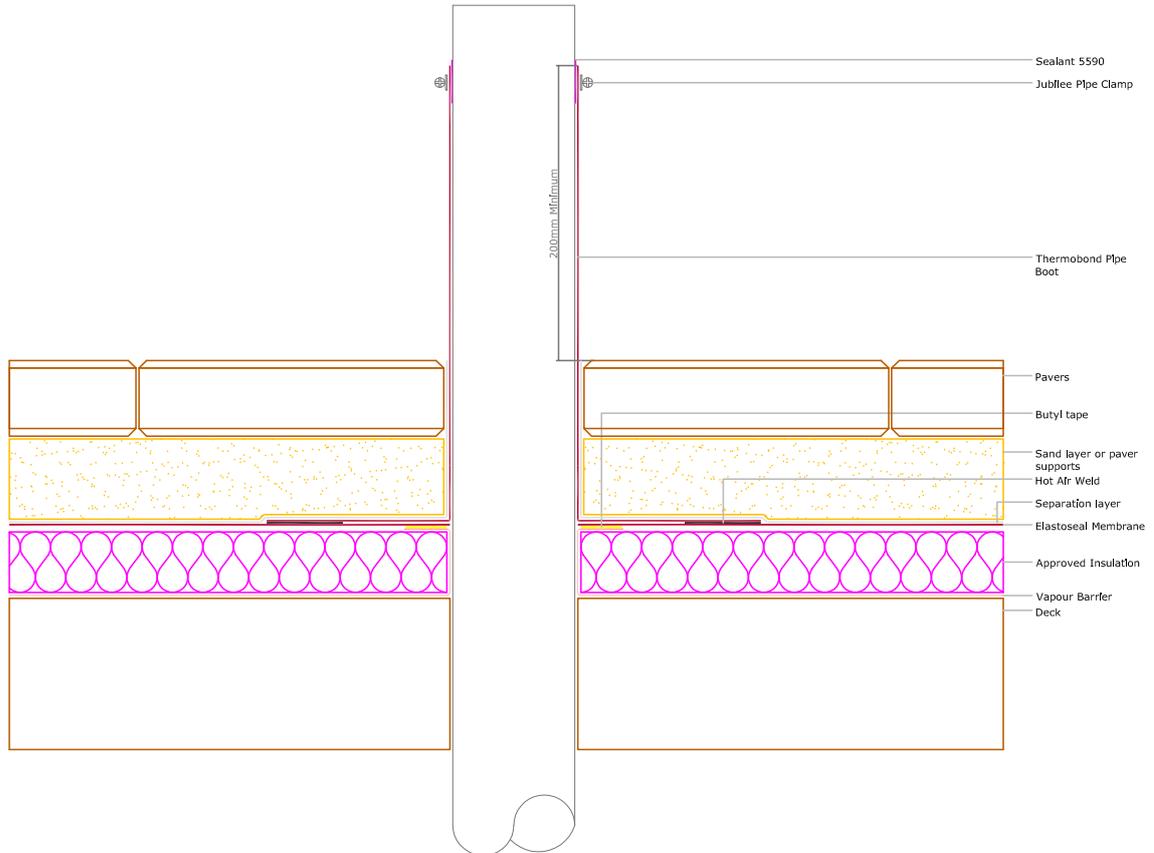
ELA-017

Coping detail for a warm roof with a gravel ballast - 3 option

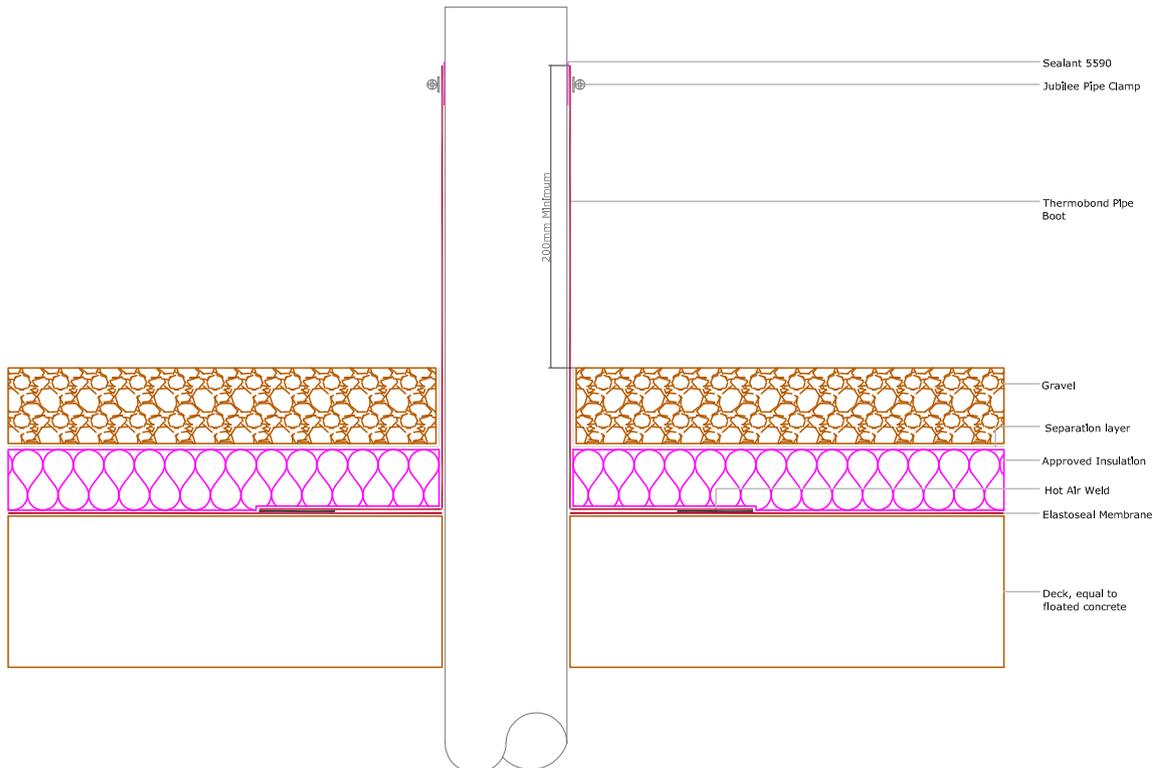


PIPE DETAILS

**ELA-201 Pipe detail for a warm roof with a paver ballast**

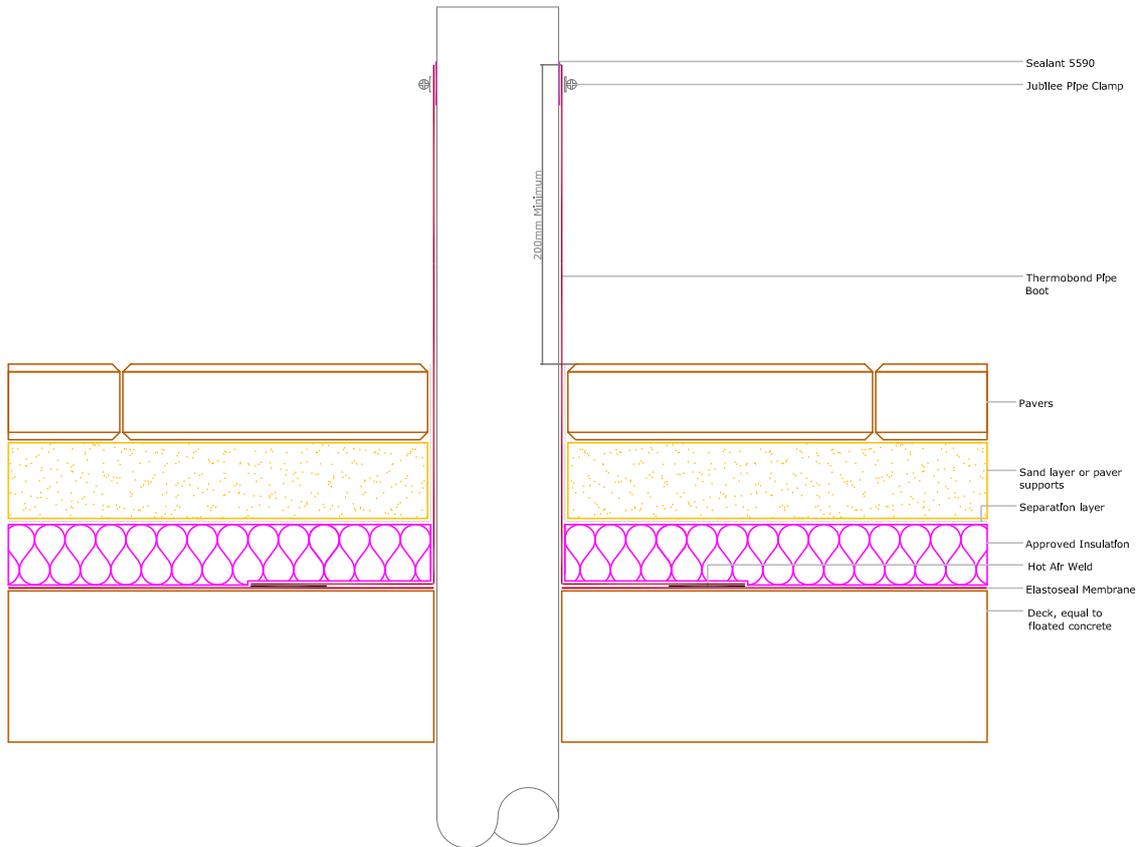


**ELA-202 Pipe detail for an inverted roof with a gravel ballast**

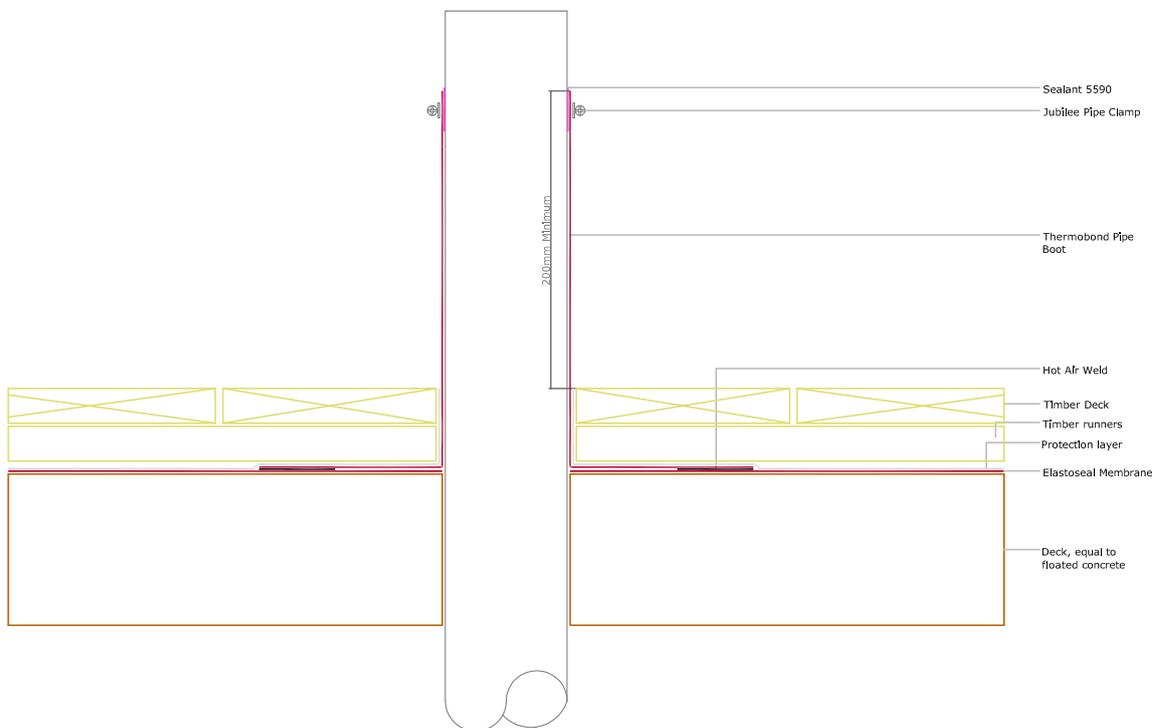


PIPE DETAILS

**ELA-203 Pipe detail for an inverted roof with a paver ballast**

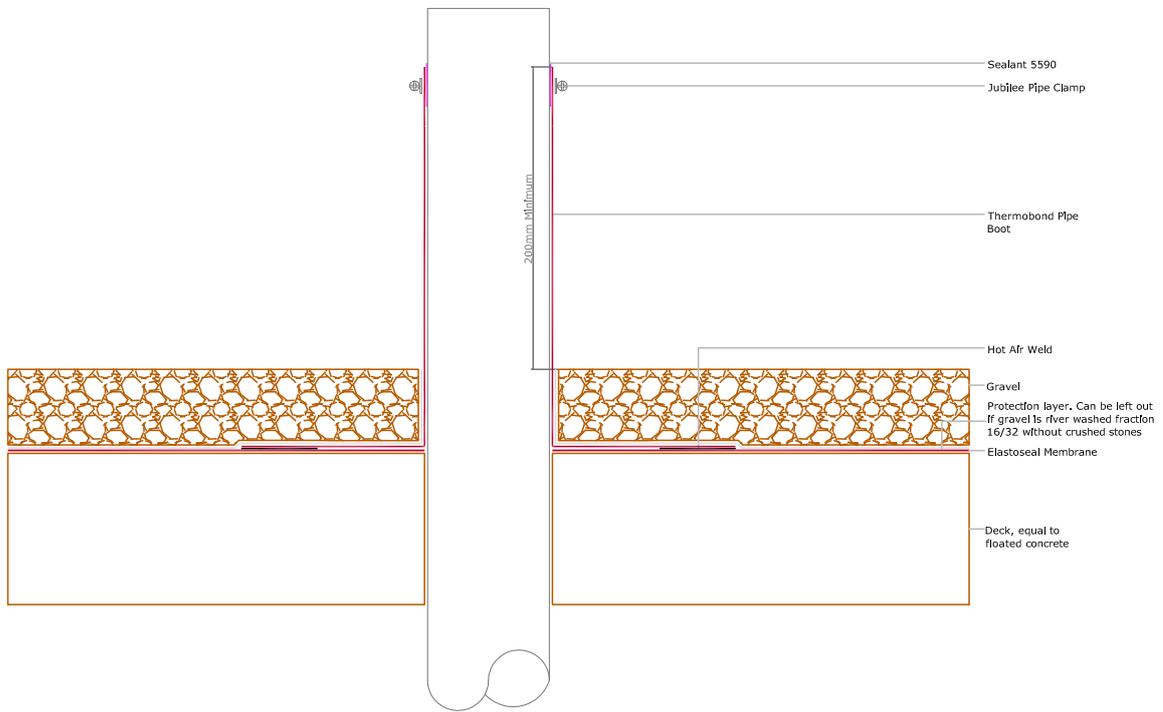


**ELA-204 Pipe detail for a cold roof with a timber deck**

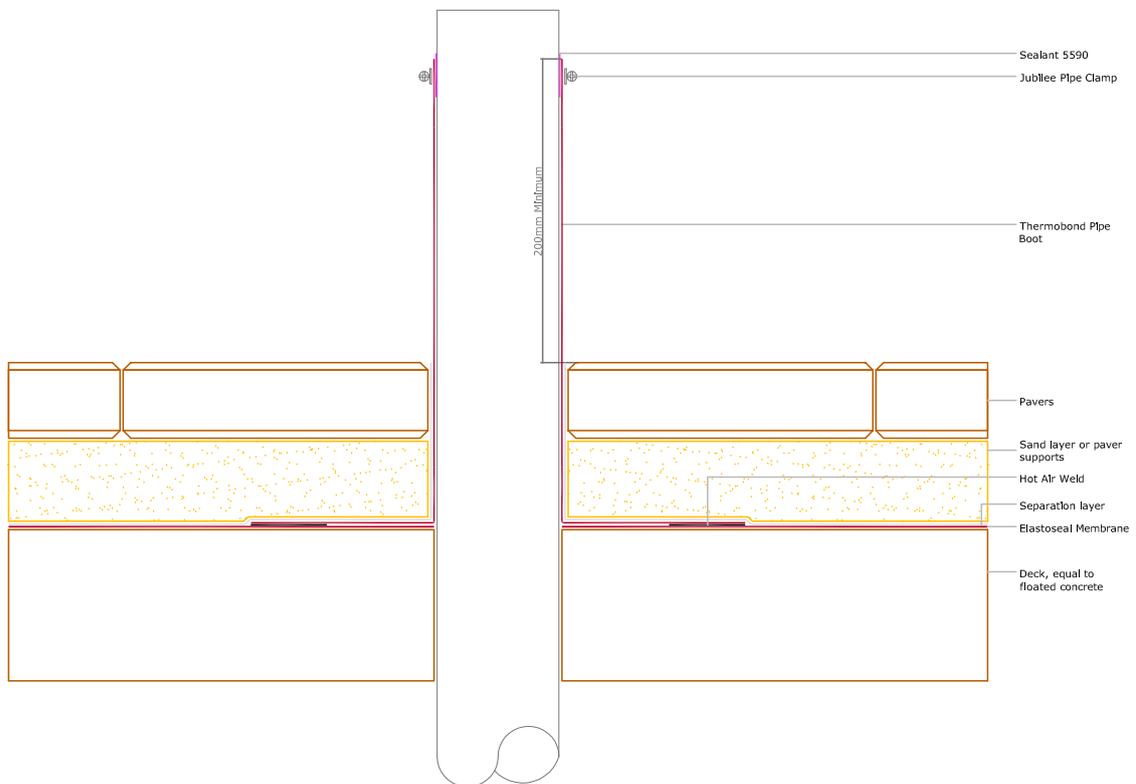


PIPE DETAILS

**ELA-205** Pipe detail for a cold roof with a gravel ballast

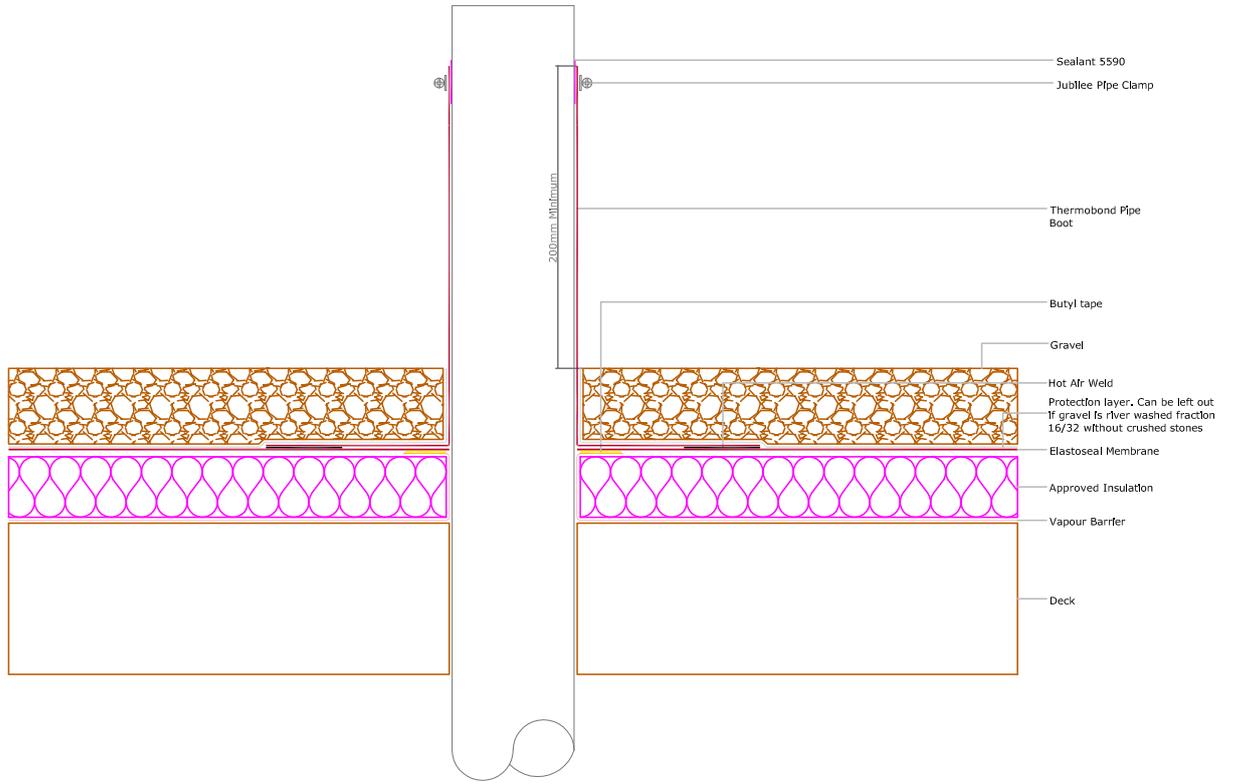


**ELA-206** Pipe detail for a cold roof with a paver ballast



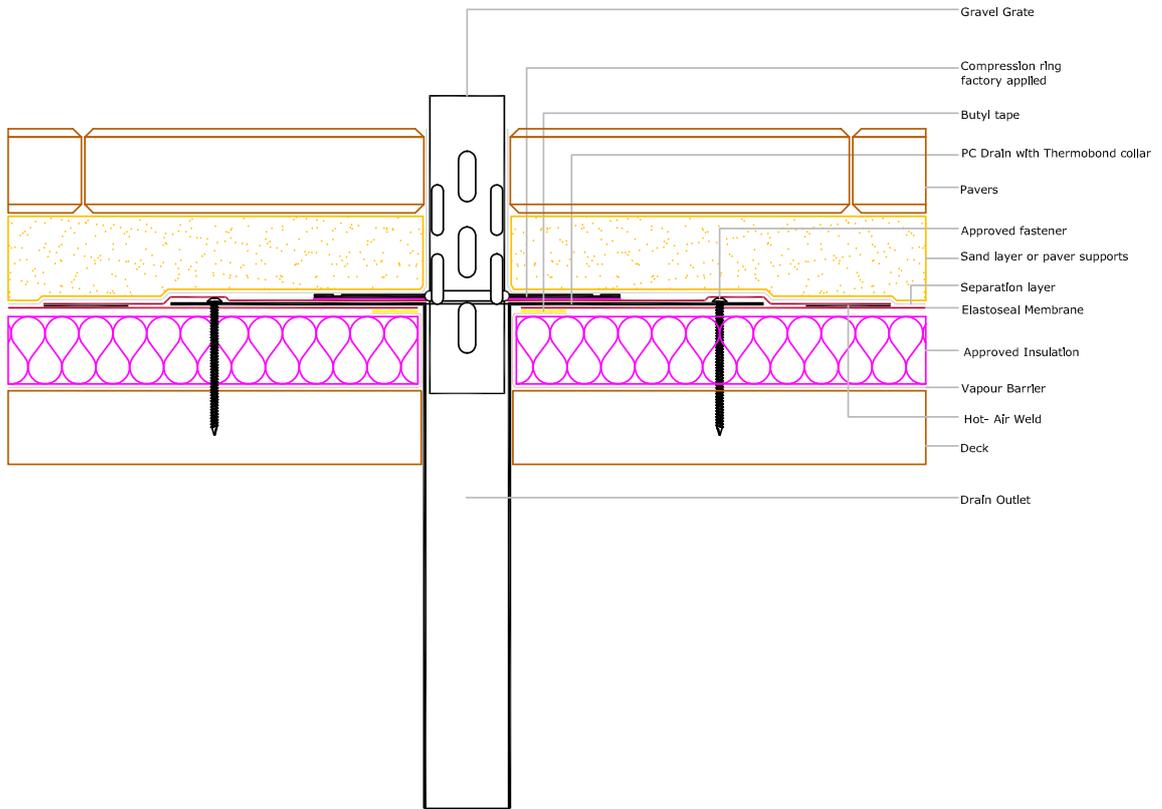
PIPE DETAILS

ELA-207 Pipe detail for a warm roof with a gravel ballast

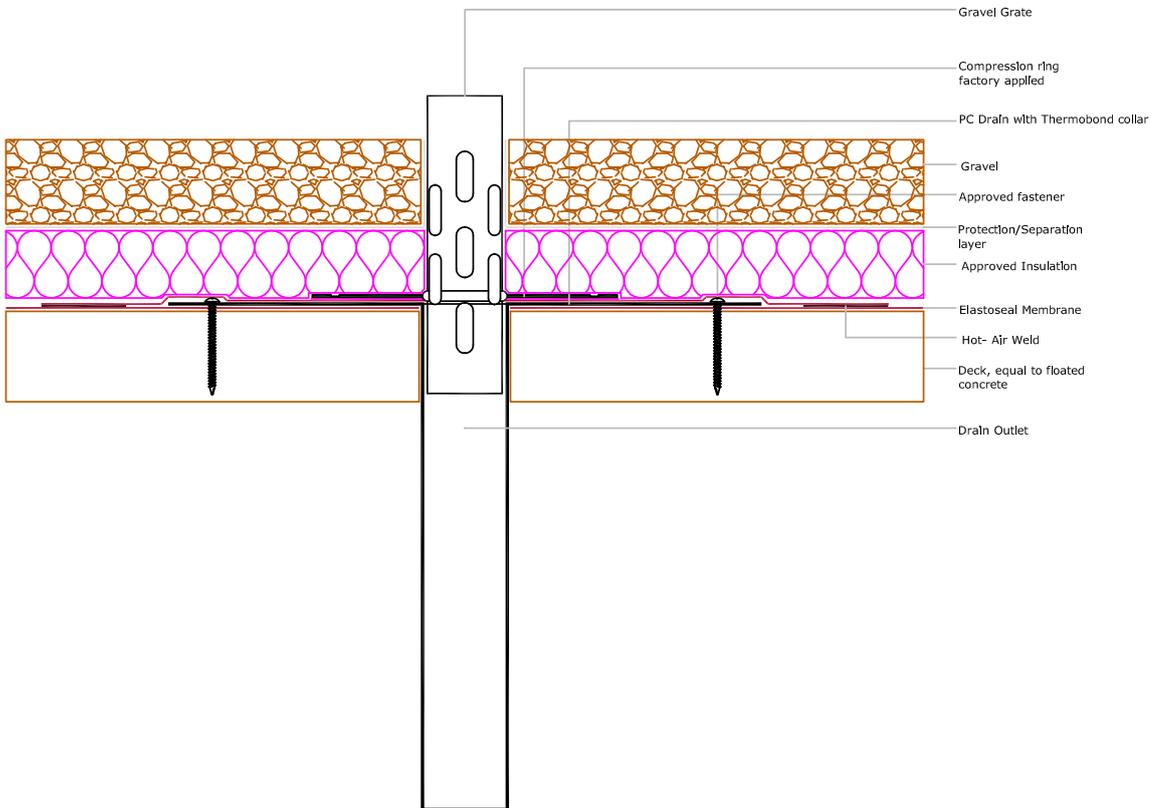


**DRAIN DETAILS**

**ELA-301 Drain detail for a warm roof with a paver ballast**



**ELA-302 Drain detail for an inverted roof with a gravel ballast**

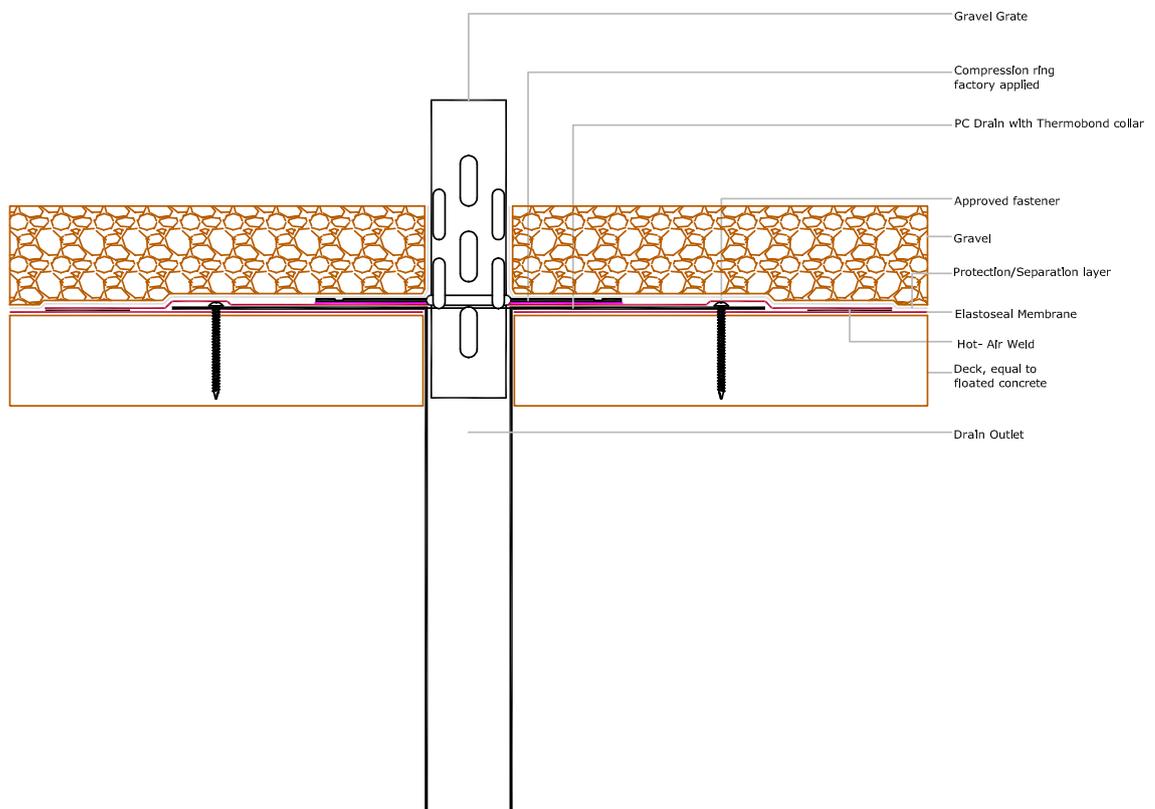


DRAIN DETAILS

**ELA-303** Drain detail for a cold roof with a timber deck

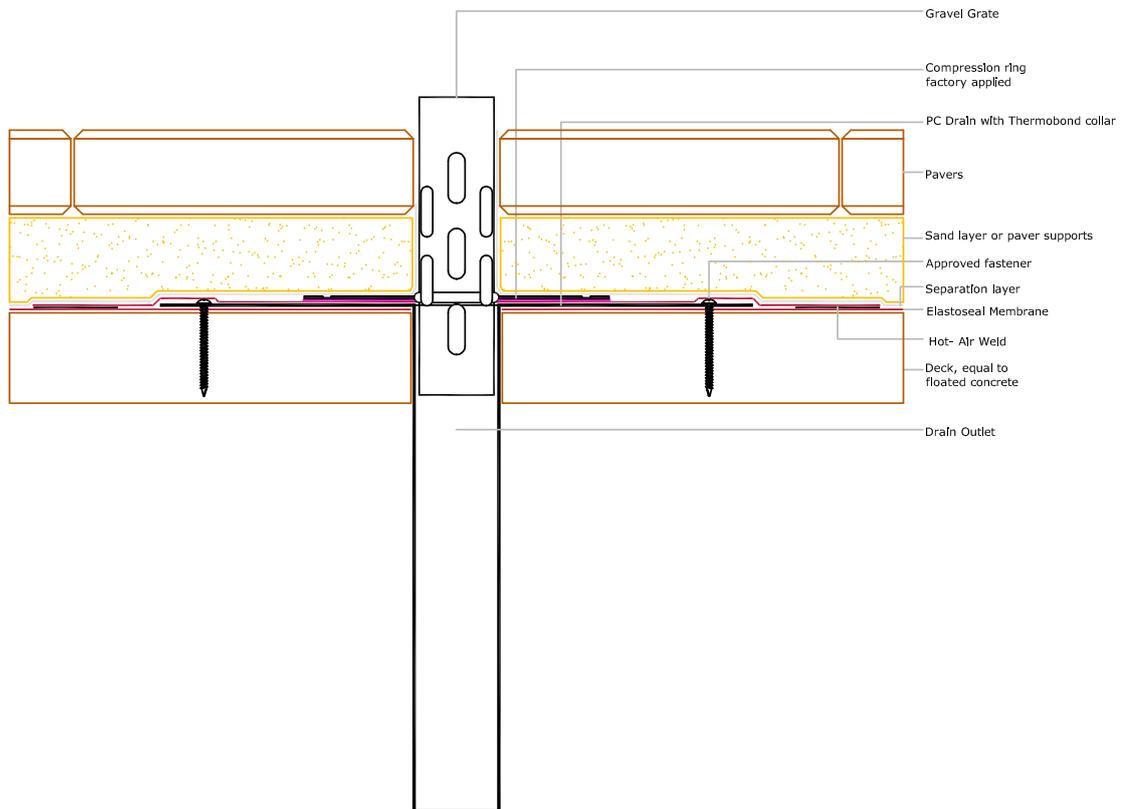


**ELA-304** Drain detail for a cold roof with a gravel ballast

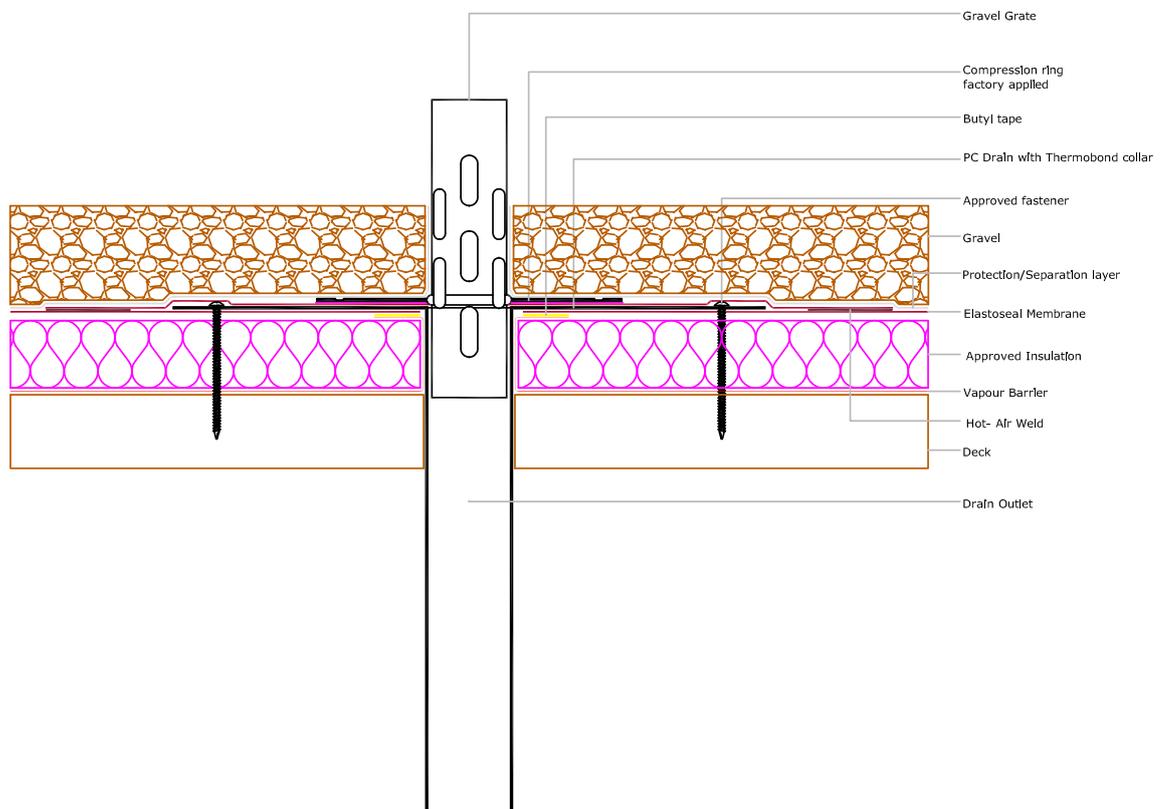


DRAIN DETAILS

**ELA-305** Drain detail for a cold roof with a paver ballast

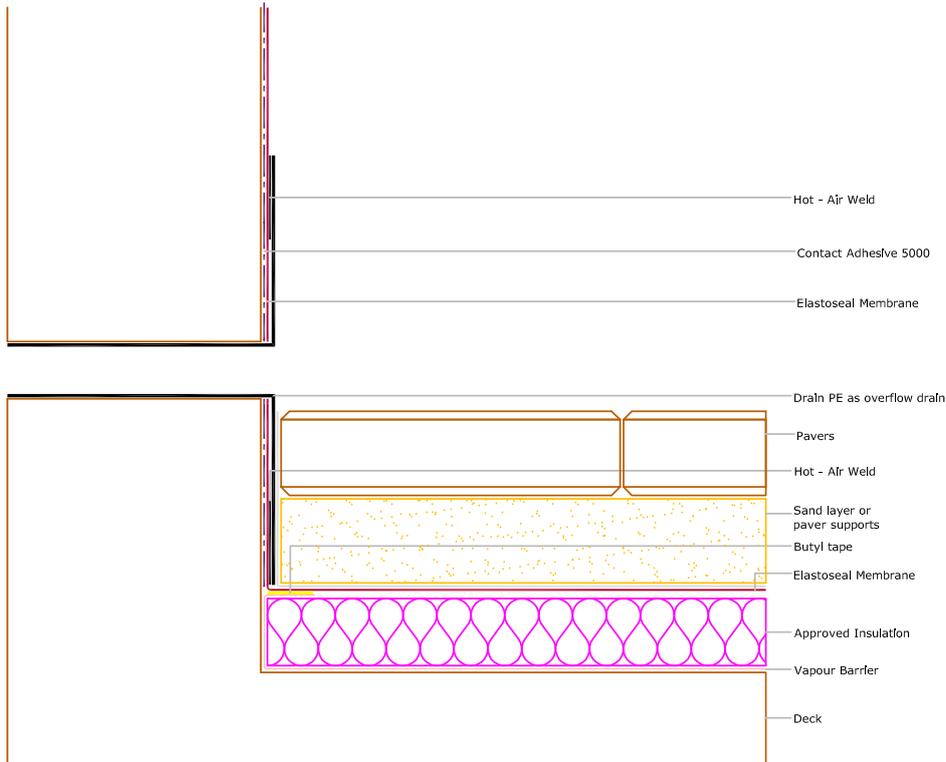


**ELA-306** Drain detail for a warm roof with a gravel ballast

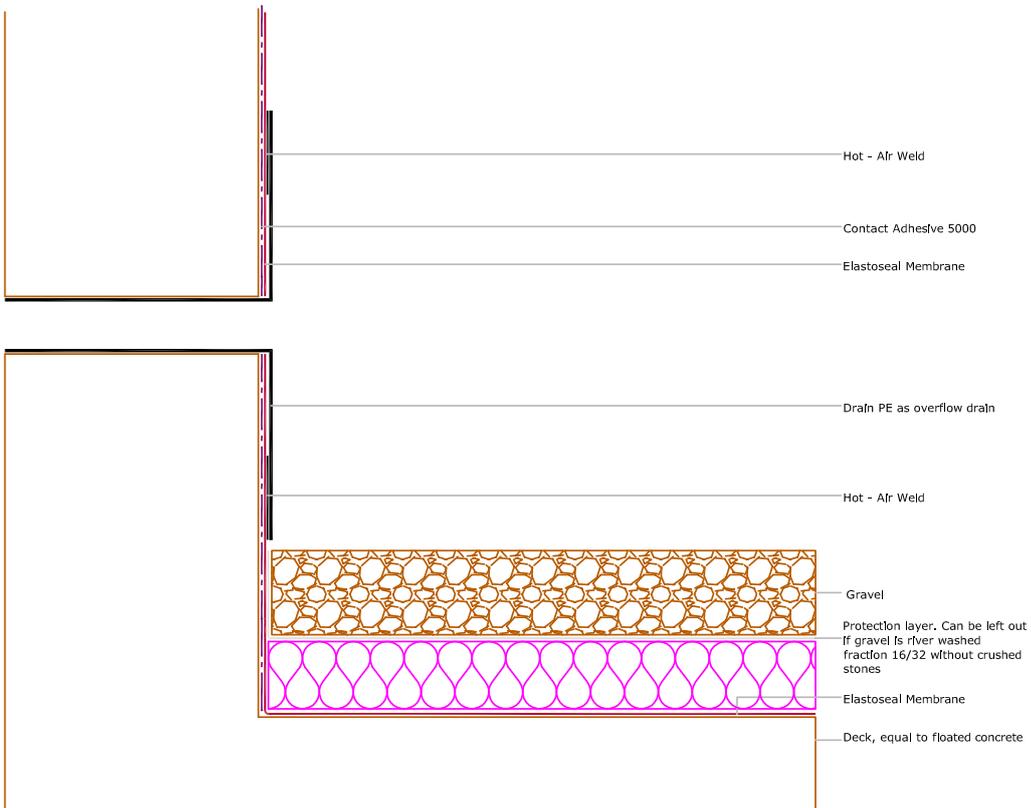


**DRAIN DETAILS**

**ELA-307 Overflow drain detail for a warm roof with a paver ballast**

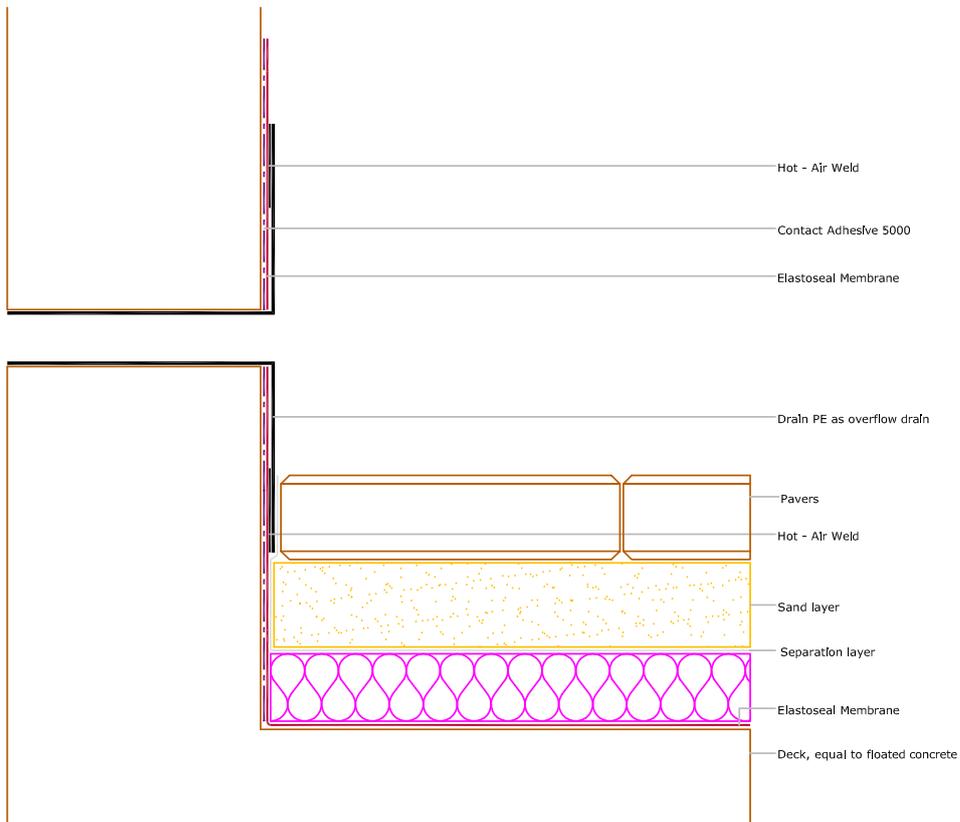


**ELA-308 Overflow drain detail for an inverted roof with a gravel ballast**

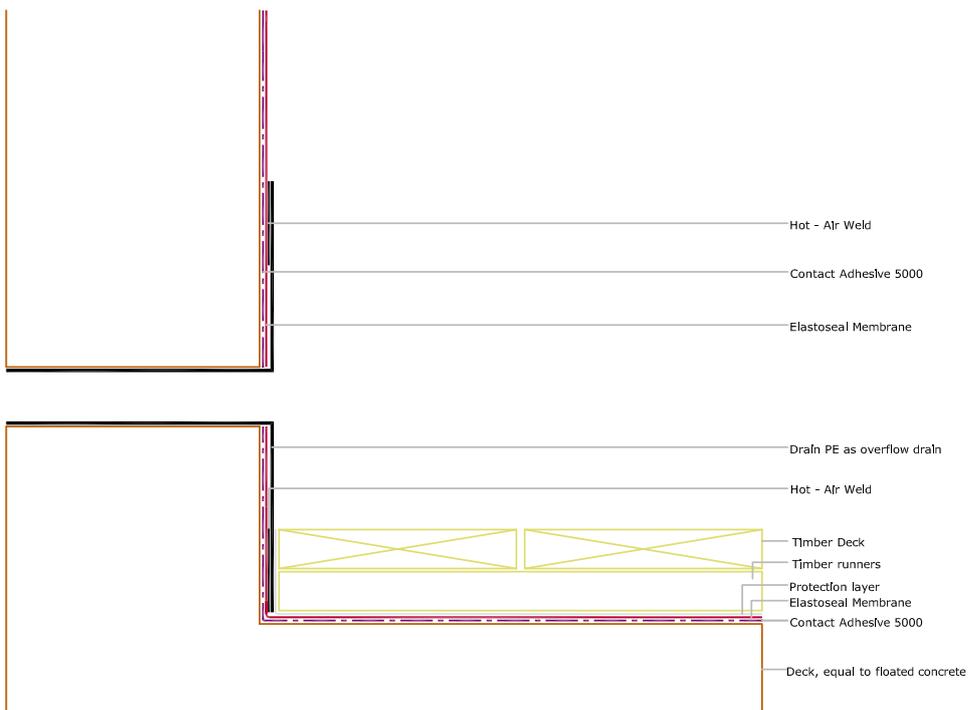


DRAIN DETAILS

**ELA-309** Overflow drain detail for an inverted roof with a paver ballast

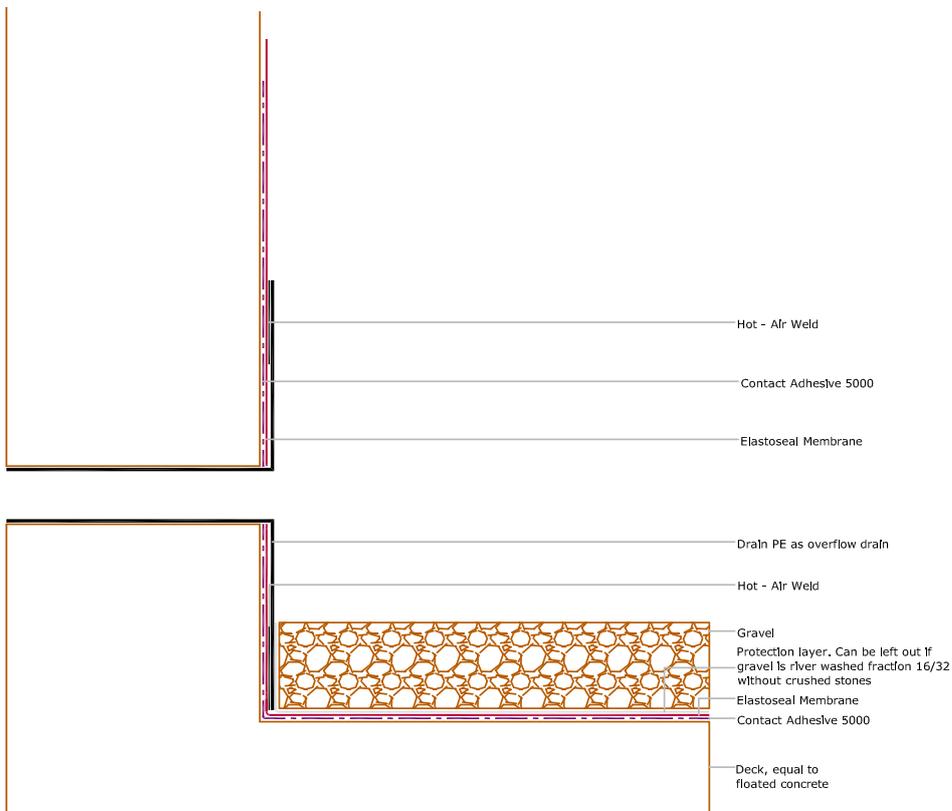


**ELA-310** Overflow drain detail for a cold roof with a timber deck

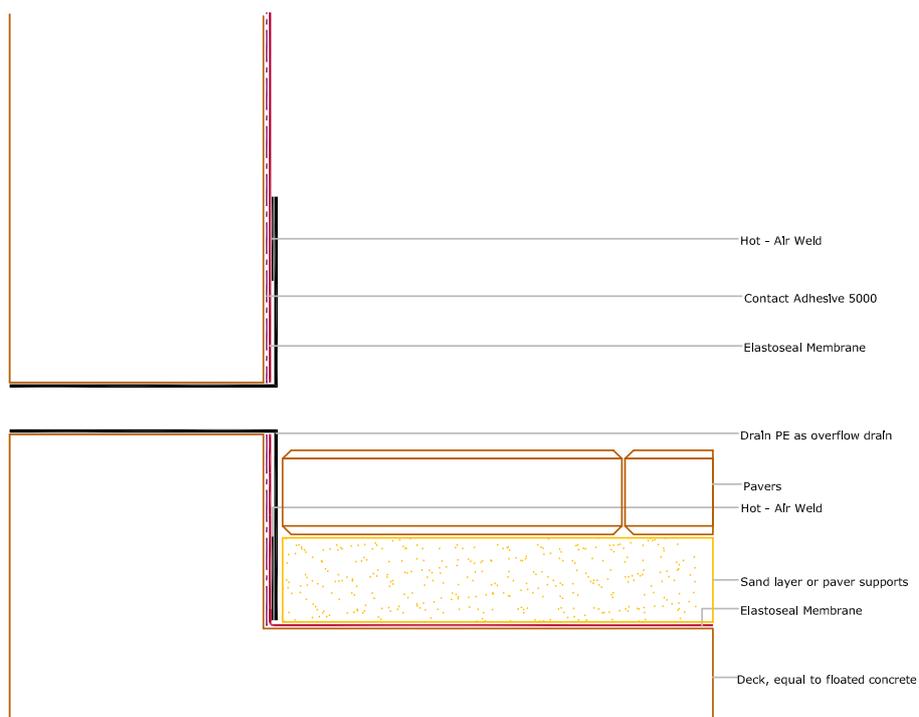


## DRAIN DETAILS

**ELA-311 Overflow drain detail for a cold roof with a gravel ballast**



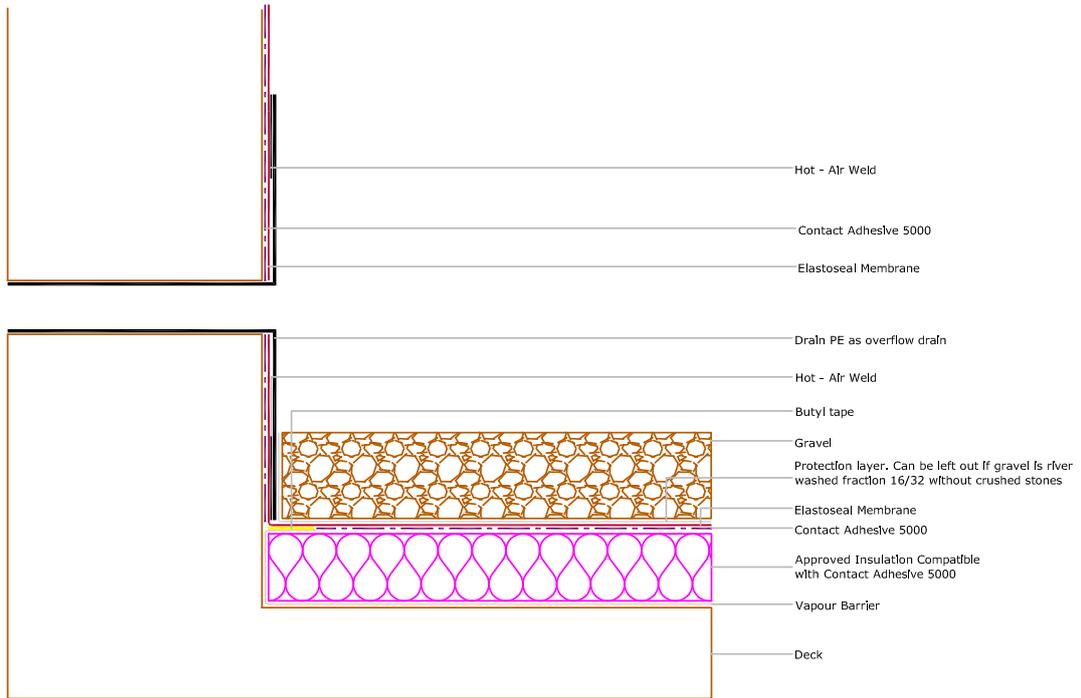
**ELA-312 Overflow drain detail for a cold roof with a paver ballast**



## DRAIN DETAILS

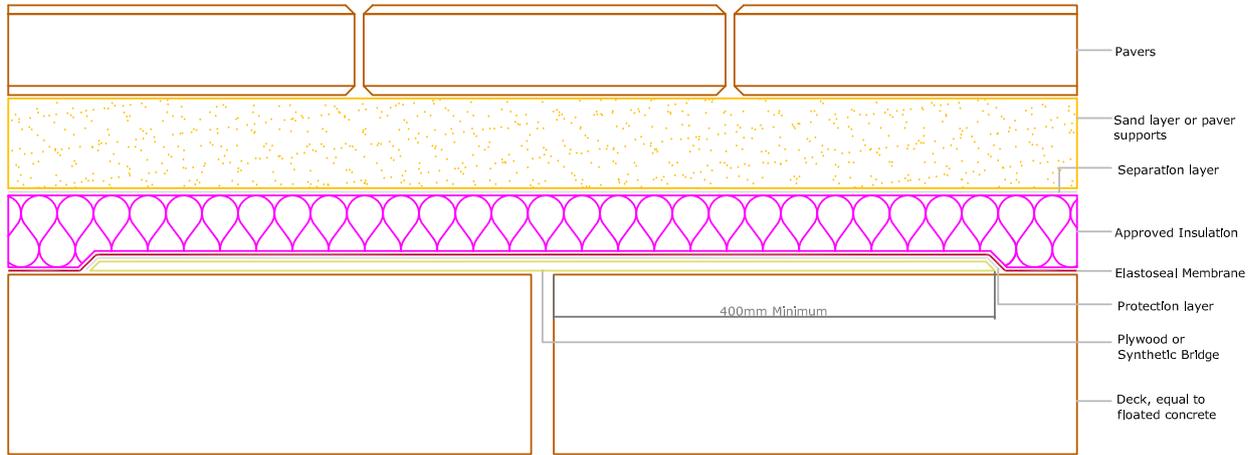
ELA-313

Overflow drain detail for a warm roof with a gravel ballast

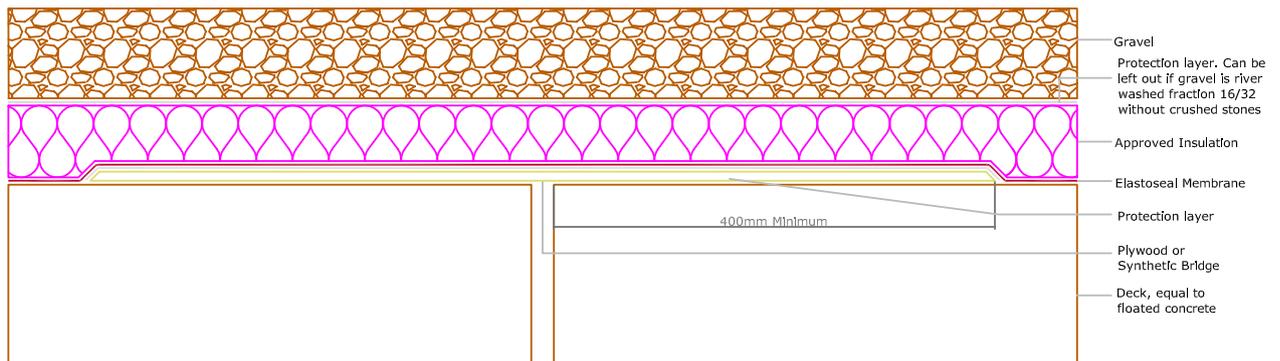


**EXPANSION JOINT DETAILS**

**ELA-401 Expansion joint for an inverted roof with a paver ballast - plywood or synthetic bridge**

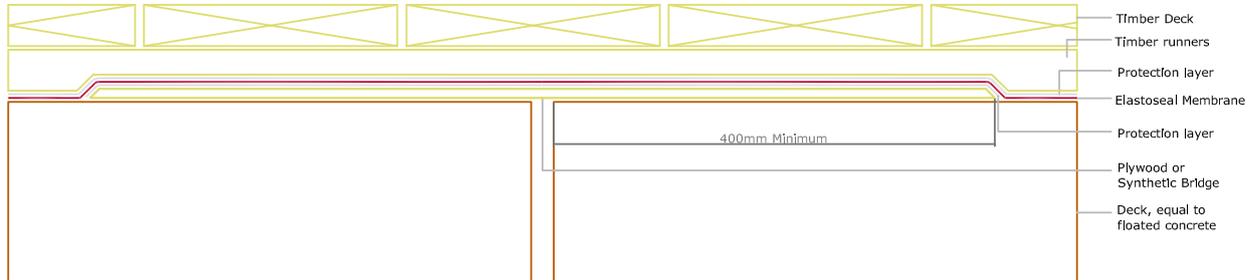


**ELA-402 Expansion joint for an inverted roof with a gravel ballast - plywood or synthetic bridge**

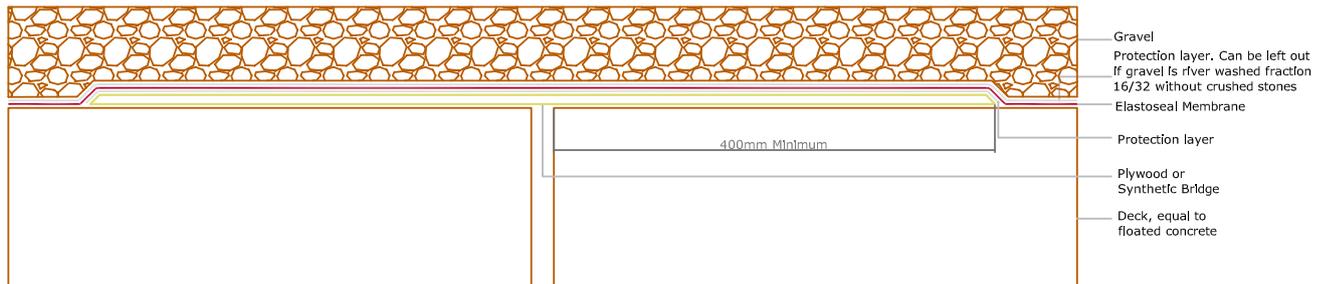


EXPANSION JOINT DETAILS

**ELA-403** Expansion joint for a cold roof with a timber deck - plywood or synthetic bridge

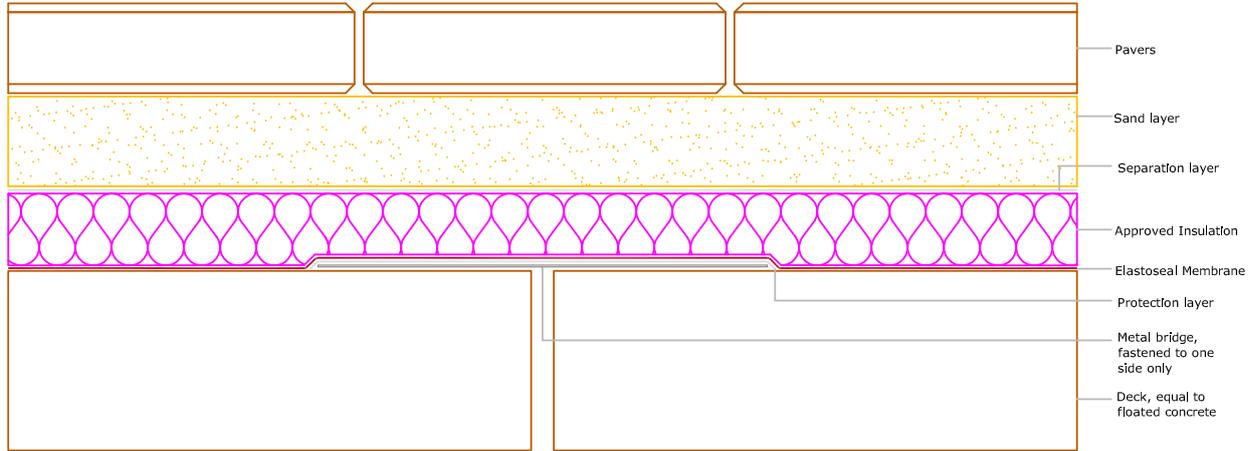


**ELA-404** Expansion joint for a cold roof with a gravel ballast - plywood or synthetic bridge

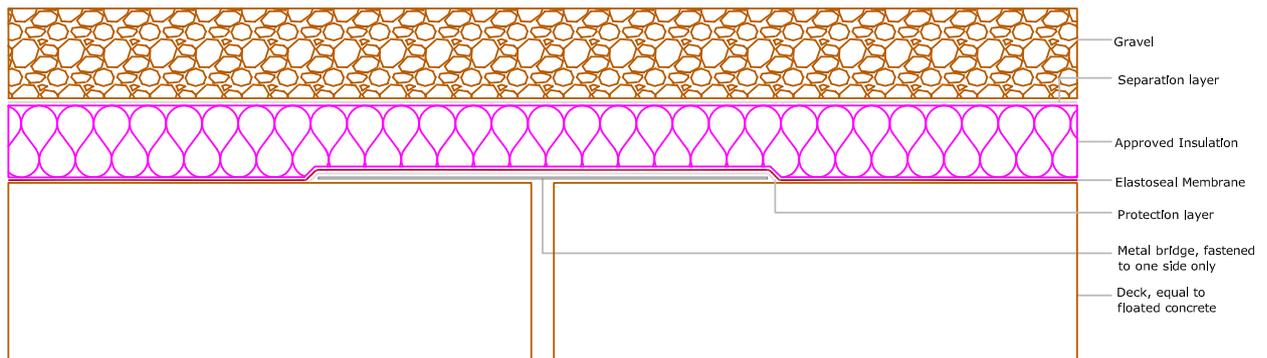


## EXPANSION JOINT DETAILS

**ELA-405** Expansion joint For an inverted roof with a paver ballast - metal bridge

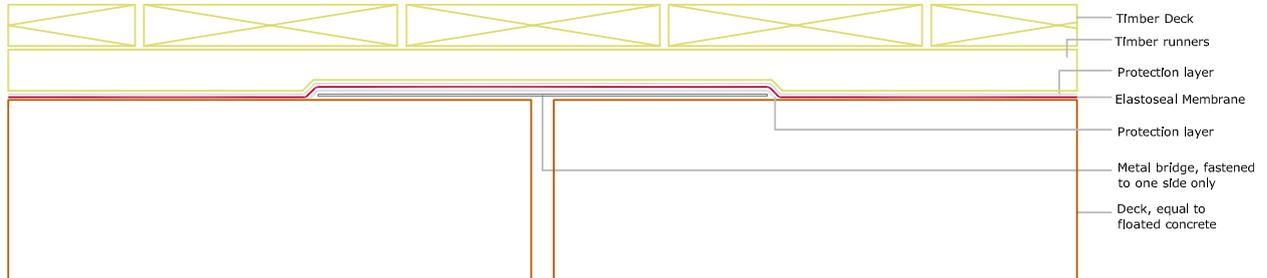


**ELA-406** Expansion joint for an inverted roof with a gravel ballast - metal bridge

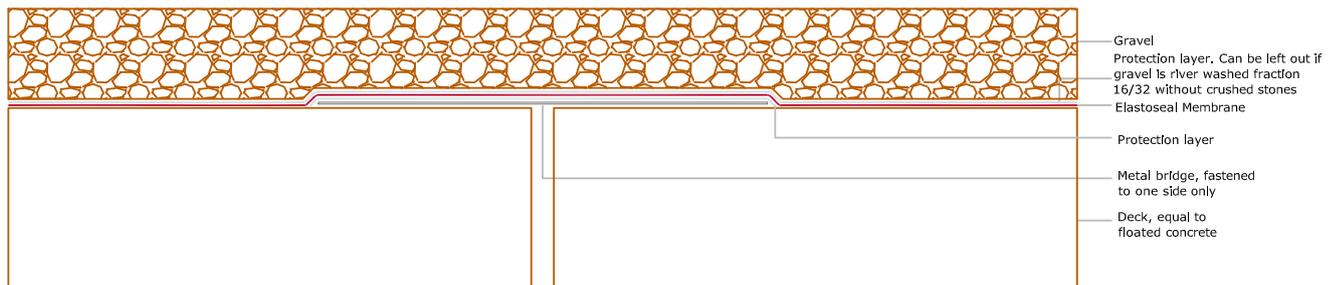


**EXPANSION JOINT DETAILS**

**ELA-407 Expansion joint For a cold roof with a timber deck - metal bridge**

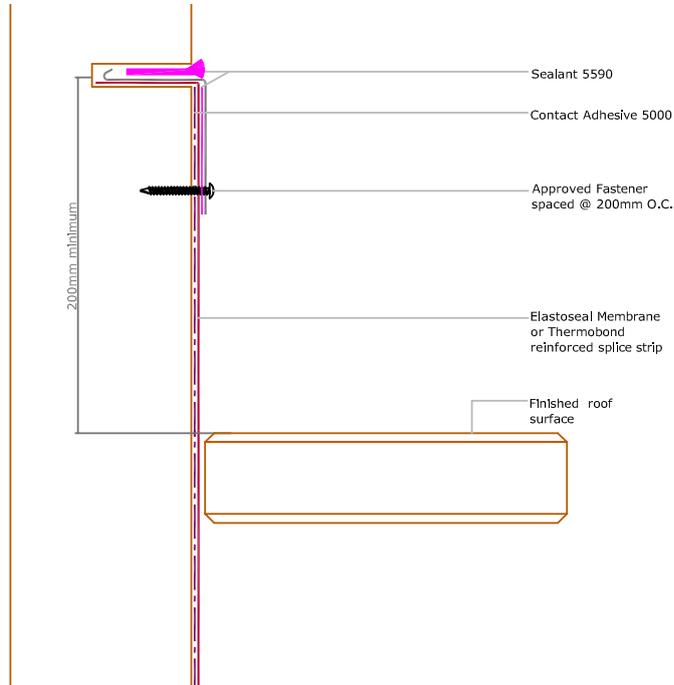


**ELA-408 Expansion joint for a cold roof with a gravel ballast - metal bridge**

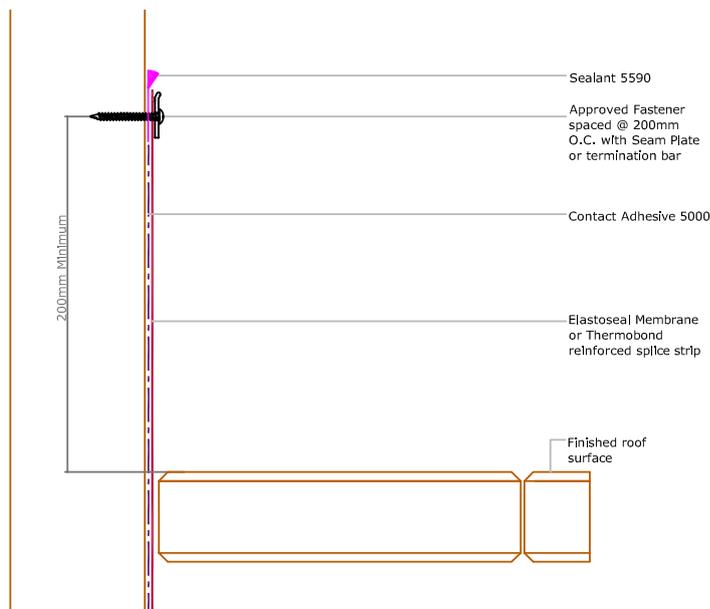


## WALL FLASHING DETAILS

### ELA-501 Wall flashing details - Reglet counterflashing



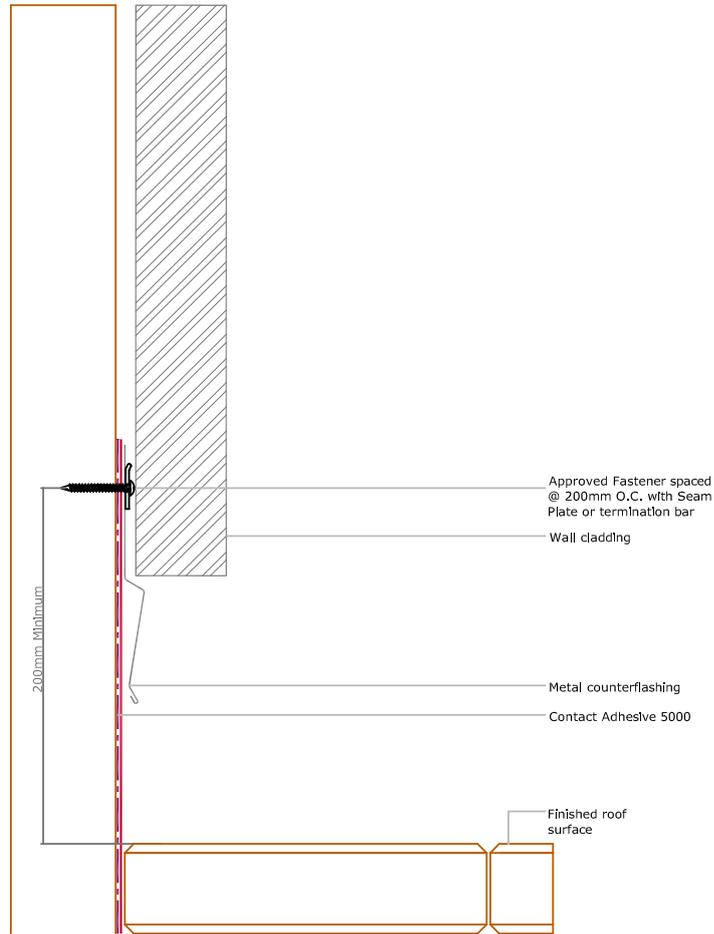
### ELA-502 Wall flashing details - Surface mounted counterflashing



## WALL FLASHING DETAILS

ELA-503

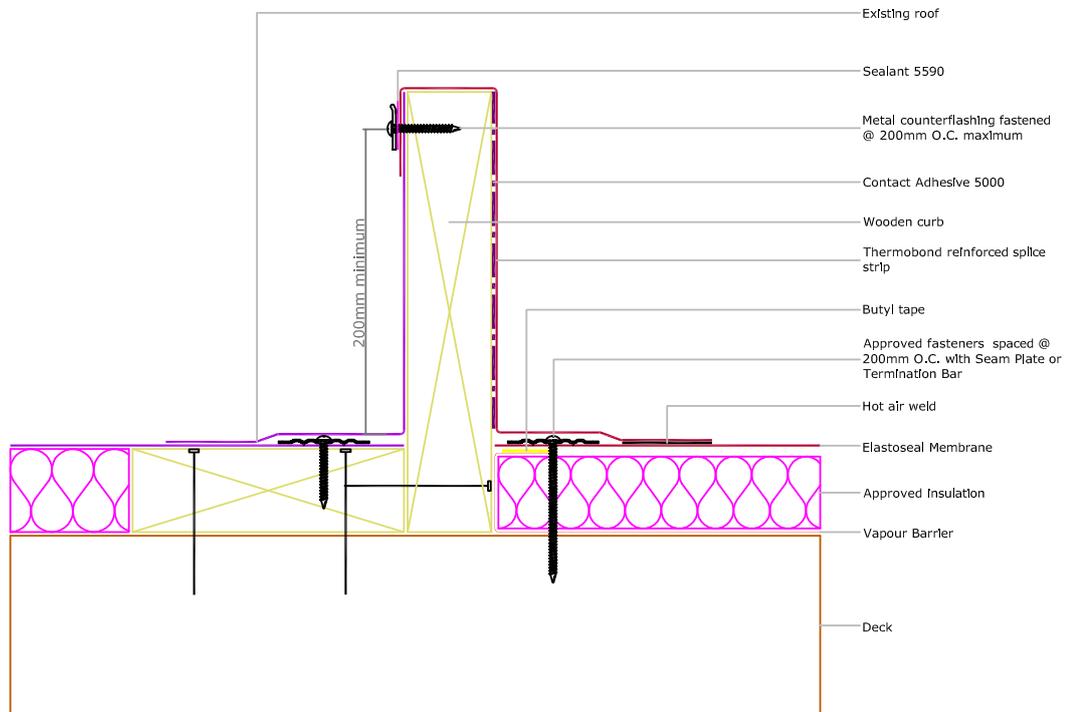
Wall flashing details - Clad Wall panel system counterflashing



## MULTI SYSTEM ROOF TIE-IN DETAILS

ELA-601

Multi - System Roof tie-in



# Table of Construction Drawings

## Elastoseal - Electrobond mechanically attached

### COPING DETAILS

<b>ELA-018</b>	Coping detail for a cold roof - Electrobond mechanically attached
<b>ELA-019</b>	Coping detail for a warm roof - Electrobond mechanically attached
<b>ELA-020</b>	Coping detail for a cold roof - Electrobond mechanically attached - 2 option
<b>ELA-021</b>	Coping detail for a warm roof - Electrobond mechanically attached - 2 option

### EDGE DETAILS

<b>ELA-101</b>	Drip edge detail for a warm roof - Electrobond mechanically attached
<b>ELA-102</b>	Snap on drip edge detail for a warm roof - Electrobond mechanically attached
<b>ELA-103</b>	Edge detail with gutter for a warm roof - Electrobond mechanically attached

### PIPE DETAILS

<b>ELA-208</b>	Pipe detail for a warm roof - Electrobond mechanically attached
<b>ELA-209</b>	Pipe detail for a cold roof - Electrobond mechanically attached

### DRAIN DETAILS

<b>ELA-314</b>	Drain detail for a warm roof - Electrobond mechanically attached
<b>ELA-315</b>	Drain detail for a cold roof - Electrobond mechanically attached
<b>ELA-316</b>	Overflow drain detail for a warm roof - Electrobond mechanically attached
<b>ELA-317</b>	Overflow drain detail for a cold roof - Electrobond mechanically attached
<b>ELA-318</b>	Overflow drain detail for a warm roof - Electrobond mechanically attached - 2 option
<b>ELA-319</b>	Overflow drain detail for a cold roof - Electrobond mechanically attached - 2 option

### EXPANSION JOINT DETAILS

<b>ELA-409</b>	Expansion joint for a cold roof - Electrobond mechanically attached
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### WALL FLASHING DETAILS

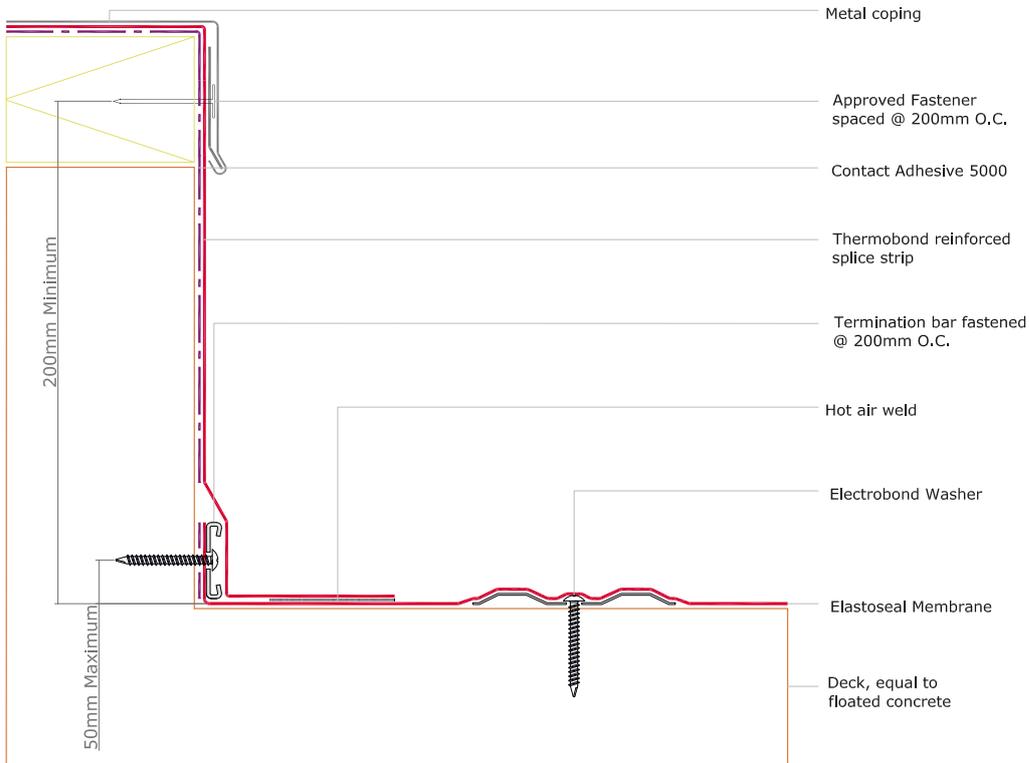
<b>ELA-504</b>	Reglet counterflashing - Electrobond mechanically attached
<b>ELA-505</b>	Surface mounted counterflashing - Electrobond mechanically attached
<b>ELA-506</b>	Clad Wall panel system counterflashing - Electrobond mechanically attached
<b>ELA-507</b>	Reglet counterflashing for a warm roof - Electrobond mechanically attached - option 2
<b>ELA-508</b>	Surface mounted counterflashing for a warm roof - Electrobond mechanically attached - option 2
<b>ELA-509</b>	Clad wall panel system counterflashing for a warm roof - Electrobond mechanically attached - option 2

### TRANSITION DETAILS

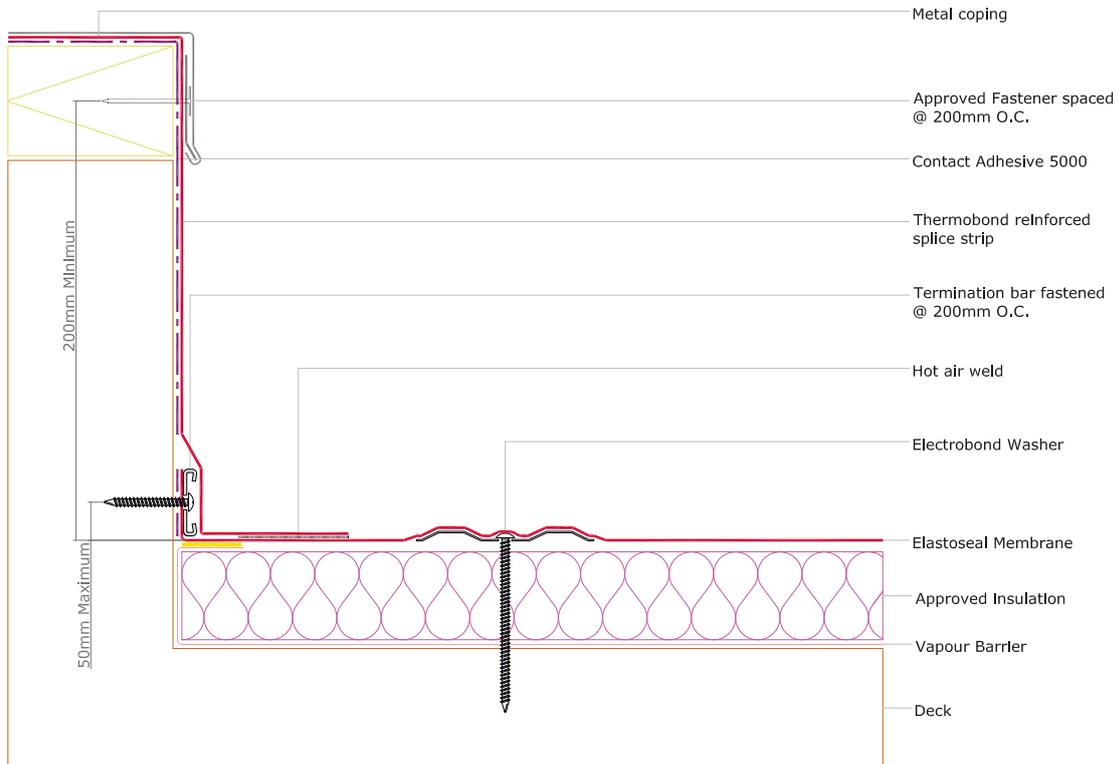
<b>ELA-601</b>	Multi - System Roof tie-in for a warm roof - Electrobond mechanically attached
<b>ELA-603</b>	Valley detail for a warm roof - Electrobond mechanically attached

**COPING DETAILS**

**ELA-018 Coping detail for a cold roof - Electrobond mechanically attached**

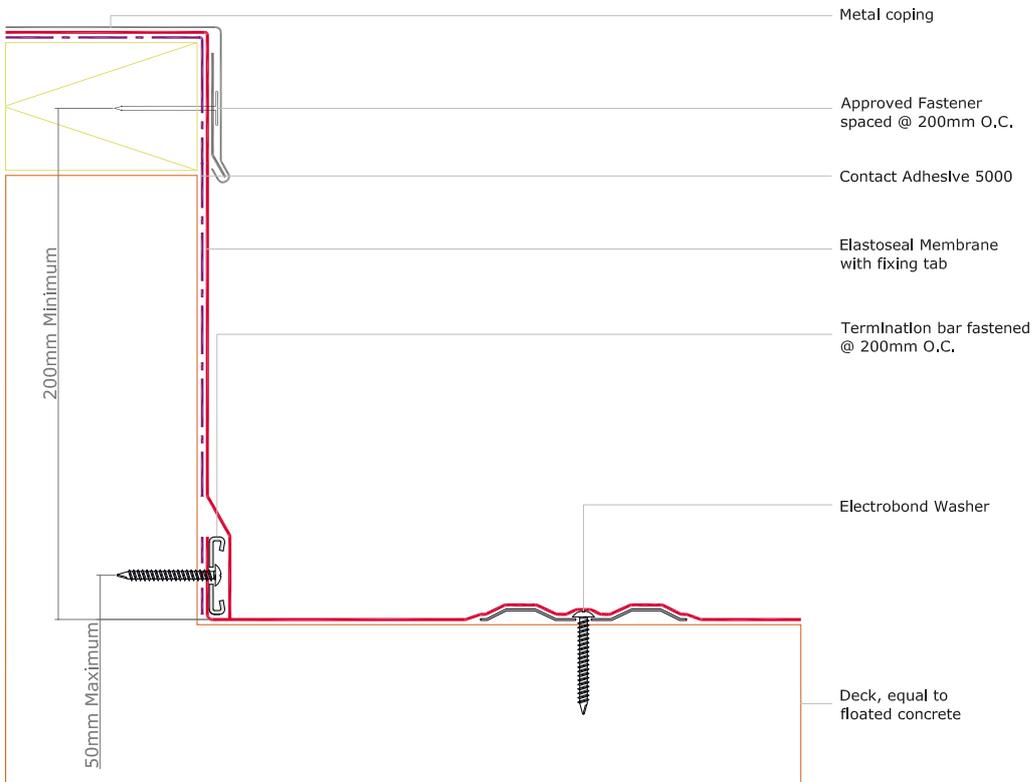


**ELA-019 Coping detail for a warm roof - Electrobond mechanically attached**

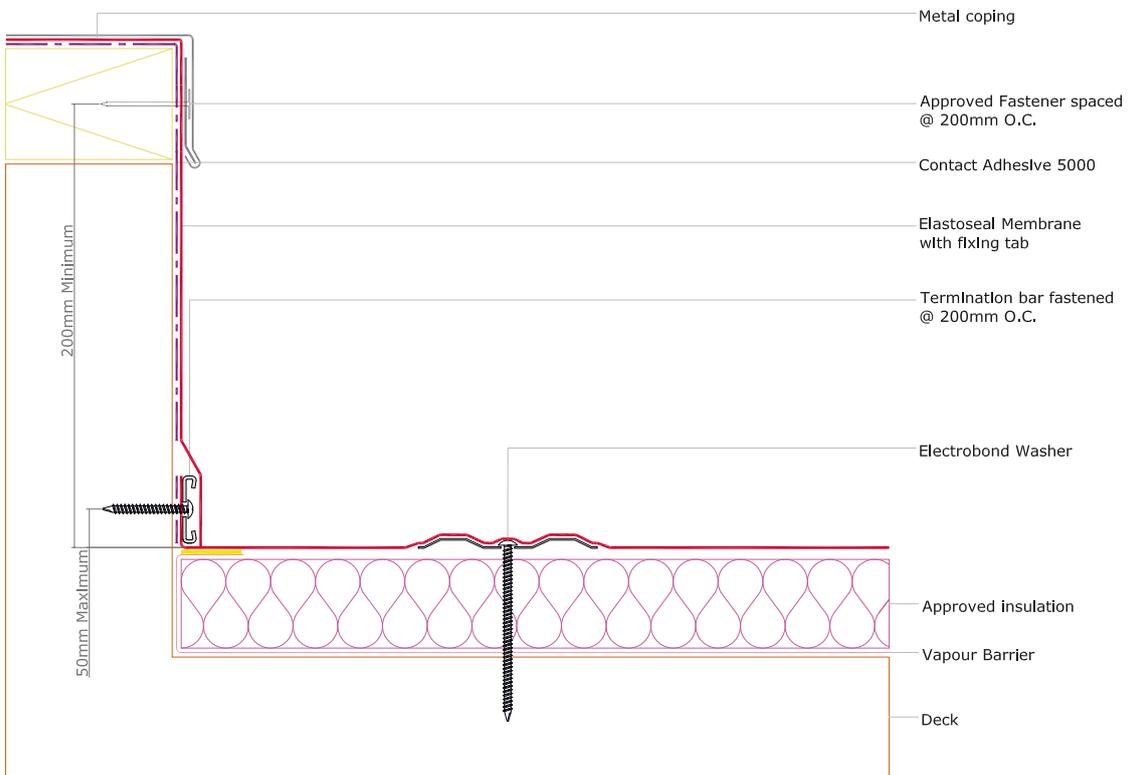


**COPING DETAILS**

**ELA-020 Coping detail for a cold roof - Electrobond mechanically attached - 2 option**

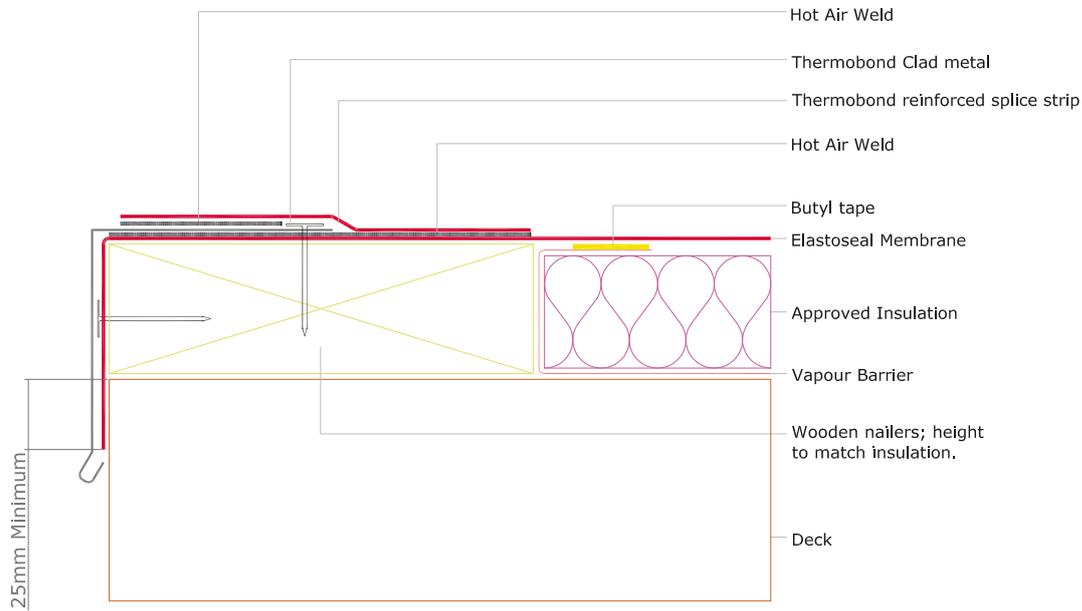


**ELA-021 Coping detail for a warm roof - Electrobond mechanically attached - 2 option**



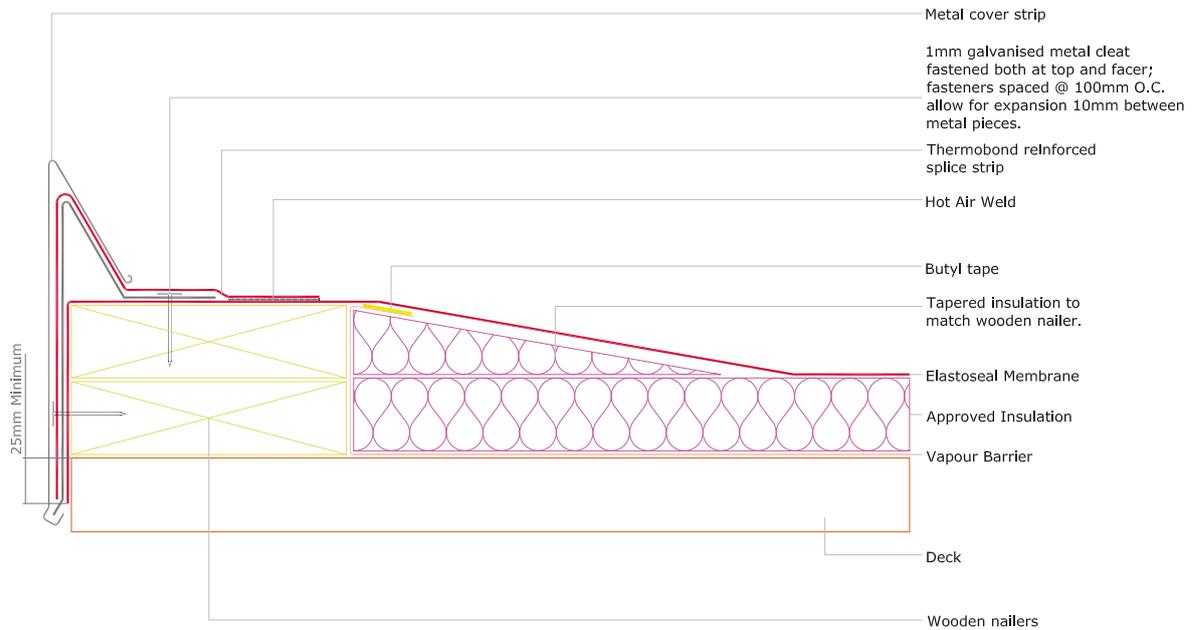
EDGE DETAILS

**ELA-101 Drip edge detail for a warm roof - Electrobond mechanically attached**



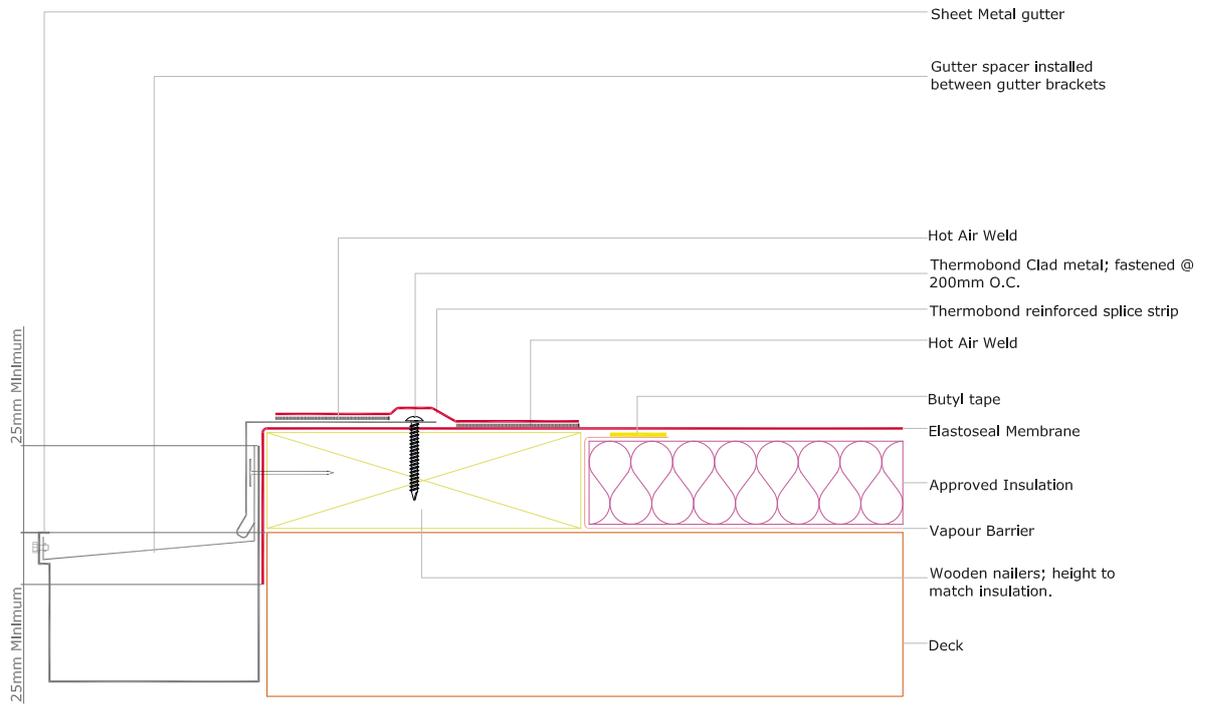
This detail is only to be used where uncontrolled waterflow over the side of the building is acceptable.

**ELA-102 Snap on drip edge detail for a warm roof - Electrobond mechanically attached**



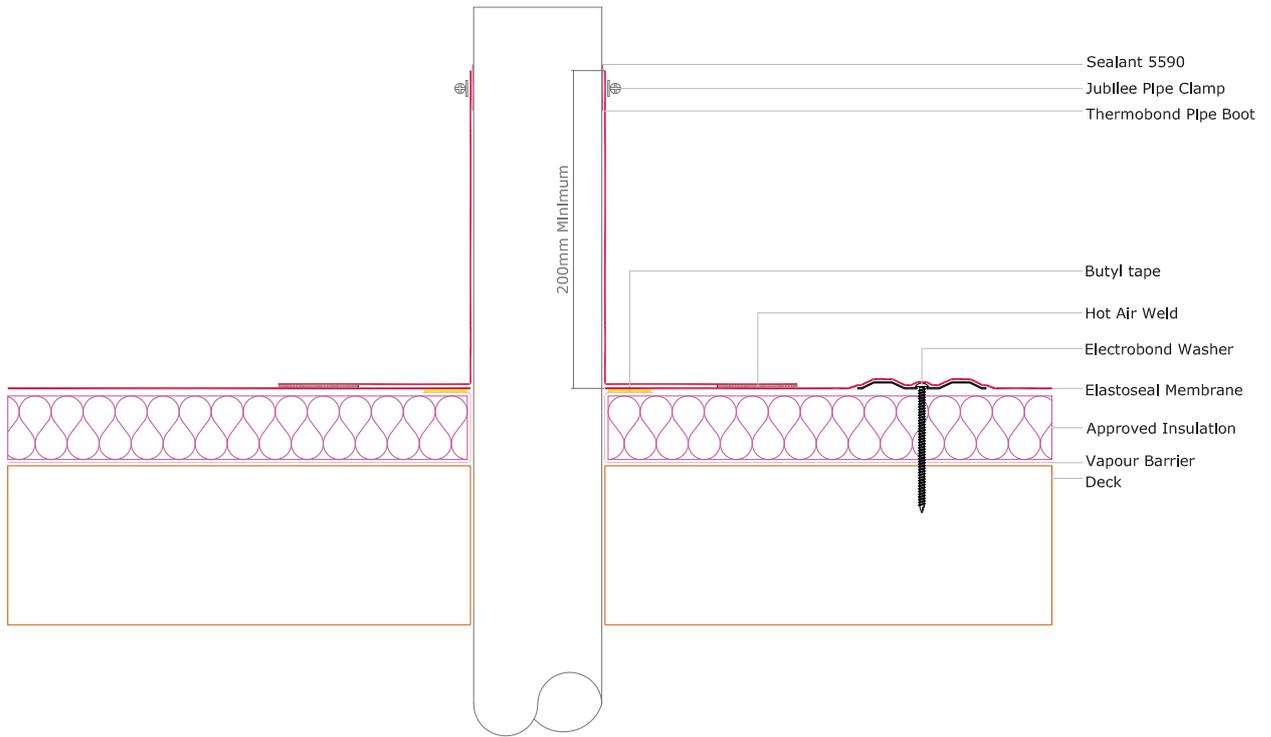
# EDGE DETAILS

**ELA-103** Edge detail with gutter for a warm roof - Electrobond mechanically attached

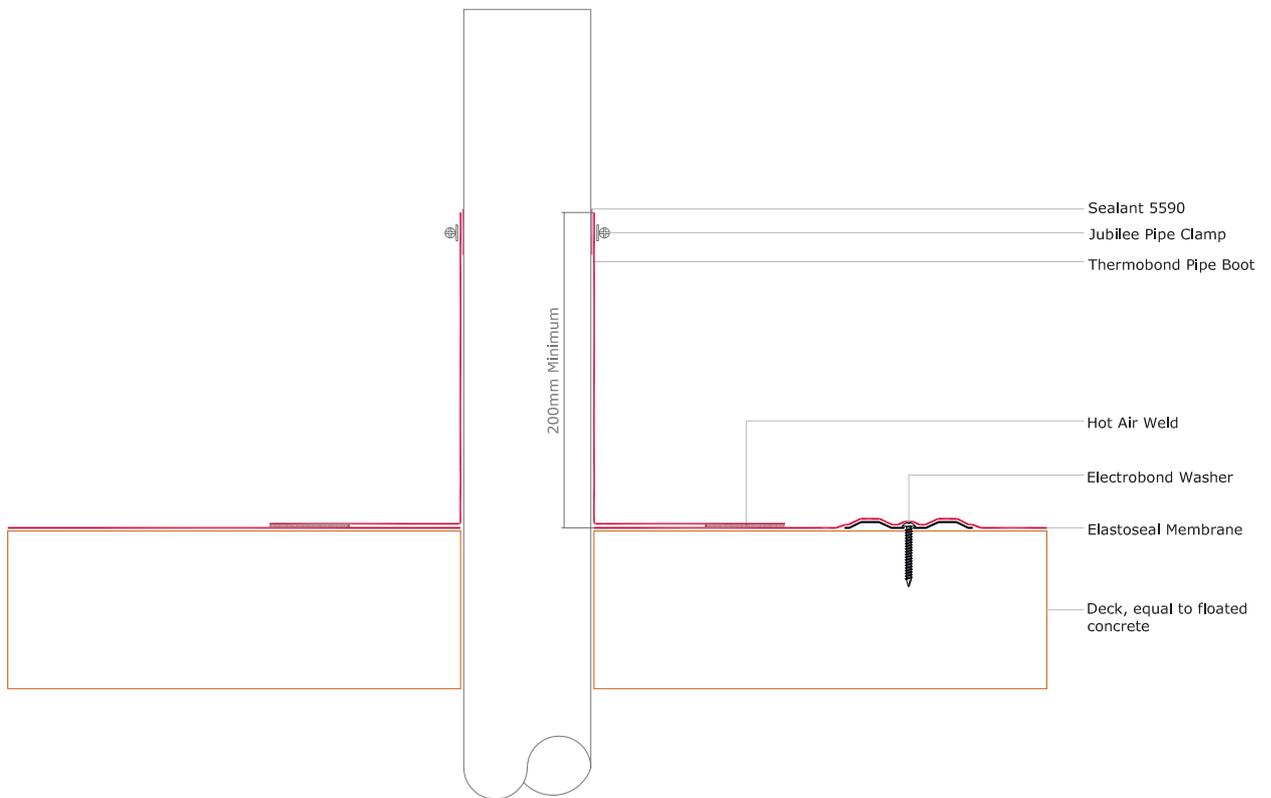


PIPE DETAILS

**ELA-208 Pipe detail for a warm roof - Electrobond mechanically attached**

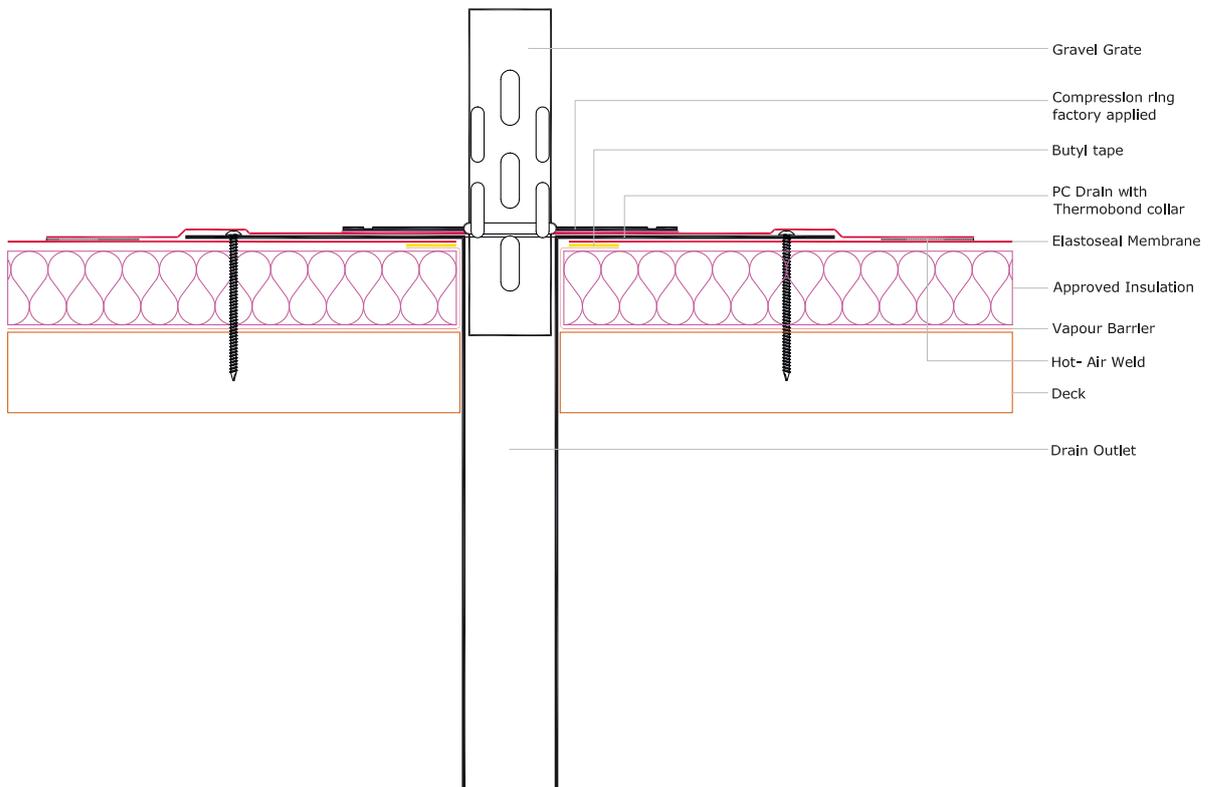


**ELA-209 Pipe detail for a cold roof - Electrobond mechanically attached**

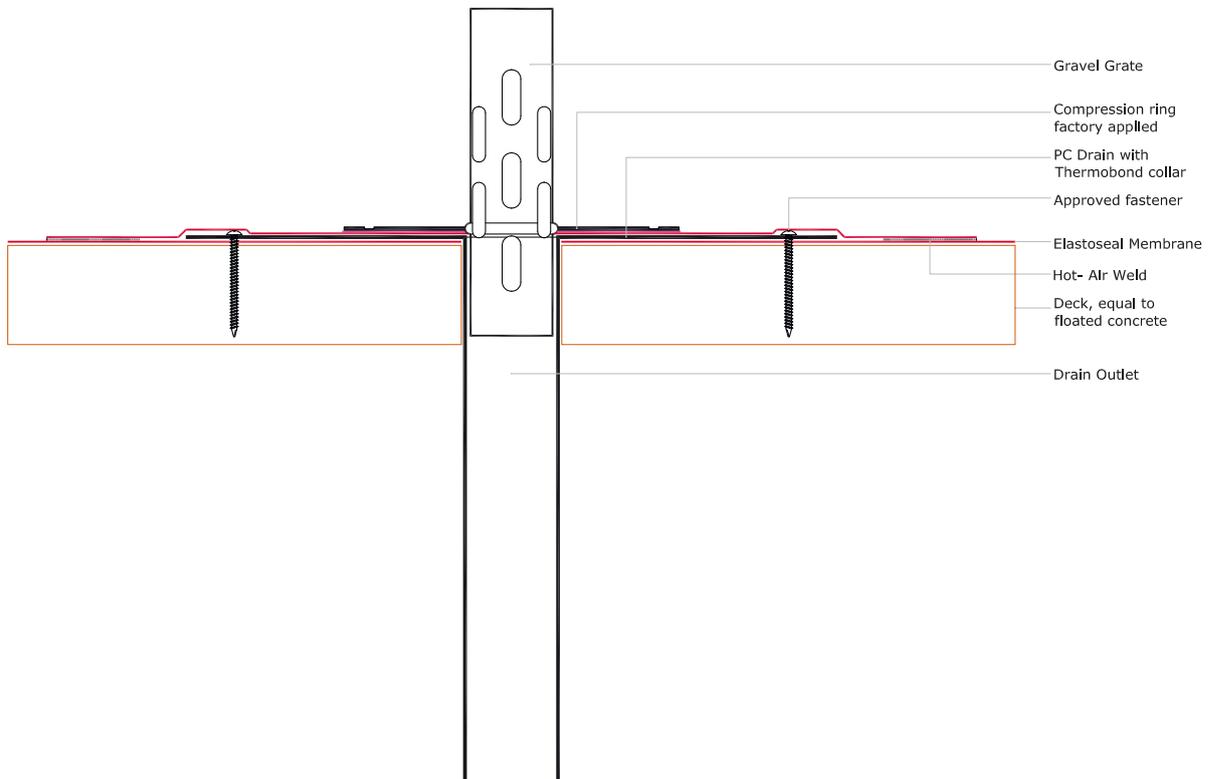


**DRAIN DETAILS**

**ELA-314 Drain detail for a warm roof - Electrobond mechanically attached**

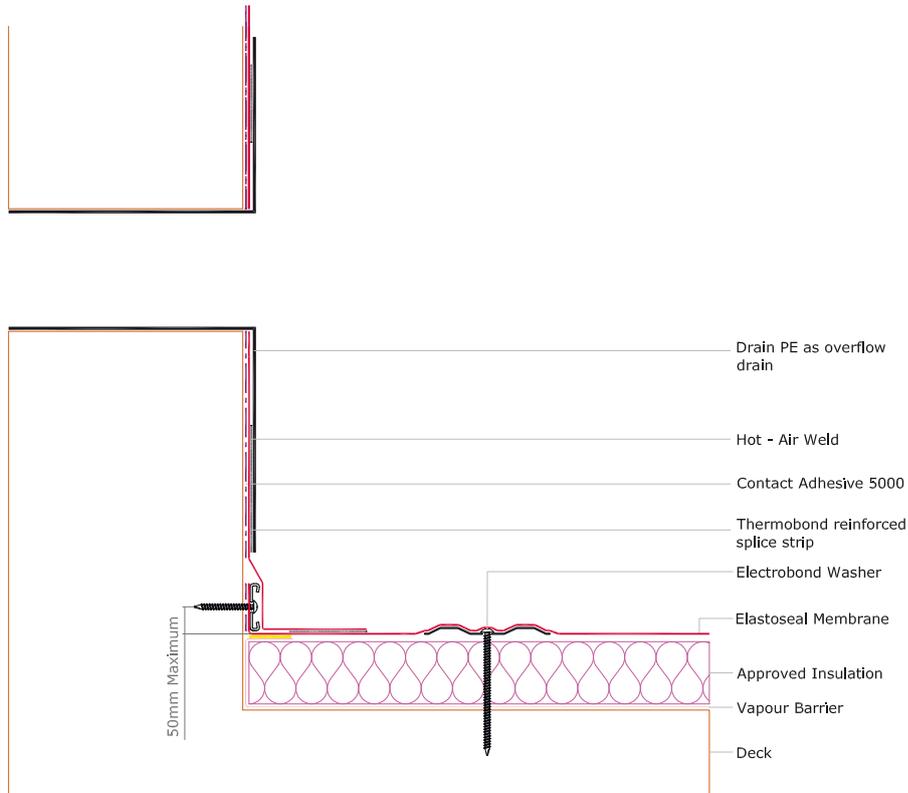


**ELA-315 Drain detail for a cold roof - Electrobond mechanically attached**

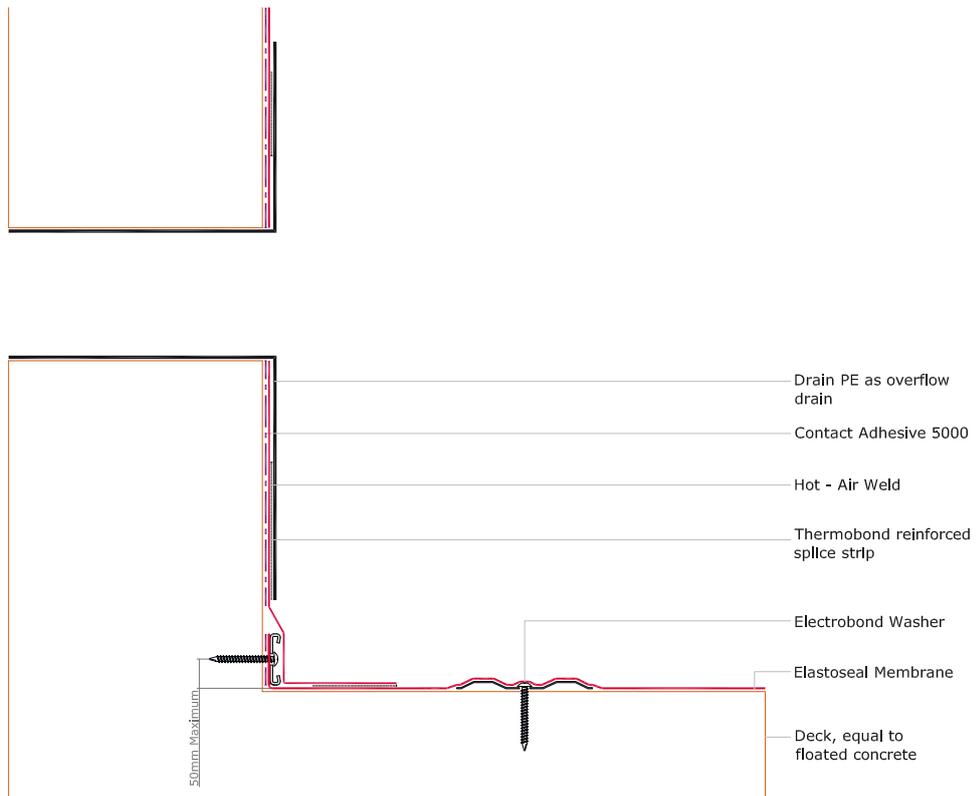


DRAIN DETAILS

**ELA-316 Overflow drain detail for a warm roof - Electrobond mechanically attached**

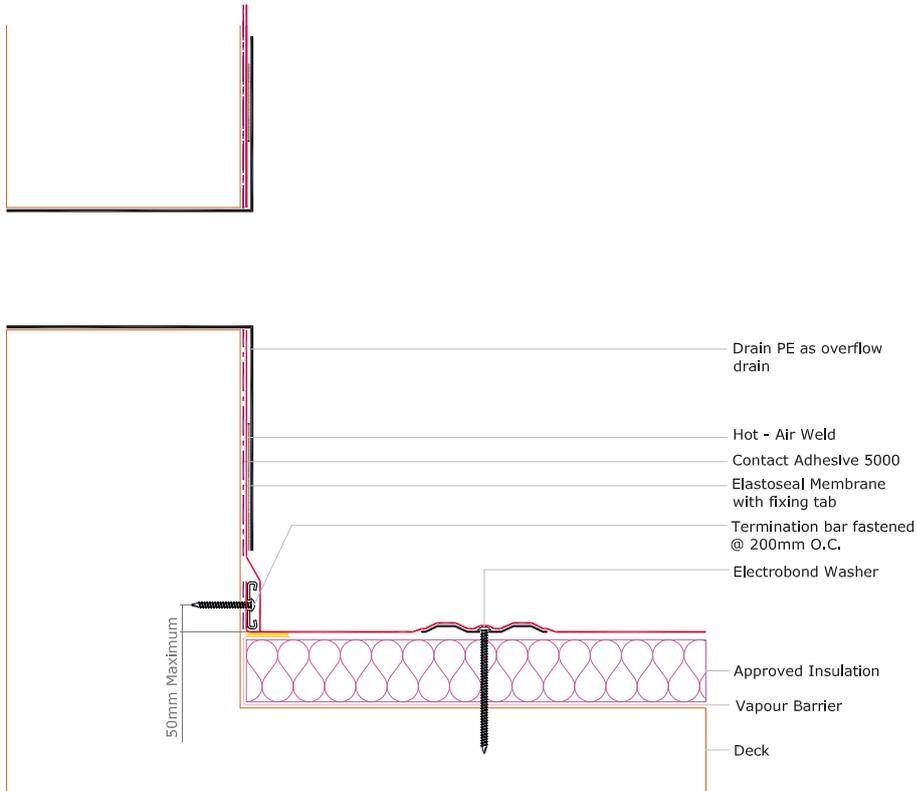


**ELA-317 Overflow drain detail for a cold roof - Electrobond mechanically attached**

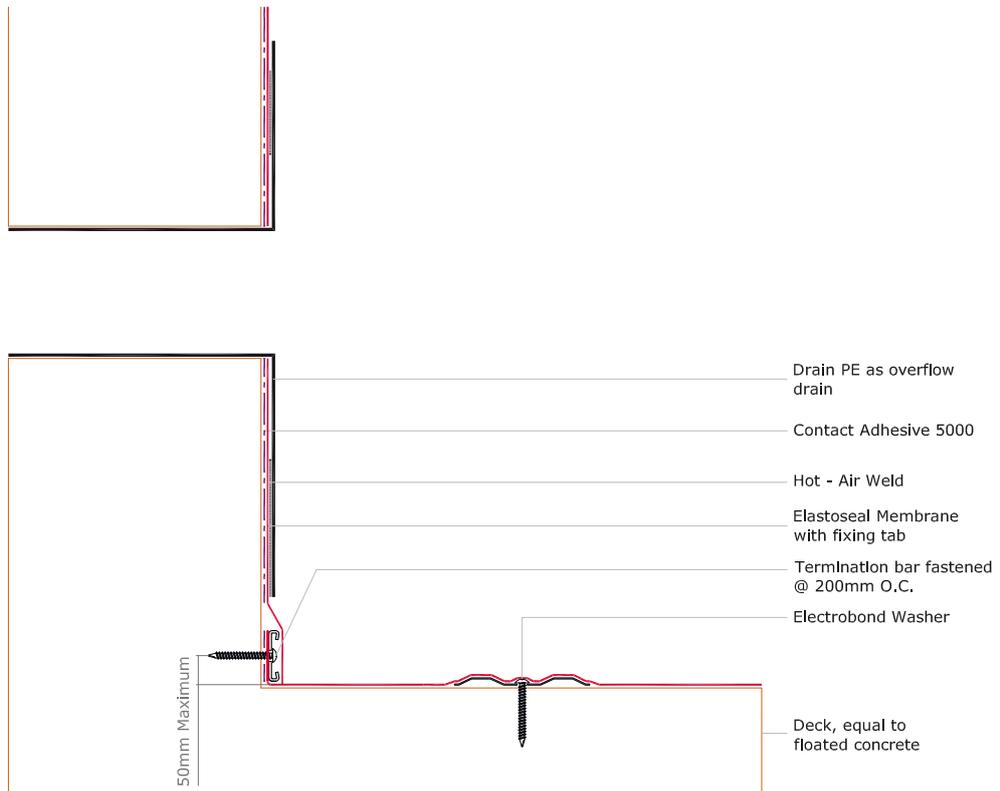


**DRAIN DETAILS**

**ELA-318 Overflow drain detail for a warm roof - Electrobond mechanically attached - 2 option**



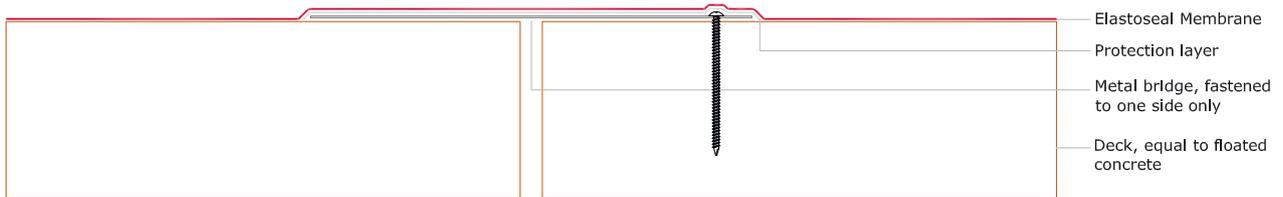
**ELA-319 Overflow drain detail for a cold roof - Electrobond mechanically attached - 2 option**



## EXPANSION JOINT DETAILS

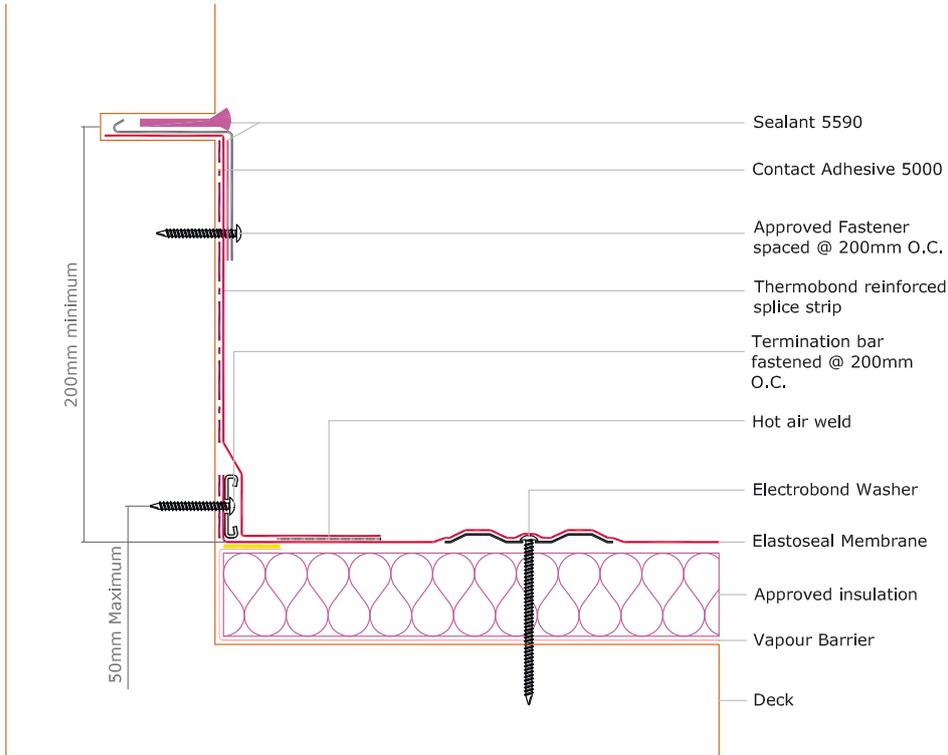
ELA-409

Expansion joint for a cold roof - Electrobond mechanically attached

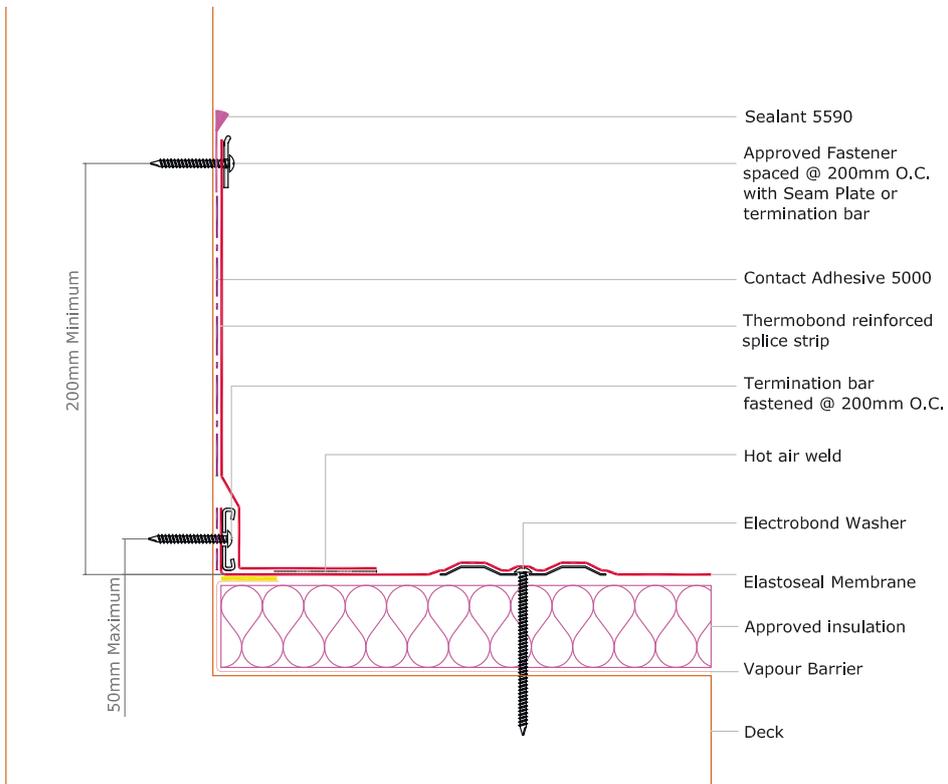


**WALL FLASHING DETAILS**

**ELA-504 Reglet counterflashing - Electrobond mechanically attached**

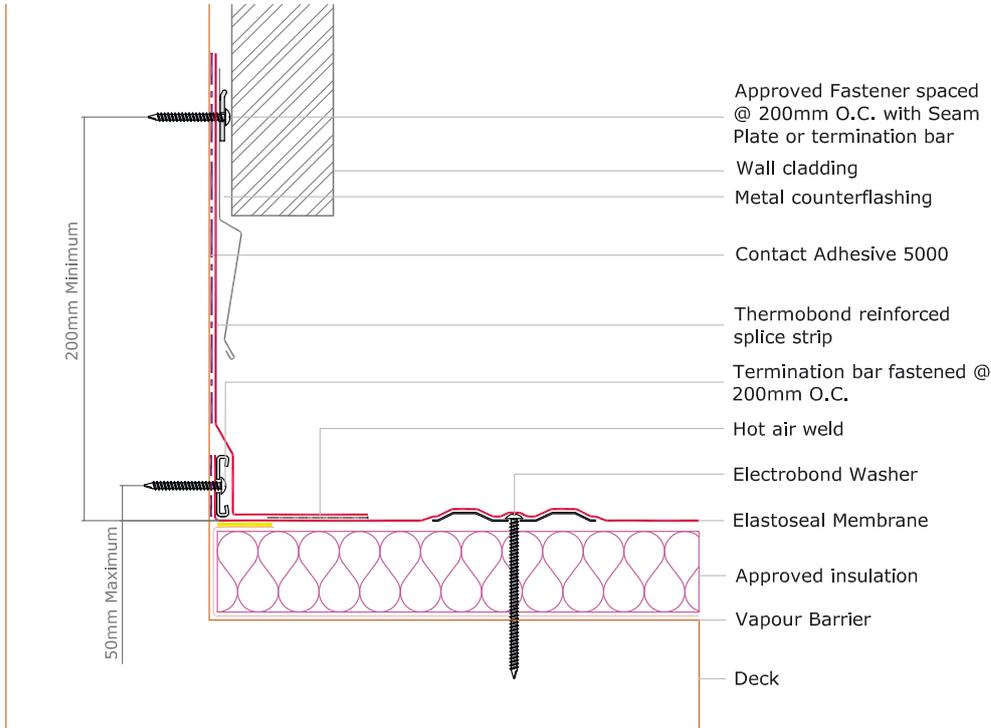


**ELA-505 Surface mounted counterflashing - Electrobond mechanically attached**

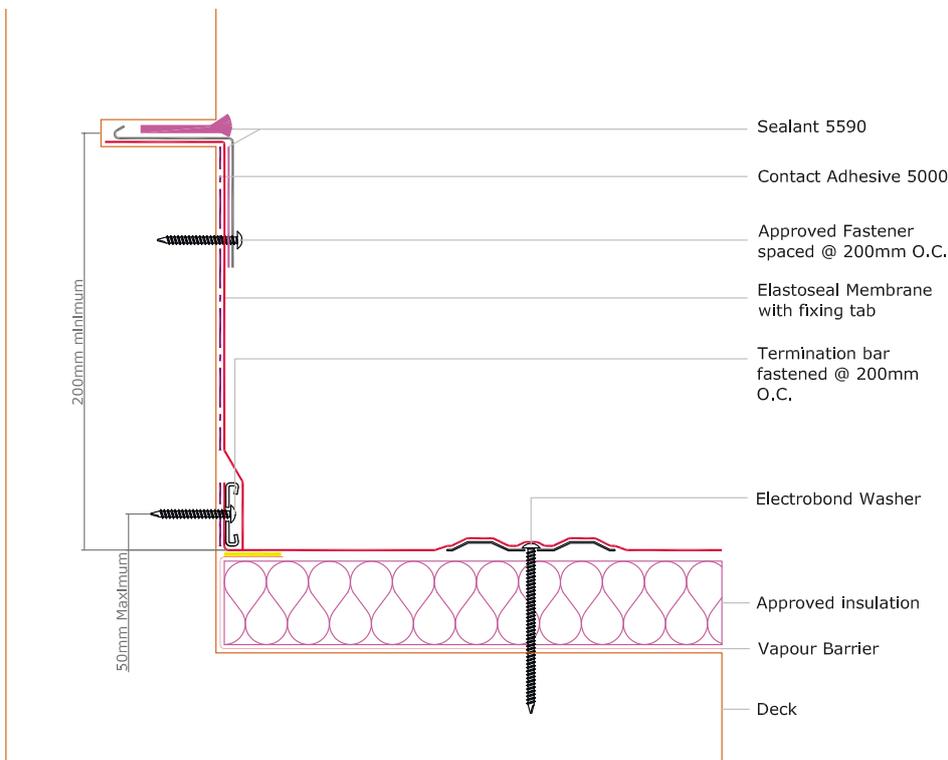


**WALL FLASHING DETAILS**

**ELA-506 Clad Wall panel system counterflashing - Electrobond mechanically attached**

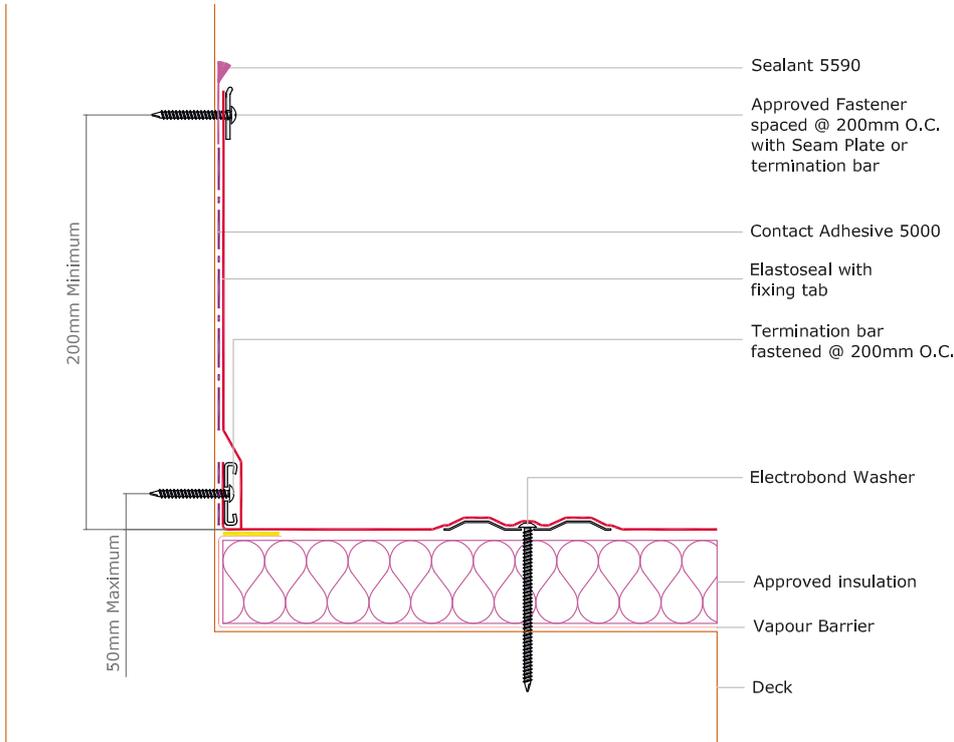


**ELA-507 Reglet counterflashing for a warm roof - Electrobond mechanically attached - option 2**

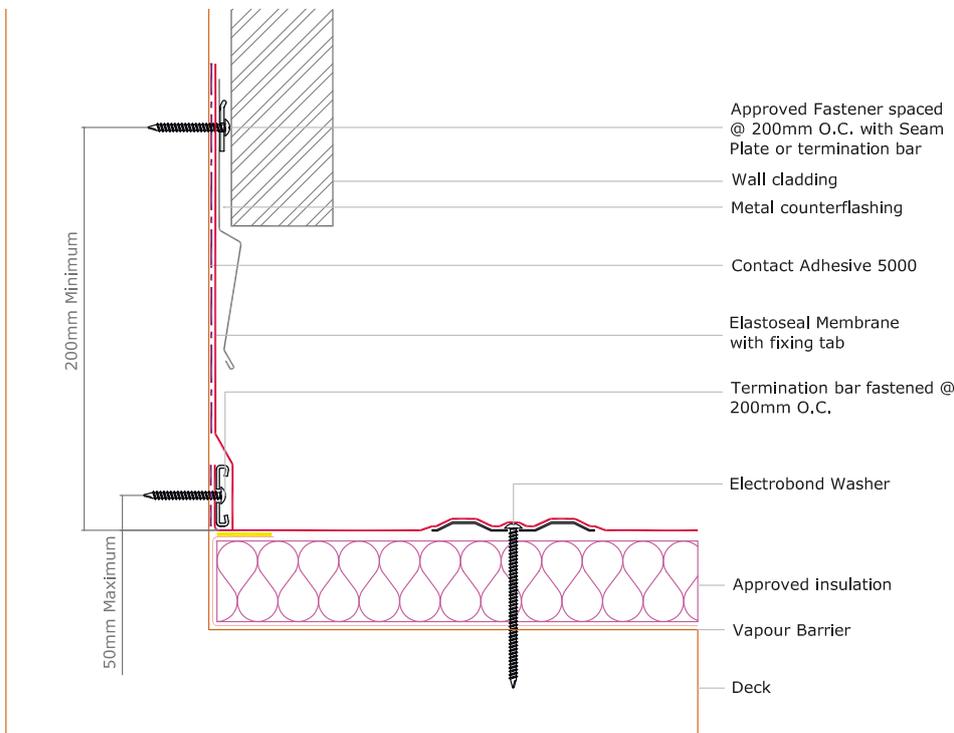


WALL FLASHING DETAILS

**ELA-508 Surface mounted counterflashing for a warm roof - Electrobond mechanically attached - option 2**

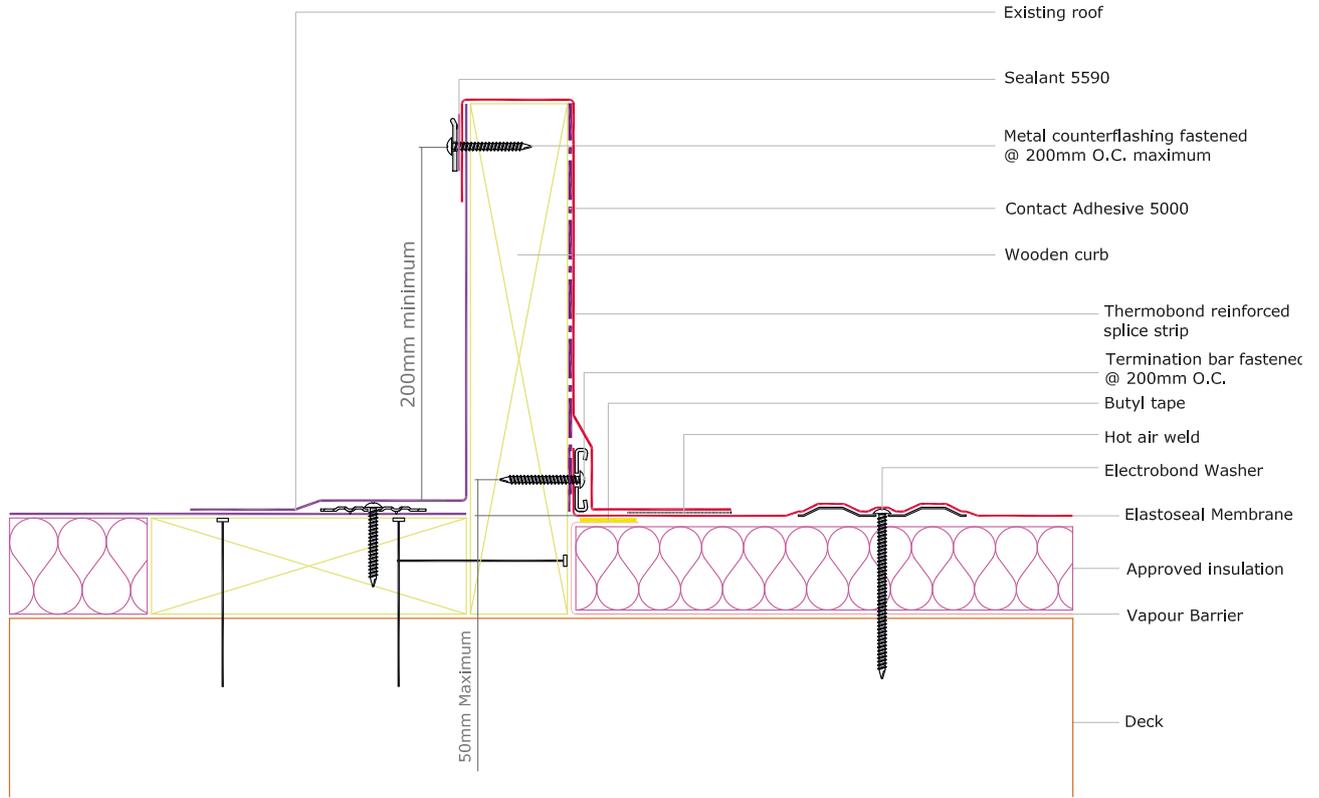


**ELA-509 Clad wall panel system counterflashing for a warm roof - Electrobond mechanically attached - option 2**

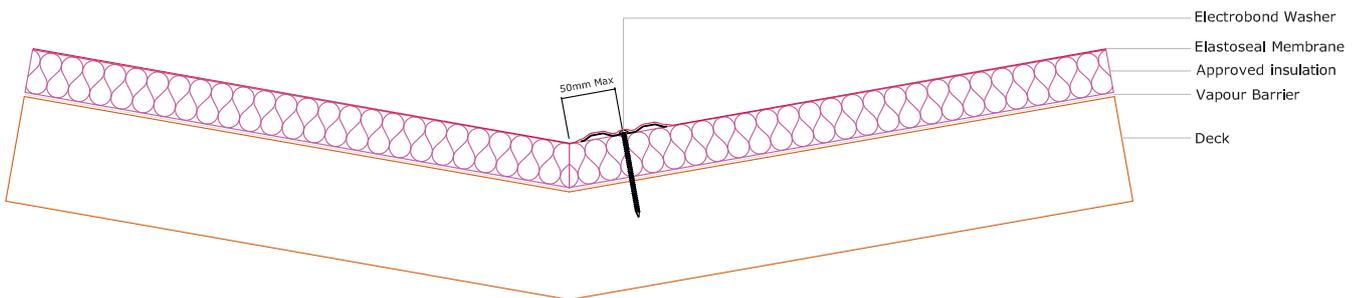


TRANSITION DETAILS

**ELA-602 Multi - System Roof tie-in for a warm roof - Electrobond mechanically attached**



**ELA-603 Valley detail for a warm roof - Electrobond mechanically attached**



# Elastoseal Roofing Reference

## Veiling Flora, Rijnsburg, Netherlands



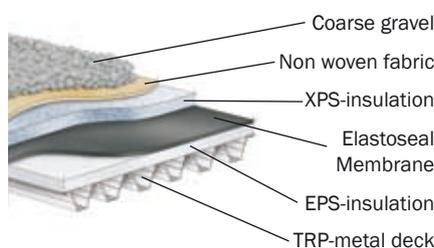
Already 1978 the Dutch flower auction Veiling Flora, started to roof their auction hall in Rijnsburg, with large prefabricated rubber sheeting as waterproofing membrane. The last twenty years Trelleborg Waterproofing have delivered Elastoseal panels to the now over 250 000 sqm. large roof.



### Roof construction

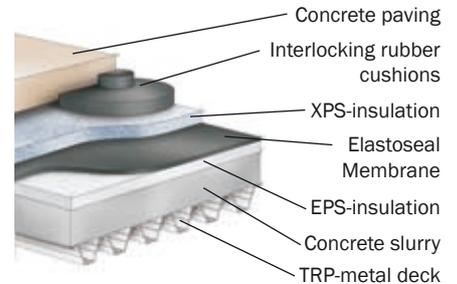
Most of the roof areas have been installed as ballasted constructions with coarse gravel as ballast. The advantages from this is that the roof gets an appealing look and that the water run-off is more even with less problems during heavy rain as result. Another advantage is that the service life of the roofing membrane is prolonged.

### Construction



On some parts of the roof parking decks has been installed. The rubber membrane provides excellent properties for this construction due to the viscous and elastic properties that makes the material resistant to very large ballast weight.

### Construction



### Installation

The field installation in Rijnsburg has been done using large prefabricated panels in sizes between 1000 – 1500 sqm:s. These panels are positioned on the roof and spliced together using hot air. This method gives fast installation with very little field splicing.



# Elastoseal Roofing Reference

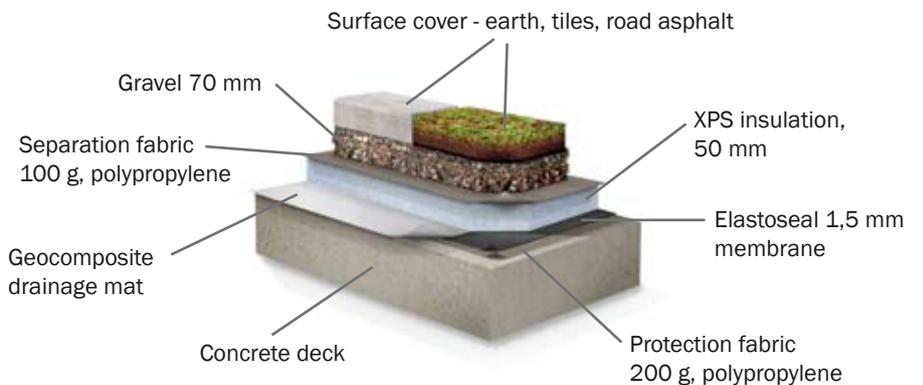
Hulagårds Have, Copenhagen, Denmark



The Danish investor Kay Wilhelmsen Group is developing the area Hulagårds Have into modern seven story apartment blocks, with parking and storage facilities under the buildings and a complete landscaping, with lawns, trees, children's playgrounds, bicycle- and walking trails and car parking areas surrounding them. The area is close to the Copenhagen City Center, at the Brønshøj / Bellabø districts.

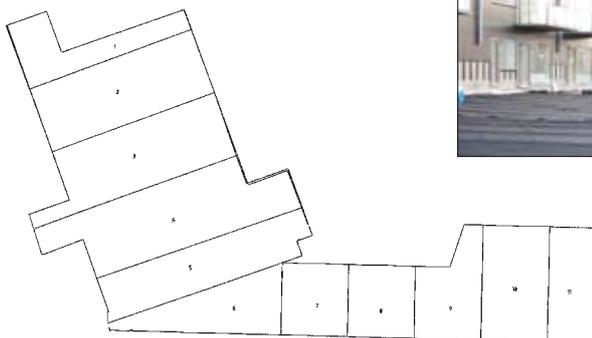
Waterproofing of the concrete deck between the buildings was made with Elastoseal panels and the Thermobond seaming technique, using hot air for all panel seaming and details.

## Construction



## Splicing

The panels were seamed using the Thermobond seaming technique and Hot Air automatic machines.



The 4800 sqm large irregular shaped concrete deck between the seven floor high apartment buildings was covered with 11 pcs of Elastoseal EPDM panels tailor-made to the size of the deck.

# Elastoseal Roofing Reference

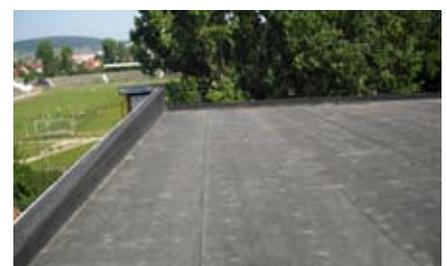
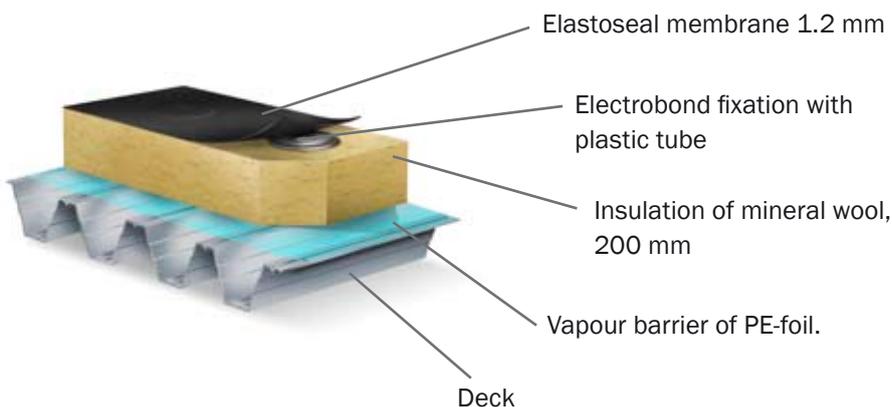
Marosvasarhely ice stadium, Targu Mures, Romania



The new ice stadium for the sport park in Marosvasarhely / Targu Mures was built during 2009 with Elastoseal membrane as roofing. The roofer that made the installation was the company EBE & CO S.R.L.

The total roof area is 4370 m<sup>2</sup> and this was covered by 8 panels of Elastoseal that had been prefabricated in a factory

to a panel size of approx 550 m<sup>2</sup> each. The insulation was fixated mechanically to the deck with Electrobond washers that also functions as fixation for the Elastoseal panels by the means of induction welding. In just a few seconds of welding the membrane are fixated without being penetrated.



# Request for windload calculation

\* Mark your choice. See page 2 for drawing.

Object	
Town / Country	
Customer	
Contact	

## Type of building

Height (H)	
Length (L)	
Width (B)	
Rooftype	
Slope	
Edge/parapet detail	

**Make on page 2 a drawing of the object with all measures. Plan must include:**

- Dimensions
- Orientation, show where north is
- Adjoining structures
- Surrounding structures
- Directions of deck if metal

## Position of object

1	Town		
2	Country		
3	Coast		Distance from sea ( in Km )

## Substrate

Metal Deck		Thickness	
Wood		Thickness	
Plywood		Thickness	
OSB		Thickness	
Site Moulded Concrete		Type	
Prefab Elements		Type	
Aerated Concrete		Density	
Other		Describe	

## Buildingtype

Open	
Close	

**Is an open building when doors and windows are larger than 5 % of the total surface of the facade**

## Insulation Membrane

Thickness	
Type / System	
Width	

