



Sealco
Waterproofing Systems

ARCHITECTURAL PRODUCT MANUAL



EcoTUFF TPO Membranes



BRANZ Appraised

Appraisal No. 792 [2012]

ECOTUFF TPO ROOF AND DECK MEMBRANE

Appraisal No. 792 [2012]

Amended 05 October 2016



BRANZ Appraisals

Technical Assessments of products
for building and construction.



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Product

- 1.1 EcoTUFF TPO Roof and Deck Membrane is a single ply, polyester fabric reinforced, thermoplastic polyolefin (TPO) fully bonded roof waterproofing sheet membrane for building roofs and decks.

Scope

- 2.1 EcoTUFF TPO Roof and Deck Membrane has been appraised as a roof and deck waterproofing membrane on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with respect to building height and maximum floor plan areas when subject to specific design; and,
 - with building structures designed and constructed to meet the requirements of the NZBC; and,
 - with substrates of plywood or concrete slab; and,
 - with minimum falls for roofs of 1:30 and decks of 1:40; and,
 - with decks that have a maximum area of 40 m²; and,
 - situated in NZS 3604 Wind Zones, up to, and including Extra High.
- 2.2 EcoTUFF TPO Roof and Deck Membrane has also been appraised for use as a roof and deck waterproofing membrane on specifically designed buildings within the following scope:
 - subject to specific structural and weathertightness design; and,
 - with substrates of plywood or concrete slab; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 6.0 kPa and,
 - with the weathertightness design of junctions for each specific structure being the responsibility of the building designer.
- 2.3 Roofs and decks waterproofed with EcoTUFF TPO Roof and Deck Membrane must be designed and constructed in accordance with the following limitations:
 - nominally flat or pitched roofs and decks constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
 - with no steps within the deck level, no integral roof gardens and no downpipe direct discharge to the decks; and,
 - with the deck membrane continually protected from physical damage by pedestal protection system.
- 2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.5 The membrane must be installed by Sealco Waterproofing Systems Ltd Approved Installers.



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THIS PUBLICATION

This manual provides the technical information necessary to correctly specify the EcoTUFF® waterproofing membrane system. It has also been designed for use by Sealco Waterproofing Systems Ltd approved applicators, for training and quality management purposes.

This manual may also be used by main contractors and Building Consent Authorities (BCA's) for quality management and inspection purposes.

NOTE TO APPLICATORS

As a Sealco approved applicator you are required to comply fully with the contents of this manual. Where a specific situation arises on a particular project that makes it difficult for you to follow the published procedure or comply with a particular detail drawing, you are required to communicate this to Sealco for an approved solution.

TRADEMARKS

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BRANCHES:

AUCKLAND
WELLINGTON
CHRISTCHURCH

USING THE ICONS

Four different visual icons have been created for this manual to draw the reader's attention to important pieces of information.



1. QUALITY CONTROL ICON

Information about warranties, quality control checks and related information.



2. USEFUL TIPS ICON

Helpful advice to make the applicator's job easier and successful installation more likely.



3. CRITICAL ICON

Vital information about the system and installation methodology. It is crucial that the specifier and/or applicator are aware of these facts.



4. HEALTH & SAFETY ICON

Information about the importance of safety checks and ensuring that the work environment is always safe with potential hazards identified and minimised.

BRANZ APPRAISED

The EcoTuff® TPO BRANZ no. 792 (2012) Systems have been BRANZ Appraised as an Alternative Solution in terms of New Zealand Building Code Compliance and the products comply with NZBC Acceptable Solution E2/AS1 Paragraph 12.2

These products are also appraised as an Alternative Solution on buildings subject to specific design.

Please contact Sealco Waterproofing Systems Ltd for a copy of this BRANZ Appraisal Certificate.

You can also download the certificate on our website www.sealco.co.nz



PRODUCT DESCRIPTION

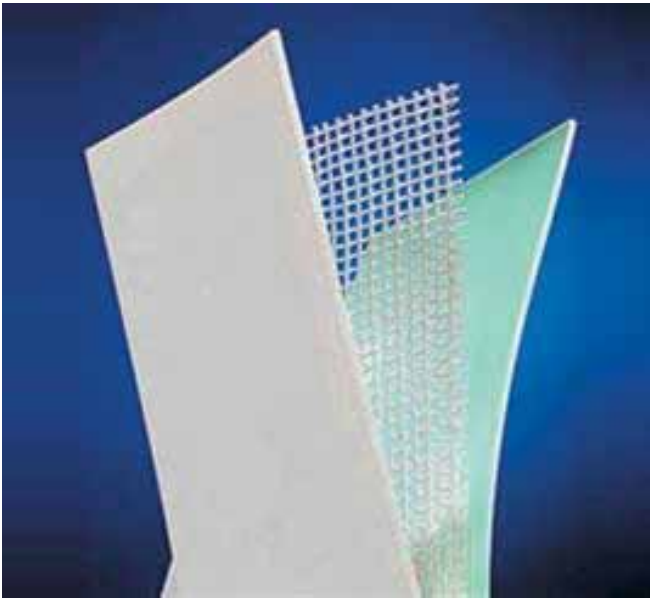
EcoTUFF® a high quality TPO (thermo plastic olifin) used to provide waterproofing protection for a variety of roofing and exterior deck applications.

The EcoTUFF® system includes the EcoTUFF® TPO membrane and EcoTUFF® contact adhesive. Also included as part of the system is the unreinforced ecoTUFF membrane, pre made corners and cut edge sealant

EcoTUFF Fleece back membrane consists of a TPO sheet vulcanised to a non-woven polyester matting.

The EcoTUFF® system is a suitable to be applied over concrete, steel, fibre cement boards or construction plywood substrates.

EcoTUFF® has been independently appraised as an Alternative Solution in terms of the NZBC, and complies with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.



EcoTUFF® is internally reinforced with a polyester scrim

STRESS FREE ROOFING

Sealco's EcoTUFF TPO Fleece-Backed membrane can be installed over many existing membranes enabling the building owner to continue using the building while a new roof is being fitted. In most cases, as the old degraded membrane does not have to be removed, this means the building will not be any less watertight than when first started application of the EcoTUFF Fleece Back membrane.

WHY ECOTUFF®

TPO MEMBRANE

EcoTUFF® membranes have over 30 years of extensive use internationally in a wide variety of waterproofing applications. They are regarded as one of the most durable membranes available.

ECOTUFF® AND RESISTANCE TO UV AND AGEING

BRANZ independent evaluation confirms EcoTUFF® is suitable for New Zealand climatic conditions, is resistant to New Zealand's high UV & ozone conditions and the extreme hot and cold weather extremes. This is particularly important when working on timber substrates, which are subject to movement.

HISTORY OF USE

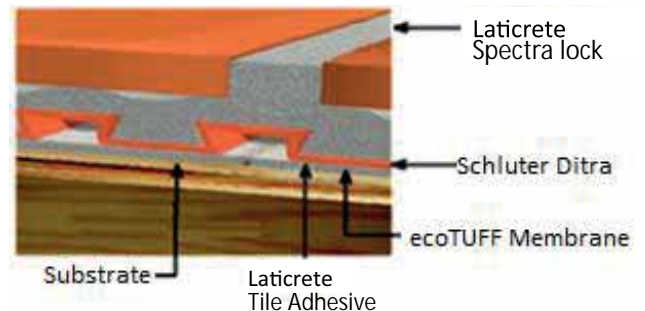
In addition to the benefits of being a TPO membrane, EcoTUFF® has extensive history of use. First installed in the 1960's throughout the USA & Canada and then introduced into the New Zealand market in 2004, EcoTUFF® is the longest serving TPO membrane system currently used in New Zealand.

MULTI USE ADHESIVE

Single part EcoTUFF® adhesive gives a high performance bond. It is used to adhere the EcoTUFF® to the substrate, in detailing work. No special seam primers, Lap tapes or other solvents are required.

DECK MEMBRANE USE

EcoTUFF® is used as an exposed roofing membrane and exterior deck membrane and in pond lining applications. When used as a deck membrane we do not recommend it be tiled over directly, but can be tiled over with the schluter Ditra system. Alternatively overlay timber decking systems or pavers on ecoJACK paver supports.



| ECOTUFF® MEMBRANE SPECIFICATIONS | | |
|----------------------------------|--------------------------|------------|
| Tensile Strength | 578N +/- 10% | ASTM D751 |
| Elongation | 25% | ASTM D751 |
| Hardness, DuroMeter A | 60 | ASTM D1415 |
| Brittleness Point | -40 ⁰ +/- 10% | ASTM D2137 |
| Ozone Resistance | No Cracks | ASTM D1149 |
| Water Absorption | 2.0% | ASTM D471 |
| Breaking Strength | 1.5KN Typical | ASTM D751 |
| Water Vapour Permeance | 0.05 Typical | E-96 |

PRODUCT PACKAGING

ECOTUFF® MEMBRANE IS AVAILABLE IN

1.14mm thick x 2.4m wide x 30.0m long rolls (grey)
 1.14mm thick x 3.7m wide x 30.0m long rolls (grey)

1.50mm thick x 2.4m wide x 30.0m long rolls (grey)
 1.50mm thick x 3.7m wide x 30.0m long rolls (grey)

* ECOTUFF® is available in white or Tan on indent only



Where the EcoTUFF® membrane is to be overlaid with timber decking, or being installed in exposed deck applications, the 1.5mm thickness is required.

DURABILITY

When installed in accordance with Sealco Waterproofing Systems specifications, the EcoTUFF® system will meet the NZBC B2.3.1 (b) requirements of 15 year durability. EcoTUFF® meets the ASTM D6134 standard required by the Department of Building & Housing E2/AS1 Acceptable Solution.

The durability opinion given by BRANZ states that when subjected to normal conditions of environment and use, EcoTUFF® is expected to have a service life of at least 20 years.

PLEASE ALSO REFER TO:

- BRANZ Bulletin No. 345 “Flat Membrane Roofs - design & installation” published June 1996.
- Department of Building & Housing Acceptable Solution E2/AS1 3rd Edition published July 2005.
- BRANZ Appraisal Cert. 533 (2006). EpiROOF® Roof Membrane.



PRODUCT OVERVIEW

ECOTUFF® TPO

A TPO (Thermo Plastic Olifin) membrane.

PRIMER

Cut back EcoTUFF® adhesive 50/50 with EcoTUFF® Solvent

BOND BREAKER TAPE

A PVC pressure sensitive tape used over plywood sheet joints as a bond breaker to minimise stress caused at the joint. Supplied as 36mm wide tape.

ECOTUFF® CONTACT ADHESIVE

A high strength solvent based contact adhesive formulated to quickly bond EcoTUFF® roofing membranes to a range of substrates.

ECOBOND WATER BASED ADHESIVE

A high strength water based adhesive formulated to quickly bond fleece backed roofing membranes to a range of substrates. An environmentally friendly option for your roof.

ECOTUFF® TPO CUT EDGE SEALANT

A specially formulated edge sealer designed for use in water diversion applications. Please note this sealant is not designed to seal against leakage but is more designed to divert water away from laps or flashing details.



Supplied in 20Litre screw top can, Solvent based EcoTUFF® adhesive is flammable and must be stored, transported and used with care. Refer to Material Safety Data Sheets for further information



The shelf life of these products is affected by the storage temperature. To gain maximum shelf life, ensure products are stored in a COOL dry place. Do NOT leave out on roofs or other areas exposed to sunlight.

UNREINFORCED FLASHING ECOTUFF

300mm wide weldable unreinforced TPO for corner, detail and flashing areas.

WEATHERED MEMBRANE CLEANER

Cleaner specifically designed for aged, dirty or weathered membranes.

ACCESSORIES

FLASHRITE® PREFORMED CORNERS

A range of internal and external weldable preformed corners to make detailing both watertight and aesthetic.

VENTRITE® ONE WAY VENTS

TPO or spun aluminium one-way air vents that allow moist air to escape from your roof cavity reducing heat build-up, condensation and potential rot. The EcoTUFF vents are available in gray and will vent up to 70sqm of roof space per unit. The spun aluminium vent will vent up to 50sqm per unit.

FLOWRITE® & DRAINRITE® ROOF OUTLETS

A range of pre-formed EcoTUFF TPO roof outlets which include droppers, scuppers and slumps to get the water safely off your roof.

TPO COATED FLASHING SHEET STEEL

A 1.2m wide x 3m long galvanised metal sheet which has been bonded with a TPO coating. The TPO coated steel can be cut and folded to suit a range of flashing requirements where the TPO can also be fully heat welded to the surface.

ECOTUFF® TUFFGRIP FASTNERS

Specifically designed 60mm diameter galvalume steel pressed plates with hooking pins to ensure a mechanical grip. TUFFgrip fasteners are heavy duty and come with angular grooved mechanic fixings.

ECOTUFF® PREFORMATED ACCESSORIES

A full range of BioTUFF Corners, pipe boots, and other accessories are available.

STORAGE

All EcoTUFF® rolls must be stored laid flat as detailed below, on a flat surface in a ventilated area. Primers and adhesives must be stored in an upright position.

The shelf life of the adhesives and tapes is determined by the conditions of storage, the higher the storage temperature the shorter the shelf life.

Primers and adhesives must be stored in cool conditions away from heat and direct sunlight.



Before installation, all EcoTUFF® membrane must be unrolled and relaxed for 20mins, to relieve stresses through the manufacture, packaging and storage.



WEATHER

The EcoTUFF® system should be installed in dry conditions. Note that a temperature of at least 12°C is required before laying the membrane and the substrate must have a maximum moisture content of 20% at the time of laying. The "tack off" time for the EcoTUFF® adhesive will be extended when installing in cooler conditions, or when the humidity is high.

HEALTH & SAFETY

The primers, adhesives and sealants used in the EcoTUFF® system are Class 3 flammable goods. Contractors should be aware of the Health & Safety precautions identified in the Material Safety Data Sheets.



FIRST AID



Swallowed – give water to dilute. Do not induce vomiting. Get medical attention without delay. Skin – Remove contaminated clothing and wash skin thoroughly with soap and water. Do not scrub skin.

Eyes – Hold open and flush with water for at least 15 minutes. Get medical attention without delay. Inhalation – Remove to fresh air. If breathing difficulty get medical attention immediately.

STAINING OF ECOTUFF®

To avoid staining of EcoTUFF® care is required during design to ensure water running off some timber (e.g. quilla) and metal (e.g. copper) is avoided.



EcoTUFF® should not be dragged across any substrate on the exposed surface. Always have the underside to the substrate.

POTABLE WATER

Water is not contaminated by EcoTUFF® membrane. The first 25mm of rainfall from the newly installed EcoTUFF® roof membrane must be discarded before any drinking water collection. This is to remove residues which may have developed during the manufacturing production of the EcoTUFF® membrane. EcoTUFF® membrane won't contaminate water it must be noted that all water collected off the EcoTUFF® roof surfaces made from any material is considered non potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilisation system.




QUALITY CONTROL AND INSPECTIONS.

Quality control & inspection forms are downloadable from our website www.sealco.co.nz

TOOLS REQUIRED

Tools required include the following:

- Large stainless steel scissors.
- Stanley knife.
- Hand stirrer.
- Vacuum cleaner or leaf blower.
- Belt sander.
- Chalk line.
- Measuring tape.
- Paint roller, tray and 4 inch brush.
- ecoTUFF® solvent for clean up
- Heavy roller.
- Broom.
- Hand roller.
- Sealant gun.
- Substrate moisture metre.
- Fire extinguisher.
- First aid kit.
- Leister hot air welding gun



Roofers must wear flat-soled shoes to reduce possible footprints on the membrane.

SUBSTRATE PREPERATION

The substrate to which the membrane system is being installed onto is a significant factor that determines the performance of the system. A belt sander should be used to smooth the areas around the screw fixings where wooden splints can damage the membrane. Sheet joints should be sanded flush where required. All holes must be filled with Builders Bog (timber substrates) or repair mortar (concrete substrates) which must be sanded off smooth.

Timber fillets at all internal corners are **not** required.

On concrete substrates, ensure the concrete is fully cured, firm and smooth, and that any loose surface concrete or latescence is removed. Repair any cracks or voids and remove any lumps or protrusions.

Use a vacuum cleaner or leaf blower to carefully remove all dirt/dust and surface contamination. Acid etching may also be required where the concrete surface is unsuitable for laying.

Sealco recommends that concrete surfaces are primed with 50/50 EcoTUFF® adhesive cut back with Solvent to give an adequate surface on which to install the membrane.


SUBSTRATES

CONCRETE SUBSTRATE SHOULD

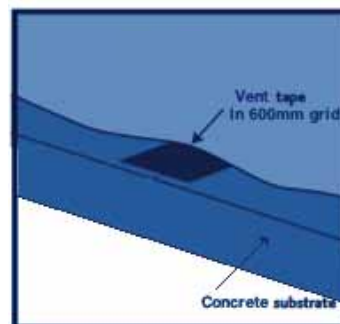
- Have cured for a minimum of 28 days and any curing compounds removed before membrane application.
- Be smooth, maximum moisture content RH75% (relative humidity)
- Have all soft areas ground off.
- Have all cracks or imperfections fixed using repair mortar.
- No mortar cove is required at internal corners
- Have all external edges chamfered to 5mm radius to remove sharp edges.
- Have adequate falls to outlets.
- Set to minimum falls of 2° slope (1:30) for roofs.
- Set to minimum falls of 1.5° slope (1:40) for decks.
- Set to minimum falls of 1.0° slope (1:100) for gutters.

PLYWOOD SUBSTRATE SHOULD

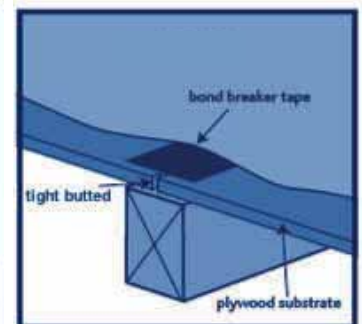
- Be CD structural grade plywood with sanded c-face upwards, H3.2 CCA treated and kiln dried.
- Be a minimum of 17mm thick and complying with AS/NZS2269.
- Be laid in a staggered pattern (offset all plywood sheets with all edges supported and tight butted).
- Be face grain laid at right angles to supports or cross members.
- Set to minimum falls of 2° slope (1:30) for roofs.
- Set to minimum falls of 1.5° slope (1:40) for decks.
- Set to minimum falls of 1.0° slope (1:100) for gutters.
- Be fixed at 150mm centres at sheet edges and 200mm in the girth.
- Be fixed with corrosion-resistant stainless steel countersunk screws (10 gauge x 50mm).
- Be smooth, clean and dry (**maximum moisture content of 20%**), and all edges sanded if necessary.



LOSP treated plywood must not be used with EcoTUFF® under any circumstances. T&G Plywood joints are no acceptable as replacement for square edged plywood fully supported



Concrete Substrate



Plywood Substrate

Installation

WORKING WITH ADHESIVES

As with any adhesive-based system, the application of the adhesive and subsequent application of the membrane is critical to the success of the system. The adhesive application rate, conditions of application and the time between applying the adhesive and placing the EcoTUFF® membrane are all important factors.



Make sure you:

- Thoroughly mix the EcoTUFF® adhesive with a hand stirrer to ensure it is fully mixed and has consistency.
- Apply the adhesive at the correct rate. Failure to achieve the correct coverage rate will reduce the bond strength of the membrane to the substrate.
- Achieve a good even coverage so a consistent bond is achieved across the system.
- Allow the adhesive to “tack-off” correctly before placing the membrane. Note that if insufficient time is allowed for, retained solvent to vapourize away, solvent bubbling can occur. Leaving the adhesive too long will result in poor bond strength.
- Install in correct conditions. Moisture and temperature extremes will affect the performance of the adhesive.
- Make sure the adhesive is used within its shelf life. If the EcoTUFF® adhesive does not flow from the stirrer when drawn from the can, it is likely to have expired.

APPLYING THE ECOTUFF® ADHESIVE

Ensure the EcoTUFF® adhesive is stirred and viscosity consistent. Apply with a brush, roller or spray. Coverage approximately 30m² of laid material per 19L can.

Allow both surfaces to “tack-off” before installing EcoTUFF membrane into place and bonding the substrate.

Ensure you wear appropriate safety equipment and have Adequate ventilation.



Prime substrate before laying the EcoTUFF® membrane. DO NOT lay EcoTUFF® membrane in temperatures below 8°C

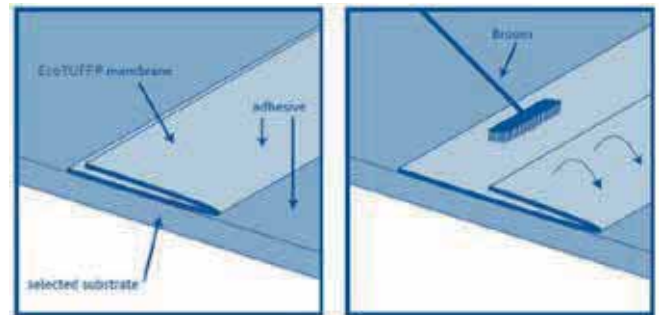
LAYING THE MEMBRANE

Ensure the substrate is clean and dust free and that all bond breaker tapes have been installed.

Once the EcoTUFF® material has relaxed, lay out the membrane in the exact position in which it will be finally positioned. Take one side edge and fold back the membrane sheet to expose half of the underside.

To the exposed underside, apply EcoTUFF® adhesive to EcoTUFF® and the substrate. When adhesive is tacky to touch but does not adhere to your fingers (approx. 10-20 min dependent on climate conditions) lay the membrane by carefully drawing back the membrane into its final permanent position. Broom the surface of the membrane to remove all air and any wrinkles, taking care not to wrinkle the membrane.

Repeat this application with the other half of the membrane to complete the installation of the sheet. Roll the surface of the membrane to obtain a full bond. When installing onto parapets or up stands over 170mm, it is better to install the membrane in two pieces, making sure the lap is positioned 150mm above the roof line. Take care to avoid damaging the membrane during installation. The membrane must be installed in a relaxed state.



Apply Adhesive to both membrane and Substrate

draw back the membrane and broom to remove wrinkles



Once you have applied the adhesive, sometimes the membrane sticks where you don't want it to. If you need to reposition the membrane, flick the EcoTUFF® quickly to release it from the adhesive. This way you don't peel the adhesive off the membrane or substrate.



Laying membrane should not commence until the substrate is up to standard, and the relevant substrate readiness check sheet has been completed.

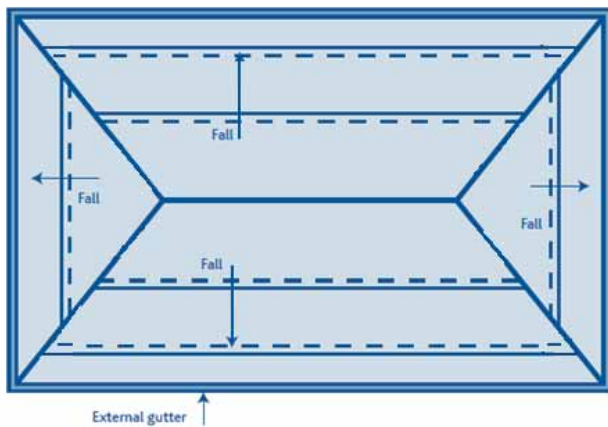


LAYING PATTERN

Start from the lowest point (i.e. at valleys or water outlets / gutters) and lay the membrane across the roof fall.

Work up to the highest point on the roof. This will ensure that water runs over the laps rather than down the lap edge.

Mark out the 40mm lap on the roll to be installed. Set out subsequent rolls to that mark and continue, ensuring 40mm end laps are allowed for.

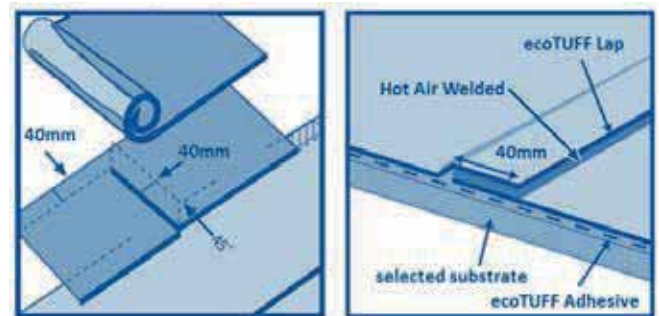


FORMING LAPS

The waterproofing performance of the system is dependent on good lap integrity. Ensure all contaminants are removed from the lap area before proceeding.

Welded laps are overlapped with a minimum of 40mm cover.

Using the TechSpan heat Welder, carefully heat both mating surfaces evenly at the same time whilst firmly rolling on top of the sheet with a hand roller.



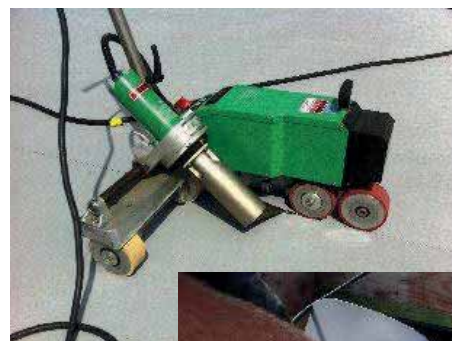
Cut 3 Way laps at 45°

All Side and End Laps to be 40mm

FLASHING

On the internal corner do not cut the membrane, simply fold back to create the "pig's ear" to lay behind the main sheet. Note: under flashing Tapes are not required in internal corners.

On external corners do not cut the membrane to the very base of the junction. Install the EcoTUFF® premade corners or use unreinforced EcoTUFF® membrane to form a watertight external corner.



Automatic and hand welder



Laps should be aligned across the roof or deck fall so water runs over the lap or aligned from ridge to gutter. Internal gutter laps to be kept to an absolute minimum and at the highest point in a gutter

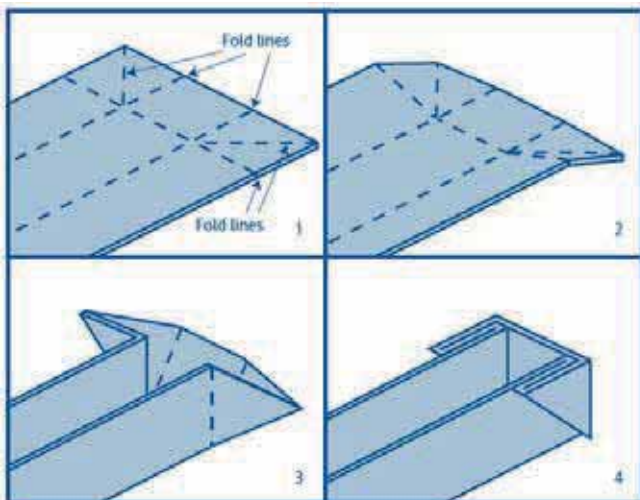
INSTALLING GUTTERS

Ensure the gutter is clean and dry and install bond breaker tapes to all plywood sheet joints.

Cut the EcoTUFF® membrane allowing enough width for the full internal girth of the gutter plus a 40mm allowance for the lap. Cut the length to suit, allowing for both end-up stands and any laps.

Apply the EcoTUFF® adhesive, at the specified rate, to the gutter base and all side/end up stands. Allow to tack off. Place the EcoTUFF® membrane into the gutter and position correctly. Fold back the EcoTUFF® in manageable sections and apply the EcoTUFF® adhesive at the required rate to the membrane. Allow to tack off, and dress the membrane into place eliminating all creases and any air entrapment.

Proceed accordingly until the full gutter has been installed. Carefully dress the membrane into the internal corners forming the pig's ear. Do not cut the membrane.



Installing Gutters



DO NOT CUT THE MEMBRANE. The end up stand is to be bonded in the normal way but the additional material (pig's ear) is to be folded behind the membrane

PIPE PENETRATIONS

TPO MOULDED PIPE BOOTS

Moulded pipe boots designed to fit 20mm-200mm pipe penetrations.

Install an EcoTUFF® pipe boot around the penetration and hot air weld to the new EcoTUFF® membrane. Tighten the pipe boot onto the pipe penetration with the sealable clip supplied.

Over-roll to ensure all air entrapment and wrinkles are removed.

MOVEMENT JOINTS

Purpose-made expansion joints and flashings should be installed to meet the specific stresses expected, and be compatible with EcoTUFF® membranes.

Movement joints should be allowed for in the following situations:

- Around the perimeter of the roof or deck, allow a 3mm gap at all abutments.
- Around perimeter of columns and post penetrations through roof or deck.
- Where a new roof area meets and joins an existing roof or deck.
- At changes of direction or at changes of heights in a roof or deck surface. i.e. at all "T" or "L" type building junctions.
- Where construction plywood abuts a concrete slab or wall.



Sealco recommends that all movement joint details and locations are approved by the architect / engineer and a Sealco representative




ROOF DRAINS

Detail Drawings: From Page 20


The substrate should be recessed to accommodate the outlet. Apply Gripset SB Sealant adhesive to this recessed area and put the outlet into place and fix with stainless steel screws.

Lay the EcoTUFF® membrane in the normal manner, installing across the outlet. At this point roll the membrane to form a bond across the flush surface of the outlet. Locate the rainwater outlet centre and cut a small hole in the centre, large enough to make the turn down fold into the rainwater outlet. Carefully fold the EcoTUFF® into the outlet ensuring the membrane is dressed neatly down. Use unreinforced EcoTUFF® membrane to form the ring clamp vortex neatly. Insert the ring clamp fitting.

Where a pre-formed EcoTUFF® rain water dropper is installed cut the EcoTUFF® to overlap the rainwater fitting by 40mm and weld with TPO hot air gun to form a waterproof bond.



When working on substrates where moisture is present, it is vital to vent under the membrane. Failure to do so will allow entrapped moisture to expand under the membrane causing bubbling



If a HVAC ventilation system is going to be installed by another contractor, DO NOT install our roof space vents. Check with ventilation engineer for advice.

ROOF VENTS

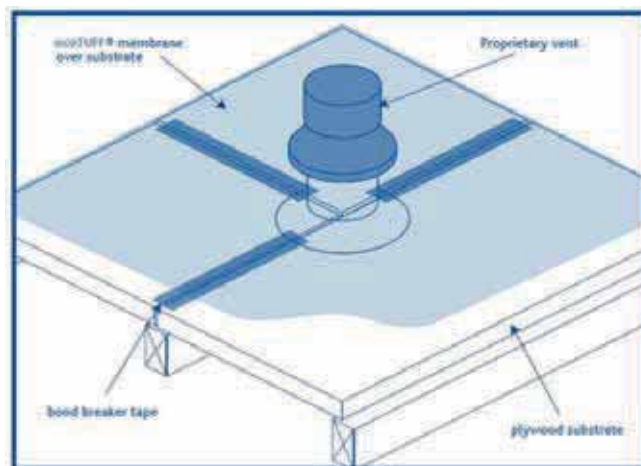
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WHY VENT?

Moisture venting helps remove any retained moisture in the substrate. Roof-space venting in confined skillion-type roofs creates air flow and equalises roof space pressure. Venting minimises temperature variations across the roof and so reduces substrate movement due to thermal expansion and contraction. To vent the roof space, simply cut out a small hole in the plywood and position the vent accordingly.

INSTALLING VENTS

A minimum of two vents are required in each roof area to be vented. Vents should be installed for every 70m² of roof area depending on the vent model being used.



CONCRETE SUBSTRATE ROOFING

Install 36mm wide PVC bond breaker tapes onto concrete in a 600mm grid pattern. Ensure the ventRITE vent is positioned on a junction in the grid tape layout

MEMBRANE TERMINATION

Detail Drawings: Page :

CHASE TERMINATION

A chase flashing is normally required when terminating into a concrete block or any masonry wall. The chase is to be a minimum of 100mm up from the substrate. The chase is recommended to be 6mm x 20mm deep. Remove all dust from the chase.

Dress the EcoTUFF® through the internal angle, up the wall face terminating at the bottom edge of the chase. Install a metal flashing into the chase and mechanically fix. Apply MS sealant adhesive into the chase between the metal flashing and chase cavity, tooling off the outer edge to a 45° angle.

UPSTAND TERMINATION

When dressing the EcoTUFF® onto a vertical surface which will be covered by exterior cladding, the EcoTUFF® is to be installed to a minimum height of 150mm

COMPRESSION FLASHING

EcoTUFF® Strike a chalk line to mark the height of the up stand. Install the EcoTUFF® membrane up to this mark. Install the metal compression flashing with the top fold (6mm angle field) lining up with the top edge of the EcoTUFF® membrane and mechanically fix into place. Using a sealant gun, apply SB or MS sealant adhesive into the 6mm cavity and tooled off at a 45° angle.

COMPLETION INSPECTION

Once the membrane is fully installed remove all dust, debris and sweep clean. Make good any imperfections and check all laps are fully adhered.

During installation, the applicator QC sheet is to be used by the installer to ensure that the work complied with our specification.

On completion, inspect all work for defects, making good as required. Pay particular attention to penetrations and other complex details and laps. Remove unused materials from site leaving the completed works clean and tidy for hand over.

Protection boards are to be used by any following trades.

Ensure that the QC sheets are completed and signed off, preferably with the main contractor.

WARRANTY

When laid by a Sealco approved applicator in accordance with Sealco specifications, a material warranty for up to 20 years is available.

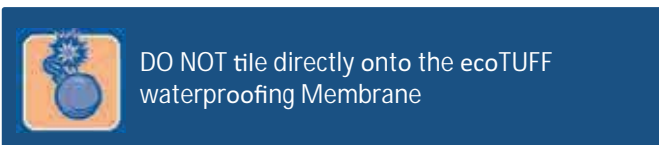
DECK APPLICATIONS

Refer to page 8 for substrate requirements. On timber decks, the supporting joists are to be installed at 400mm centres in each direction with 20mm CCA treated H3.2 grade plywood, glue and screw fixed.

The membrane is installed in the same way as outlined on pages 8 - 14, with the following additional requirements or adjustments.

1. TILED DECK APPLICATIONS

For a tiled deck application we recommend epiSPAN or ecoTUFF with Schluter Ditra system for Tiling. Schluter Ditra can be installed directly onto ecoTUFF TPO. Please see the Schluter Ditra Manual for installation details.



2. LOOSE-LAID DUCKBOARD / PAVED APPLICATIONS

Lay the timber bearers so that water will be able to flow freely to the water outlet. Install ecoTUFF® impact isolation EPDM craddles placed at 300mm centres to ensure the ecoTUFF® membrane is protected from any contact by the timber raft system.

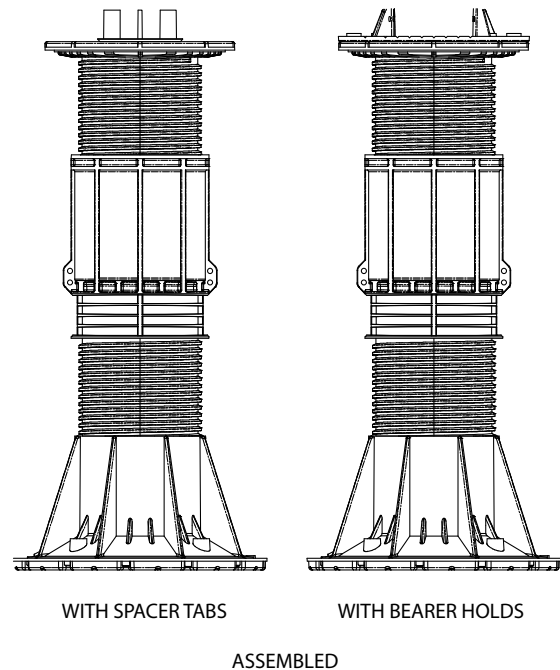
Ensure that no screw or nail fixings penetrate through the bearer into the membrane.

ECOJACK PAVER SUPPORTS

Paver stands form part of the acceptable solution E2/AS1 (paragraph 7.3) and allow maintenance access to the membrane. Paver stands also allow services to be run underneath the paver stand system. Unlike standard tile applications, paver stands can have a variety of surface finishes installed on them.

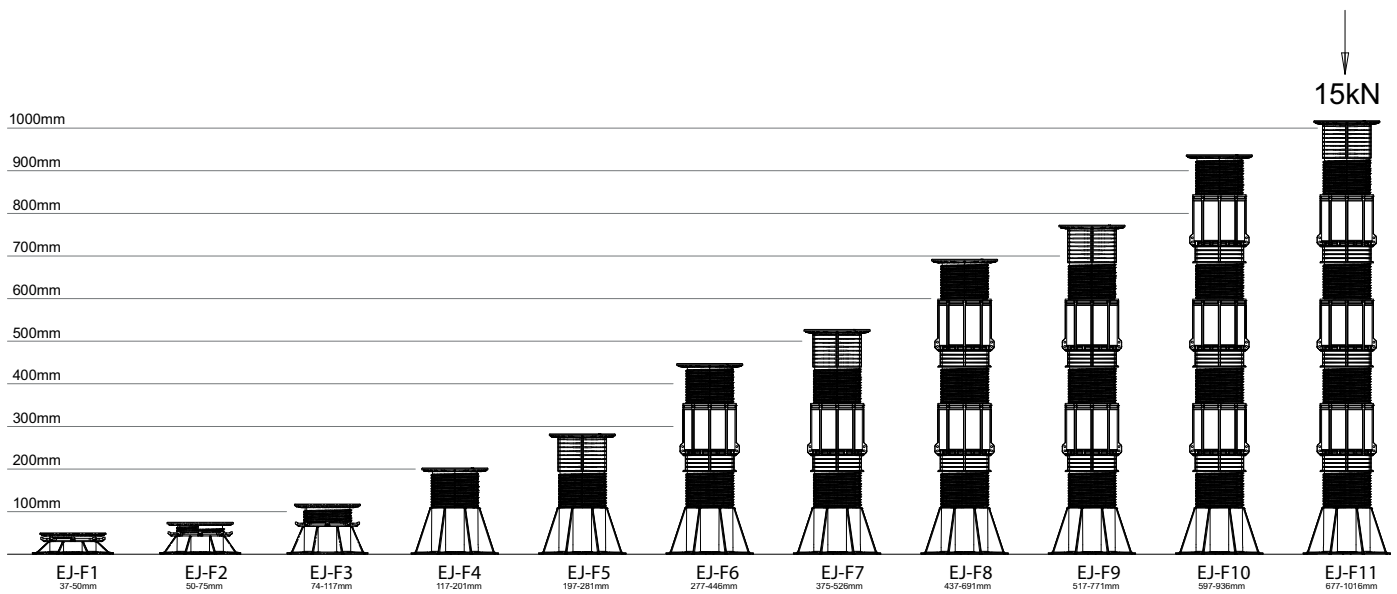
EcoJACK paver supports can be installed directly onto the EcoTUFF® membrane. They are available in a 20mm to 50mm fixed height support, or in a range of adjustable supports.

On substrates with a significant slope, the self-levelling supports make it much easier to keep a level surface while following the contour of the substrate.

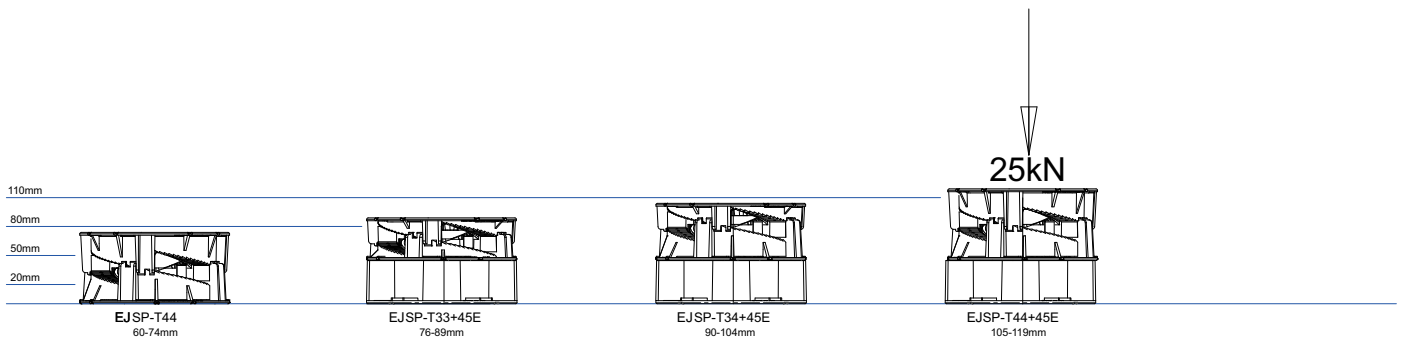
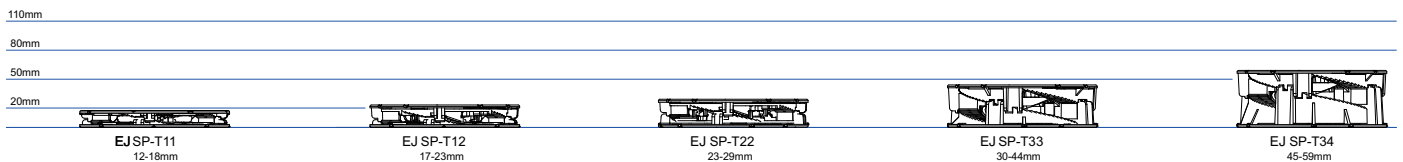


Example of EcoJACK Paver Support

ECOJACK Sizes



ECOJACK HEIGHT CHART



GREENSEAL APPLICATIONS

EcoTUFF® TPO system can also be used in environmentally friendly green roof systems. The green roof system incorporates the EcoTUFF TPO system, drainage cell, filter fabric, soil and planting.

As an alternative to planting, a decorative pebble ballast may be used. Sealco is able to provide project specific specifications, however the following general guidelines apply;

PRODUCT OVERVIEW

ECOTUFF® TPO MEMBRANE

EcoTUFF® is a high quality TPO (thermo plastic olifin) used to provide waterproofing protection for a variety of roofing and exterior deck applications. The EcoTUFF® system includes the EcoTUFF® TPO membrane and EcoTUFF® contact adhesive. Also included as part of the system is the unreinforced EcoTUFF® membrane, pre made corners and cut edge sealant. EcoTUFF® Fleece back membrane consists of a TPO sheet vulcanised to a non-woven polyester matting.

The EcoTUFF® system is a suitable to be applied over concrete, steel, fibre cement boards or construction plywood substrates. EcoTUFF® has been independently appraised as an Alternative Solution in terms of the NZBC, and complies with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.

GREENSEAL DRAINAGE CELL

In green roof systems, it is important that while excess water is effectively drained away, some moisture must be retained. The GreenSEAL® 30mm plastic drainage cell has water retention cusps and drainage holes that retain sufficient water to support plant growth; while draining excess water.

The GreenSEAL® 10mm drainage cell is used in pebble ballast roofs and will drain all water from the roof.

FILTER FABRIC

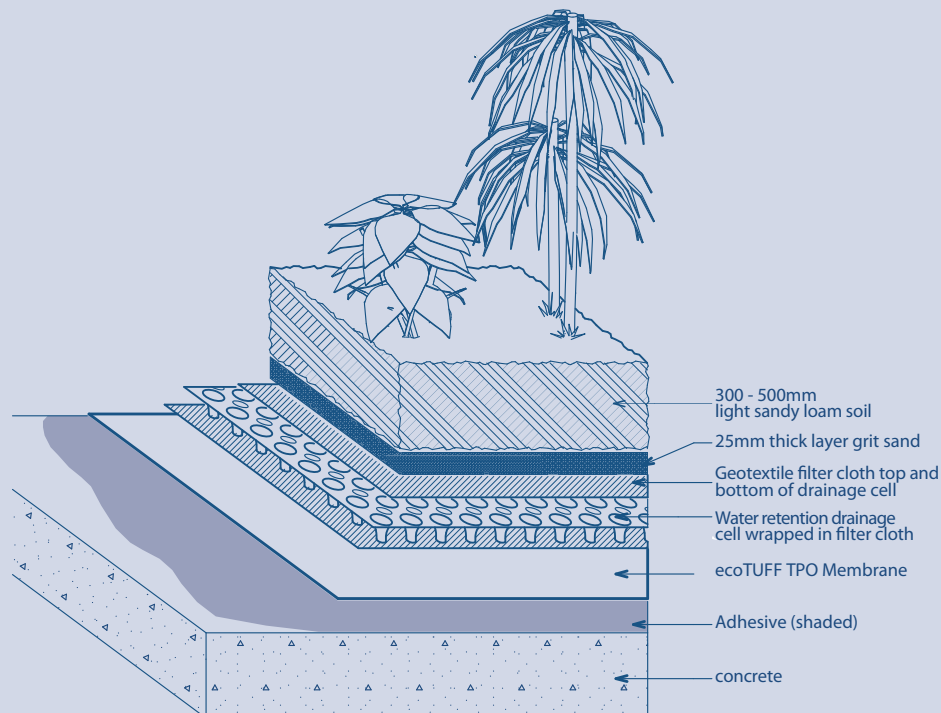
It is important that the filter fabric stops fines getting into the drainage cell, preventing the flow of water. The bidim A14 geotextile cloth should be used, as this is manufactured from recycled polymer. Install 25mm of sand grit over to ensure the filter fabric will remain free draining.

Install a 25mm thick layer of grit sand over the filter cloth to ensure it never chokes with soil fines.

SUBSTRATE

It is important to ensure the substrate and roof structure has been designed taking account of the loadings presented by the GreenSEAL® system.

In particular, it is important that adequate movement joints have been designed to account for anticipated movement, particularly with timber substrates.



GREENSEAL® APPLICATIONS (CONT)

ECOTUFF® TPO

The EcoTUFF® TPO system is installed as outlined on pages 8-14. Ensure the membrane is fully bonded and that all laps and penetration details are neatly formed and watertight.

GREENROOF SYSTEMS

ROOF DRAINS.

DrainRITE® roof drains must be recessed into the substrate and flush. This is important as the drainage cell will be installed over the membrane system including the outlets. Use only EcoTUFF® TPO roof drains.

The rainwater outlets will need risers manufactured from a perforated stainless steel. Ensure the riser extends to at least 60mm higher than the soil depth and ensure a neat fit into the outlet. Have a 30mm stainless steel flange fitted 80mm up from the bottom of the riser to stop the riser sliding into the drainage system. When installing the riser, wrap a geotextile filter cloth around the riser to ensure no fines are washed down the roof drain. Use only ecotuff TPO scuppers.

SCUPPER AND OVERFLOW OUTLETS

The flowRITE® scupper and overflow outlets will need a mesh placed over the outlet point where it discharges into a rainwater head or similar, to prevent birds nesting in the scupper/ outlet and blocking the system.

TERMINATION

It is important that the membrane terminations are detailed correctly so water cannot track behind the membrane. The EcoTUFF® membrane can be terminated into a chase, behind a wall cladding system, under a cap flashing or with a compression flashing.

GRIT SAND

Place 25mm Grit sand over the drainage cell Filter Fabric to ensure the filter fabric is not choked off over time with soil fines. Refer to page 18 Green Roof Detail.

SOIL COVER

Cover the GreenSEAL® system with light sandy loam soil depending on the planting requirements.

Extensive green roof systems require approximately 25-100mm of soil planted with low growing stress-tolerant grasses, mosses and similar plants.

Intensive green roofs require 150mm or more of soil planted with a variety of shrubs, vegetables and small trees.

PLANTING

A wide variety of planting options are available for GreenSEAL® applications. Normally stress tolerant plantings will perform best. A planting list can be obtained from Sealco.

PEBBLE BALLAST SYSTEMS

The Ballast Pebble systems will generally have 20mm smooth stone overlaid at approximately 40mm to 50mm thick. No stainless steel riser will be required as the whole roof will be a drainage system. However, a special edge flashing is required where an internal gutter is specified, so the stones can be contained. It is important that leaf guards are in place at all times where an internal gutter is part of the design, to prevent stones getting into the drainage system.

WARMSEAL ROOF SYSTEMS

Sealco WARM ROOF PRODUCT DESCRIPTION

Sealco Waterproofing Systems insulated warm roof system is a roof that has the insulation installed above the structure with the waterproofing membrane installed on the top of this insulation. The system is designed to keep the outer of the building insulated and "warm" from the external elements.

POLYISO INSULATION

Black Pearl® is a superior rigid insulating material manufactured from the BASF raw material called Neopor. Black Pearl® is a forward thinking solution for all applications where insulation is used in building and construction. Black Pearl offers a minimum of 30% higher thermal efficiency than white EPS and therefore offers the ideal solution for thermal performance for N.Z conditions.

CUT TO FALLS

Sealco Insulation Panels can be cut to falls to either enhance existing falls or to create falls on a flat structure. This can greatly reduce your build costs while increasing your insulation values.

OVERLAY EXISTING ROOFS

Sealco warm roof systems are easily installed over existing roofs including older membrane and steel tray roofs. This eliminates the need for costly removal of degraded roofs.



WARMSEAL® APPLICATIONS (CONT)

FIRE BEHAVIOUR

Sealco Black Pearl is made of Neopor® with a flame retardant. The flame retardant reduces the flammability and spread of flame on the surface of the foam if an ignition source comes in direct contact with the foam. Black Pearl has been tested for Flame Propagation to the internationally recognized test AS 2122.1-1993 and complies with all classes of Black Pearl® produced.

UNIFORM INSULATION VALUE

Traditional "Cool Roof" designs incorporate insulation between rafters. Heat transfer can be lost through the rafters and framing of the structure (thermal bridging). Sealco warm roofs evenly insulate the entire roof area without loss of heat through lower R rated materials.

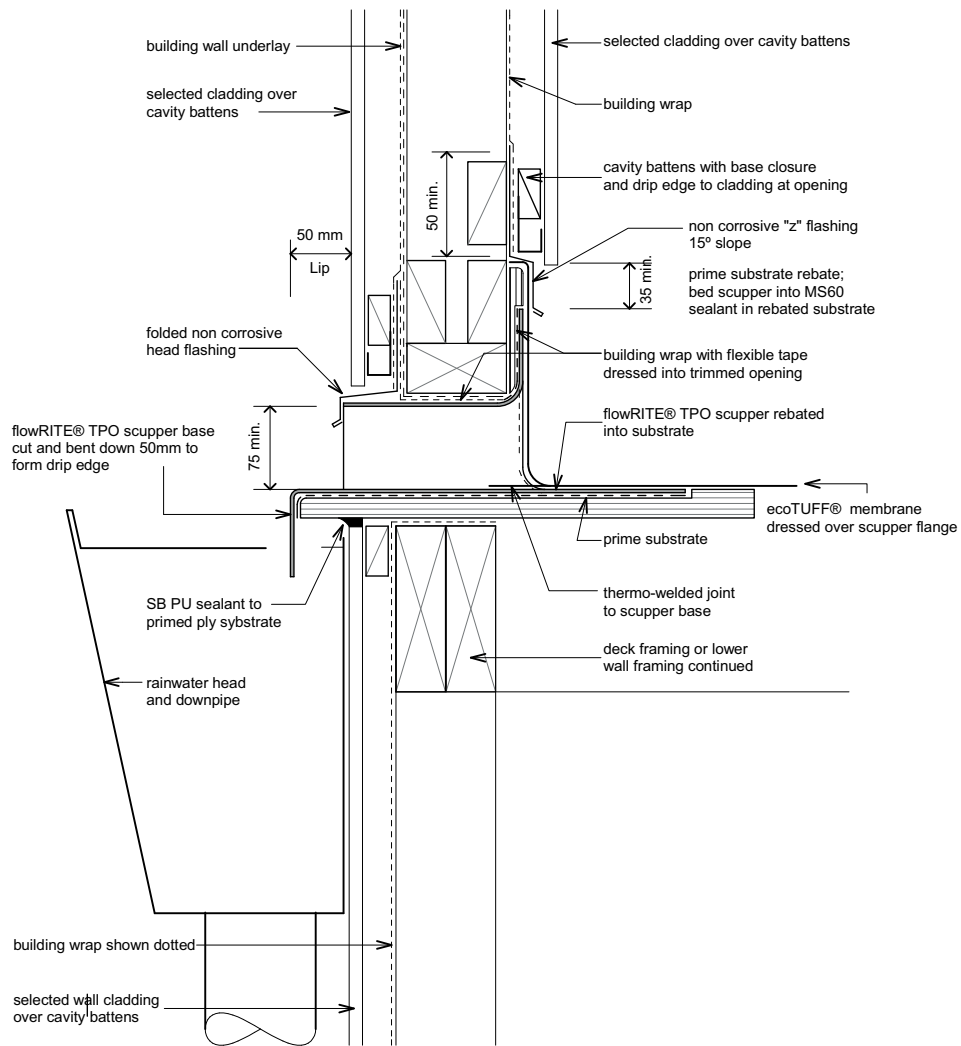
REDUCED AIR CONDITIONING AND HEATING COSTS

Because there is less heat loss or excessive gain, your heating and cooling costs will be greatly reduced because air conditioning units will be operating less.



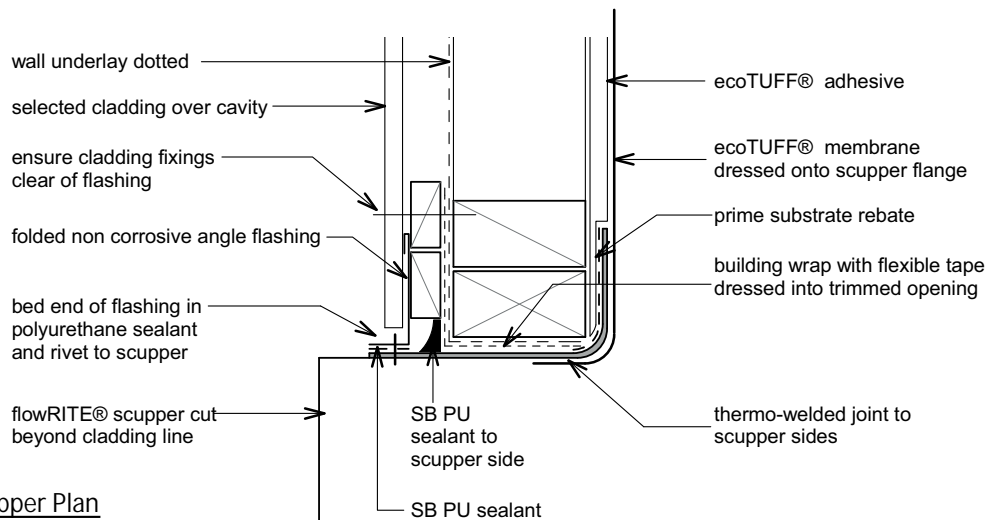
It is critical that all laps and penetrations are checked to ensure watertight integrity. Where Possible a 24-hour flood test should be carried out after the membrane has been installed

Detail Drawings



ecoT05 - flowRITE® Outlet Scupper Section

REVISION: 18 JULY 2014

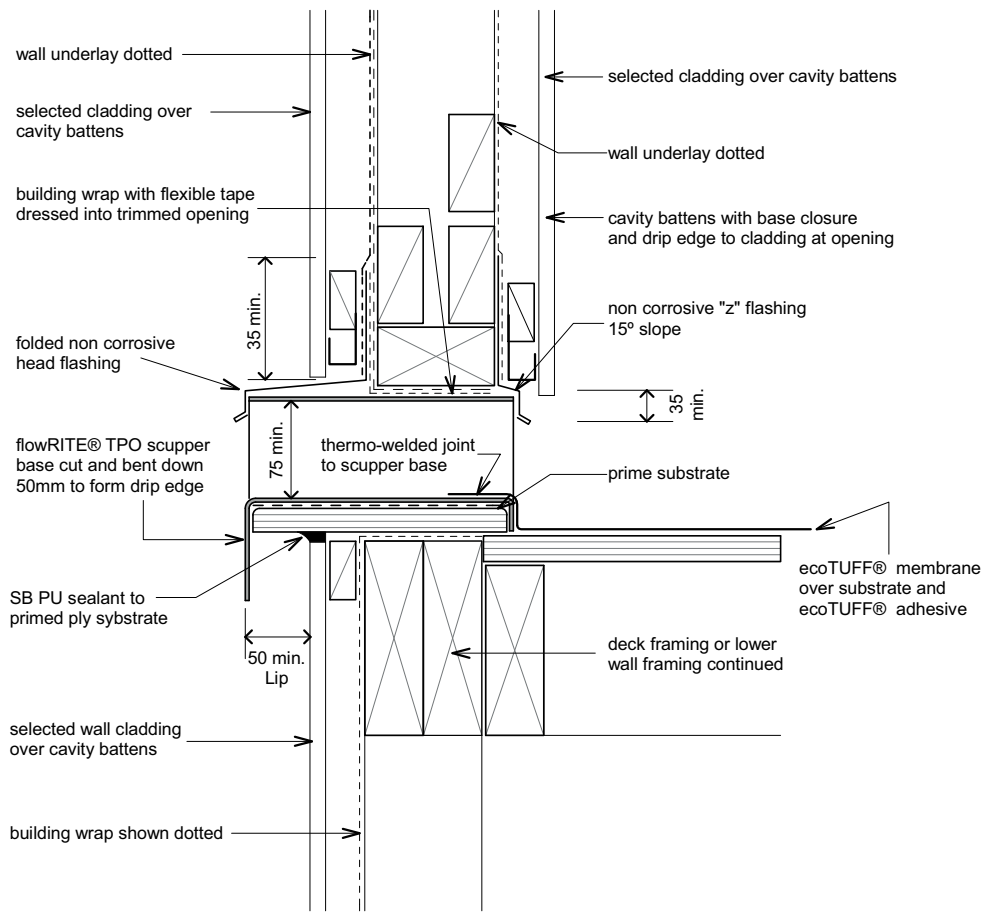


ecoT06 - Outlet Scupper Plan

REVISION: 18 JULY 2014

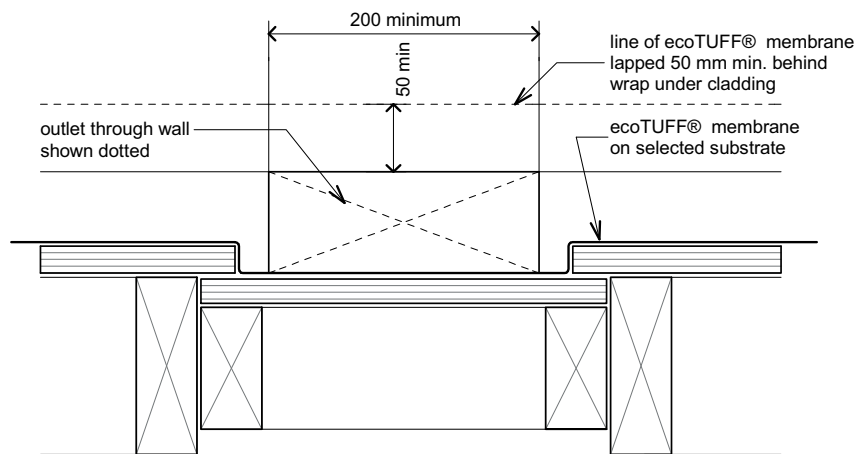


Detail Drawings



ecoT07 - flowRITE® Overflow Scupper Section 1

REVISION: 18 JULY 2014

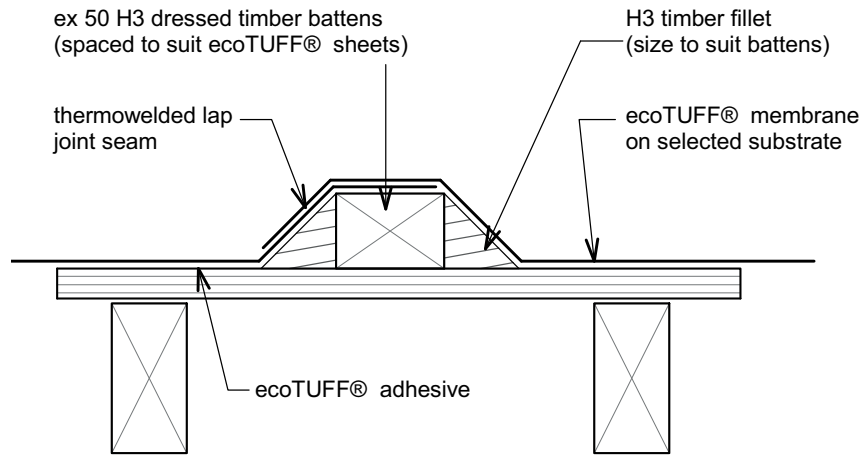


ecoT08 - Overflow Scupper Section 2

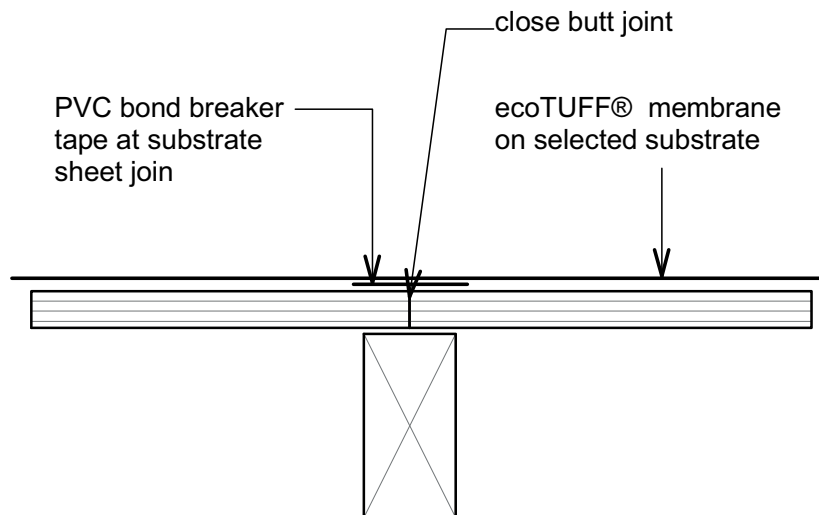
REVISION: 18 JULY 2014



Detail Drawings



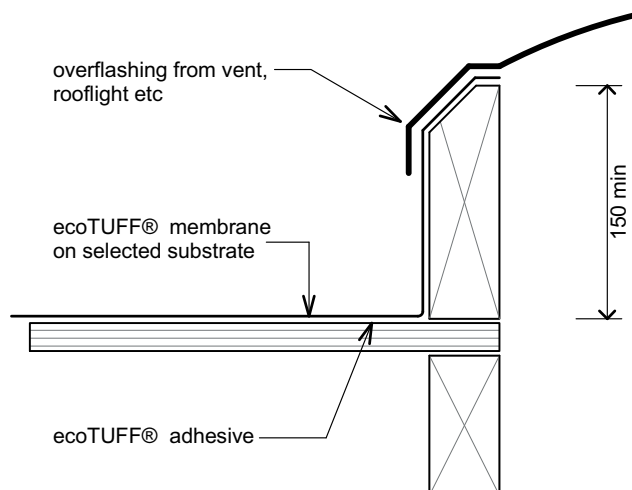
ecoT09 - Batten Join
REVISION: 18 JULY 2014



ecoT10 - Substrate Join
REVISION: 18 JULY 2014

NOTE:

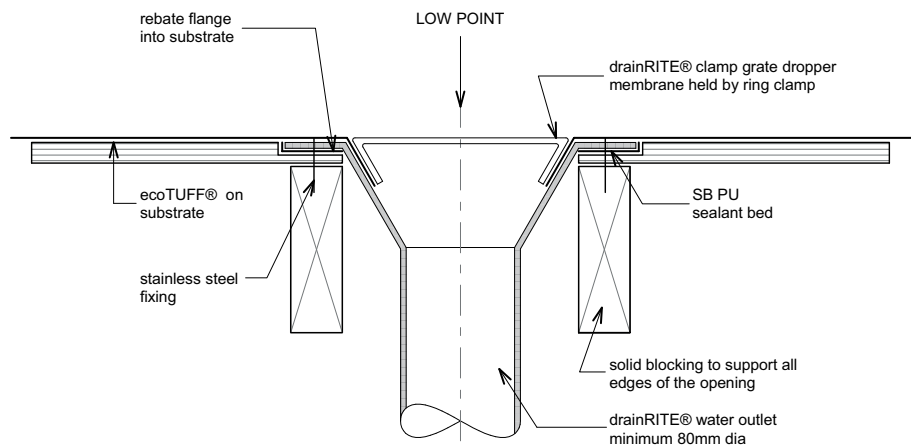
Maximum skylight penetration size 1200 x 1200mm
External corners to be formed as per EcoTUFF external corner detail



ecoT11 - Roof Skylite
REVISION: 18 JULY 2014

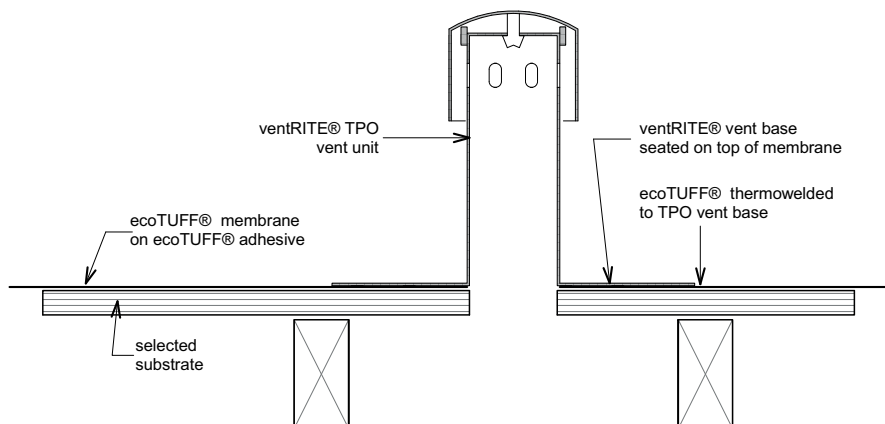


Detail Drawings



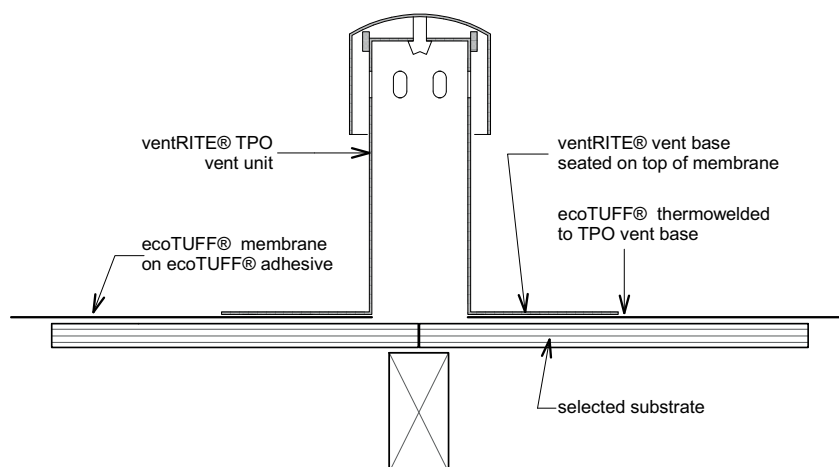
ecoT14 - drainRiTE® water outlet

REVISION: 18 JULY 2014



ecoT13 - ventRiTE® Roof Vent Outlet

REVISION: 18 JULY 2014

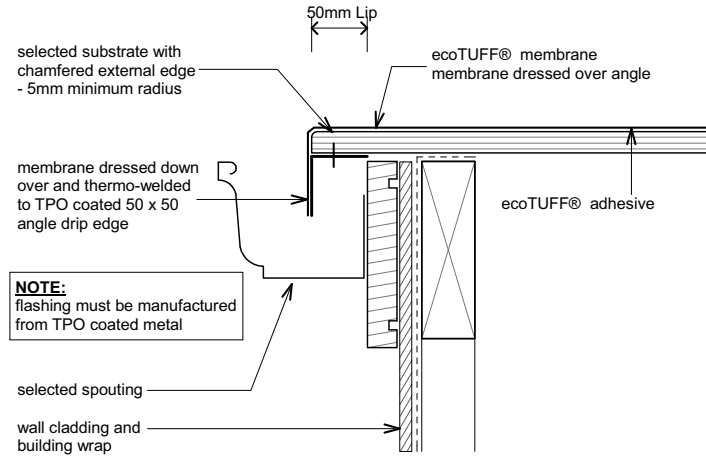


ecoT12 - ventRiTE® Substrate Moisture Outlet

REVISION: 18 JULY 2014

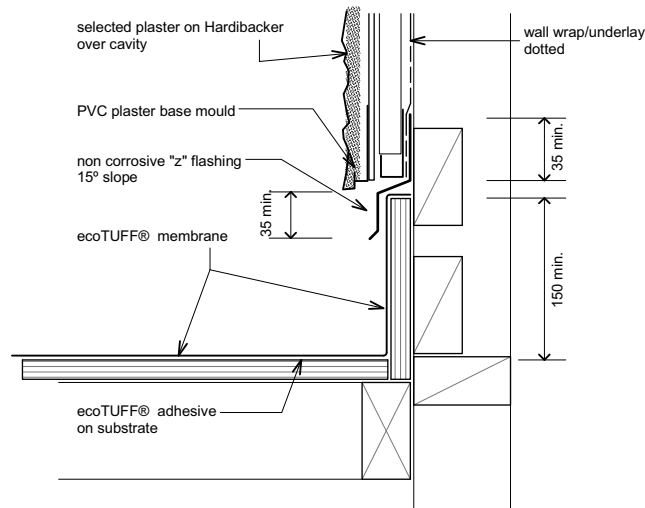


Detail Drawings



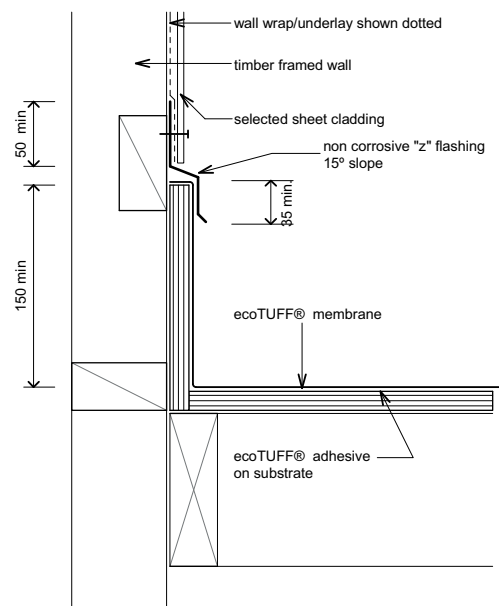
ecoT16 - External gutter type 2

REVISION: 18 JULY 2014



ecoT17 - Gutter Wall 1 Cladding over Cavity

REVISION: 18 JULY 2014

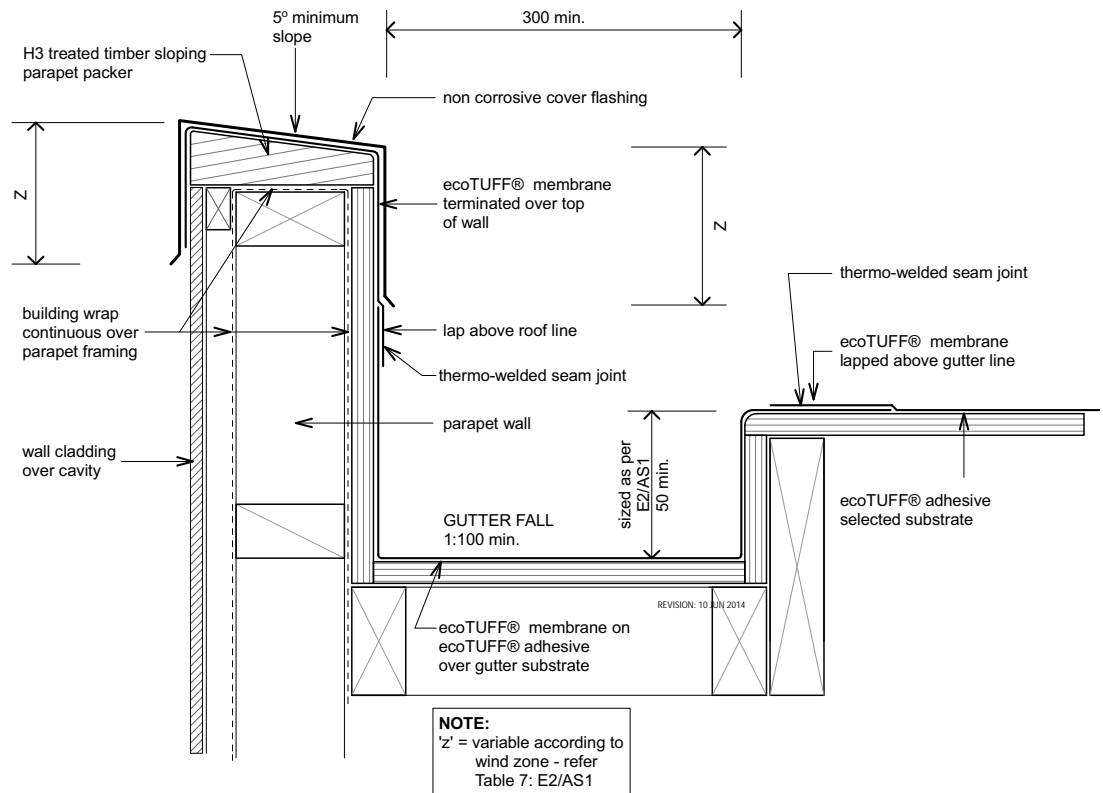


ecoT18 - Gutter Wall type 2 - Direct Fix Cladding

REVISION: 18 JULY 2014

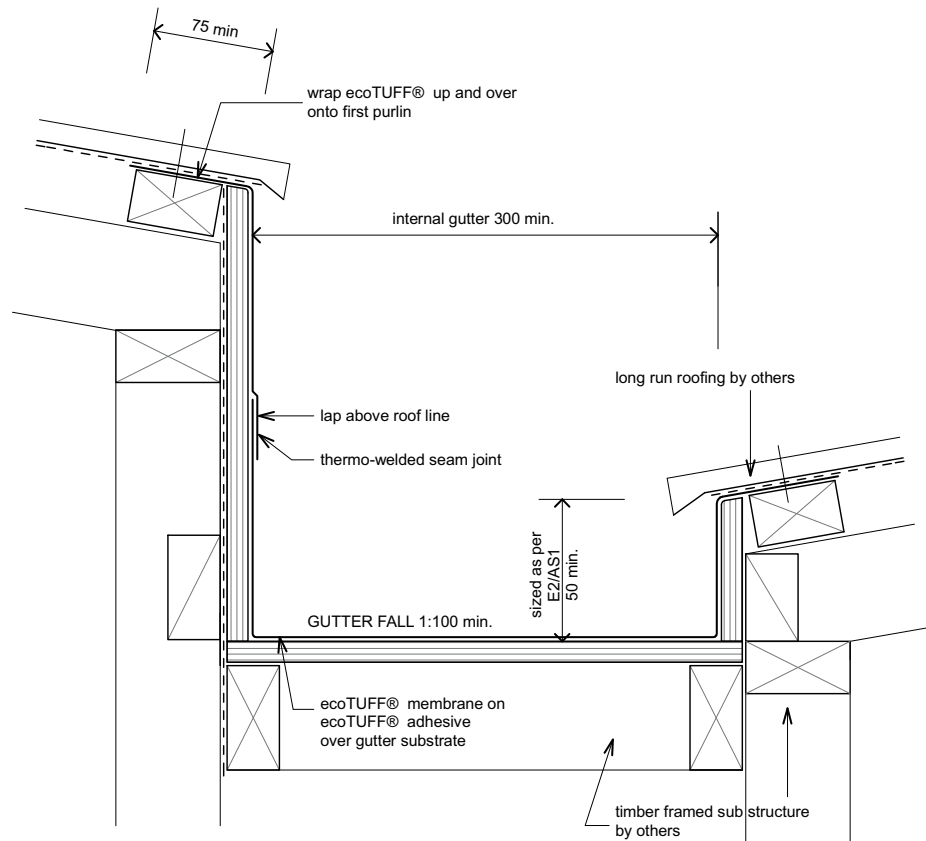


Detail Drawings



ecoT19 - Gutter Parapet

REVISION: 18 JULY 2014

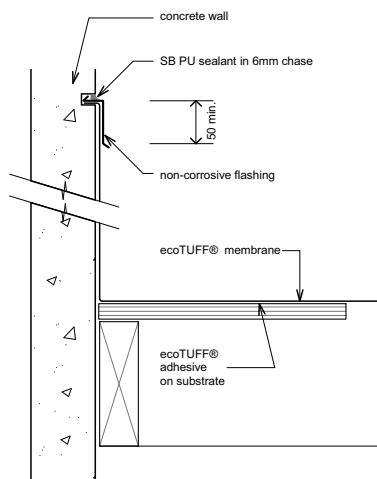


ecoT20 - Internal Gutter

REVISION: 18 JULY 2014

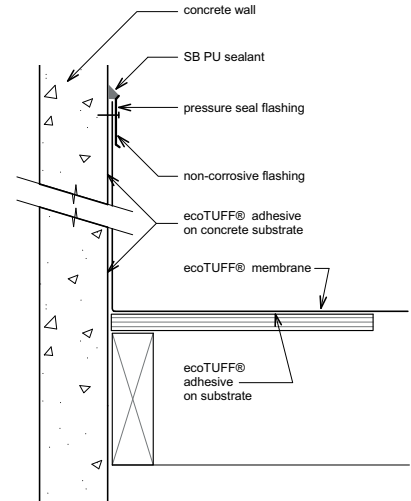


Detail Drawings



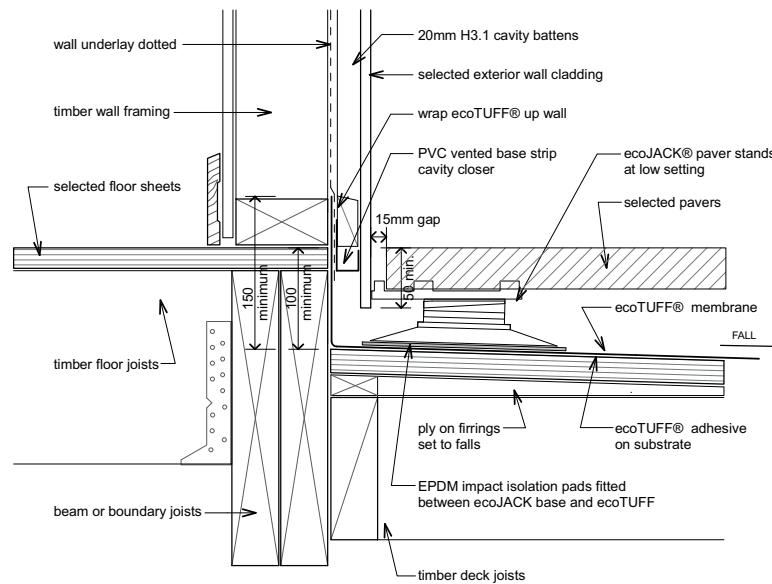
ecoT23 - Chase Termination

REVISION: 18 JULY 2014



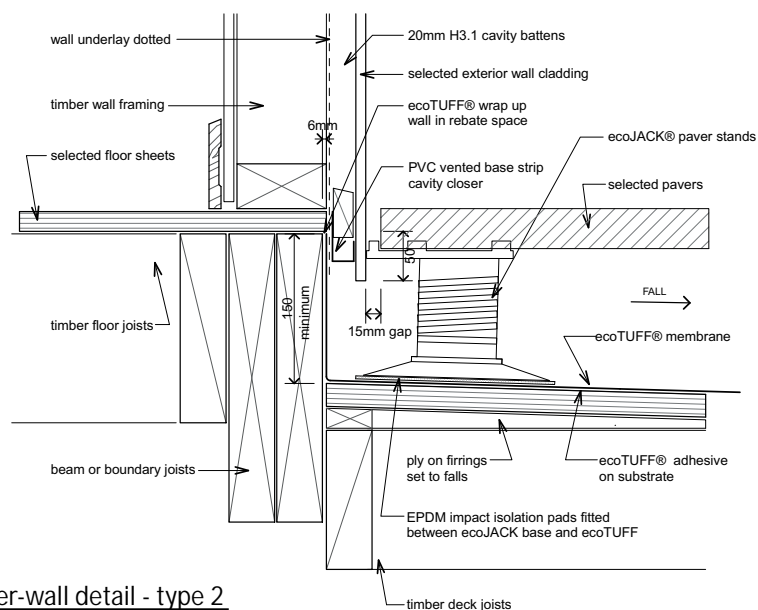
ecoT24 - Compress Termination

REVISION: 18 JULY 2014



ecoT25 - ecoJACK® paver-wall detail - type 1

REVISION: 18 JULY 2014

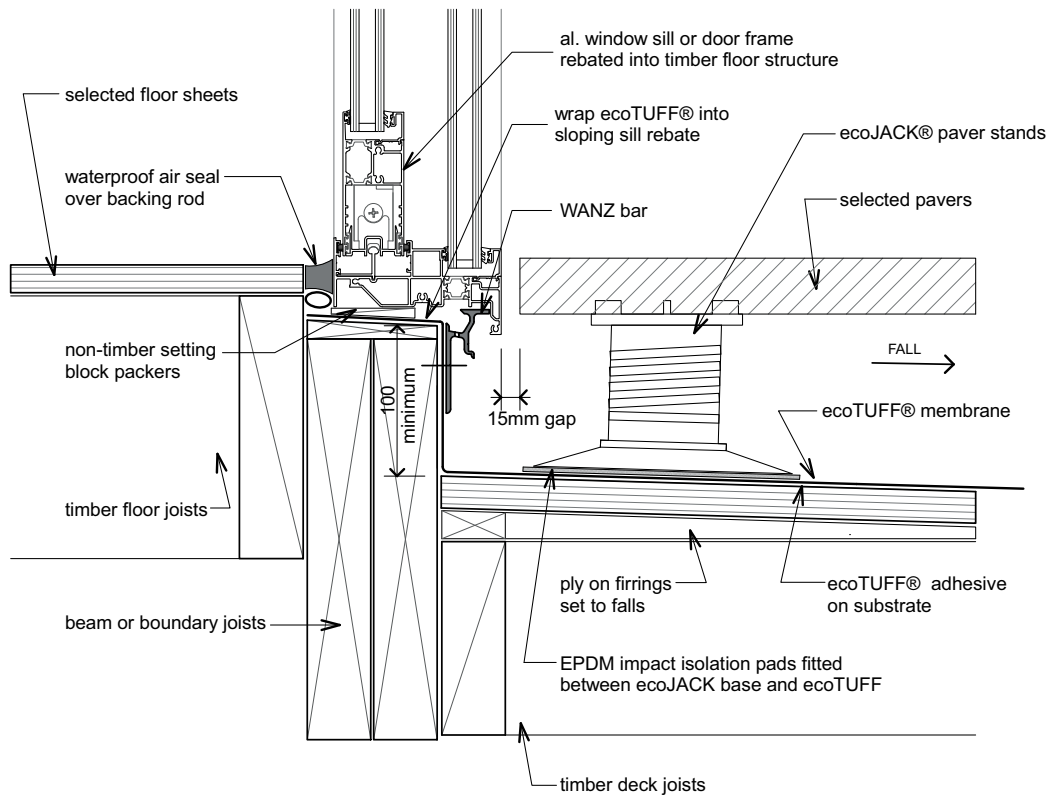


ecoT26 - ecoJACK® paver-wall detail - type 2

REVISION: 10 JUN 2014

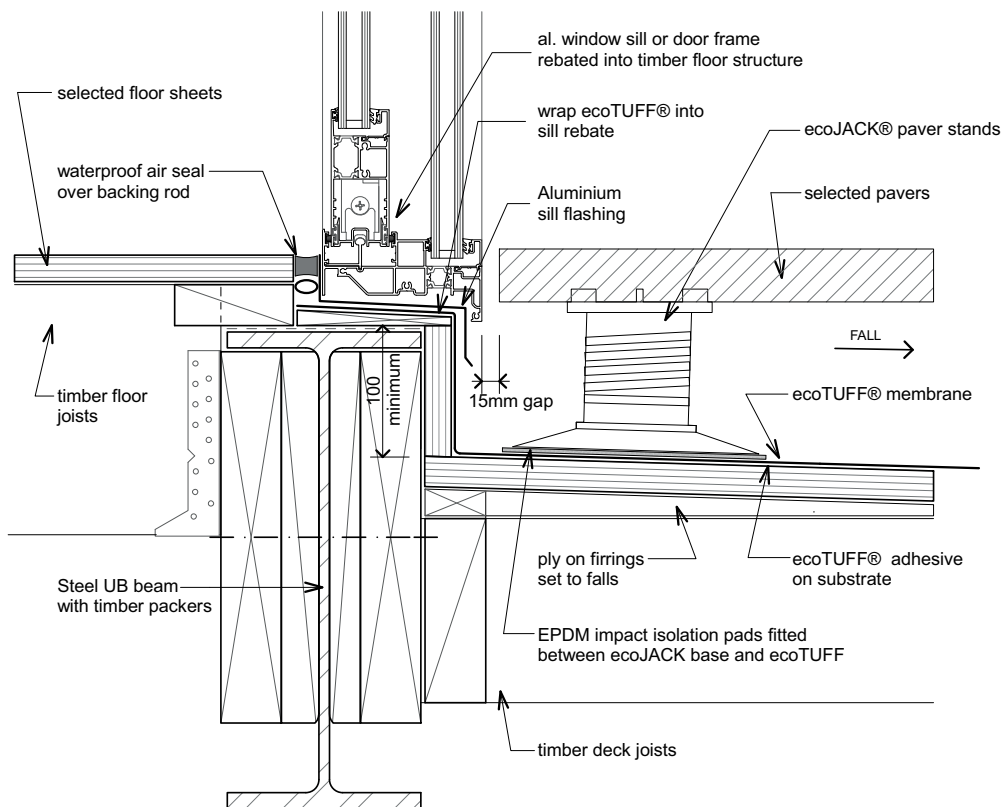


Detail Drawings



ecoT27 - ecoJACK® paver-threshold detail - type 1

REVISION: 18 JULY 2014

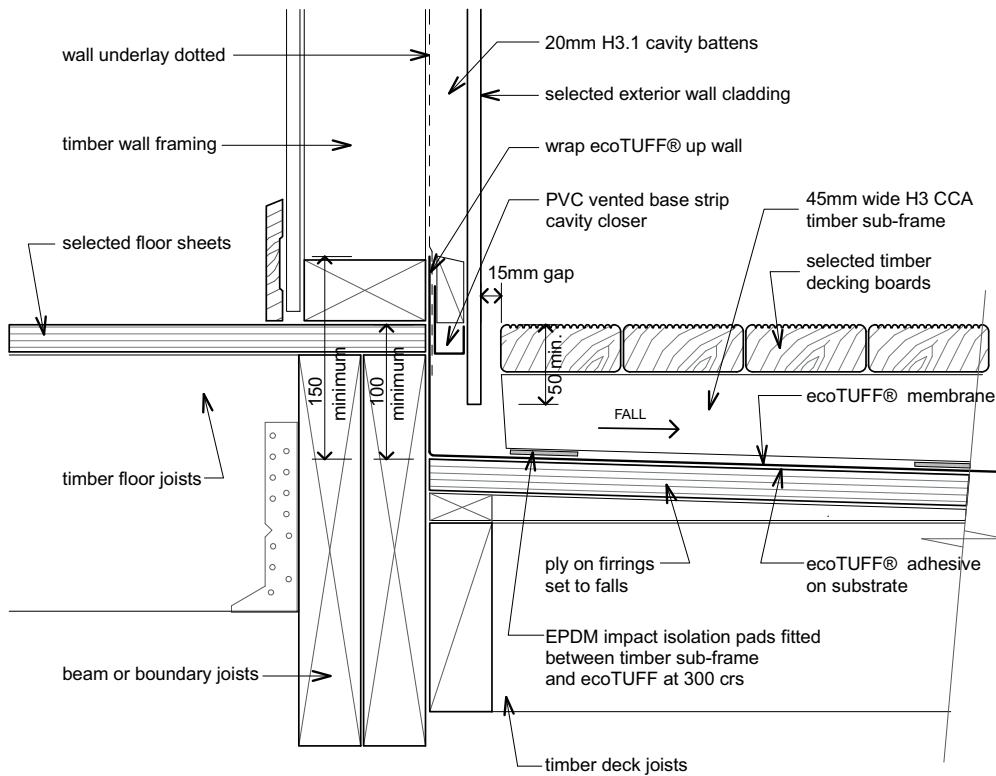


ecoT28 - ecoJACK® paver-threshold detail - type 2

REVISION: 18 JULY 2014

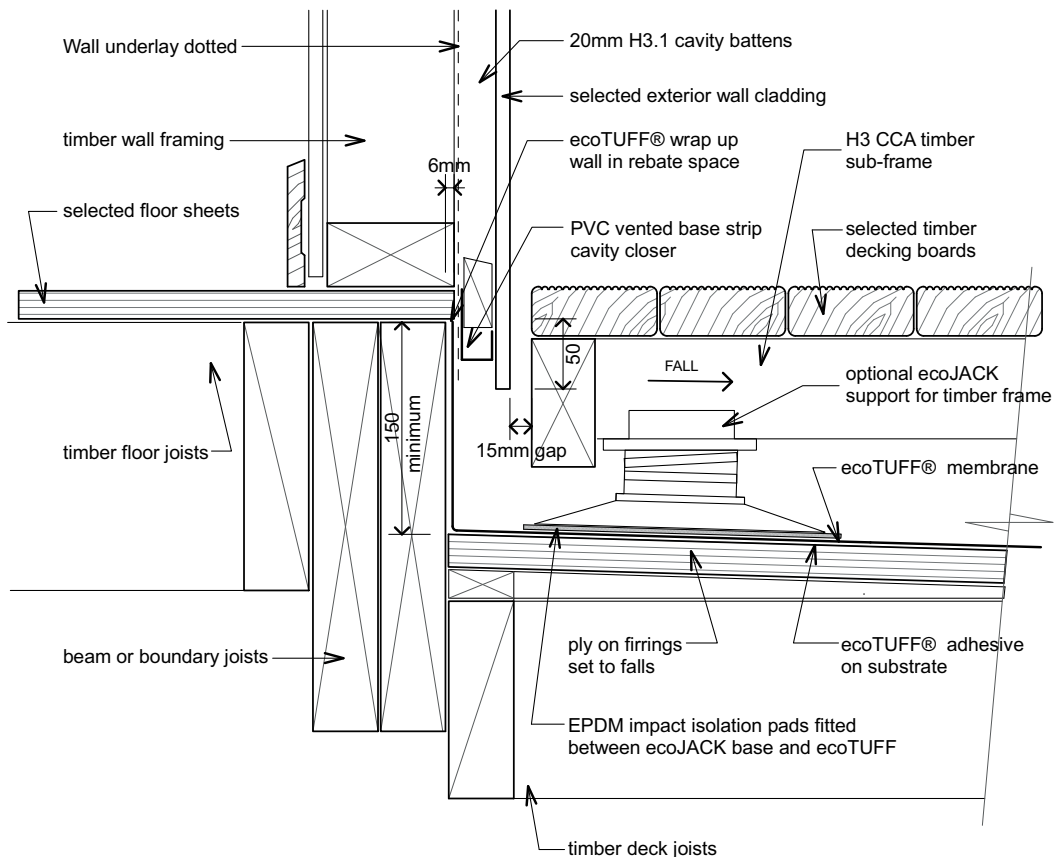


Detail Drawings



ecoT29 - timber raft floating deck-wall detail - type 1

REVISION: 10 JUN 2014

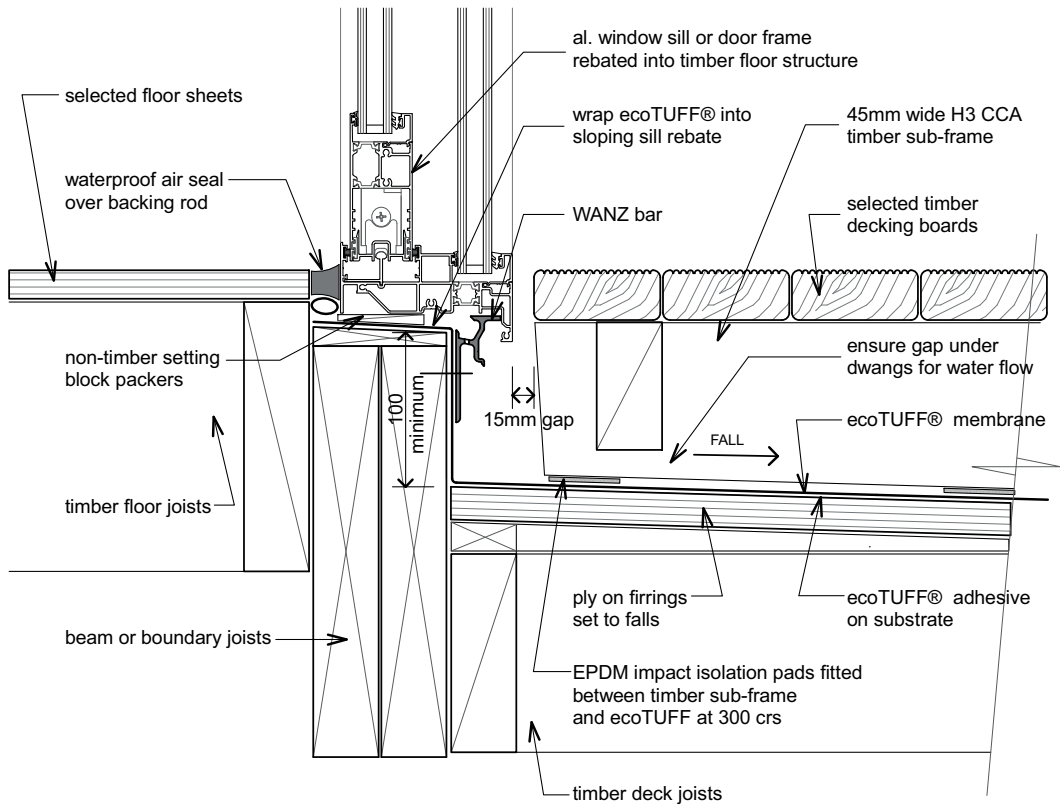


ecoT30 - timber raft floating deck-wall detail - type 2

REVISION: 18 JULY 2014

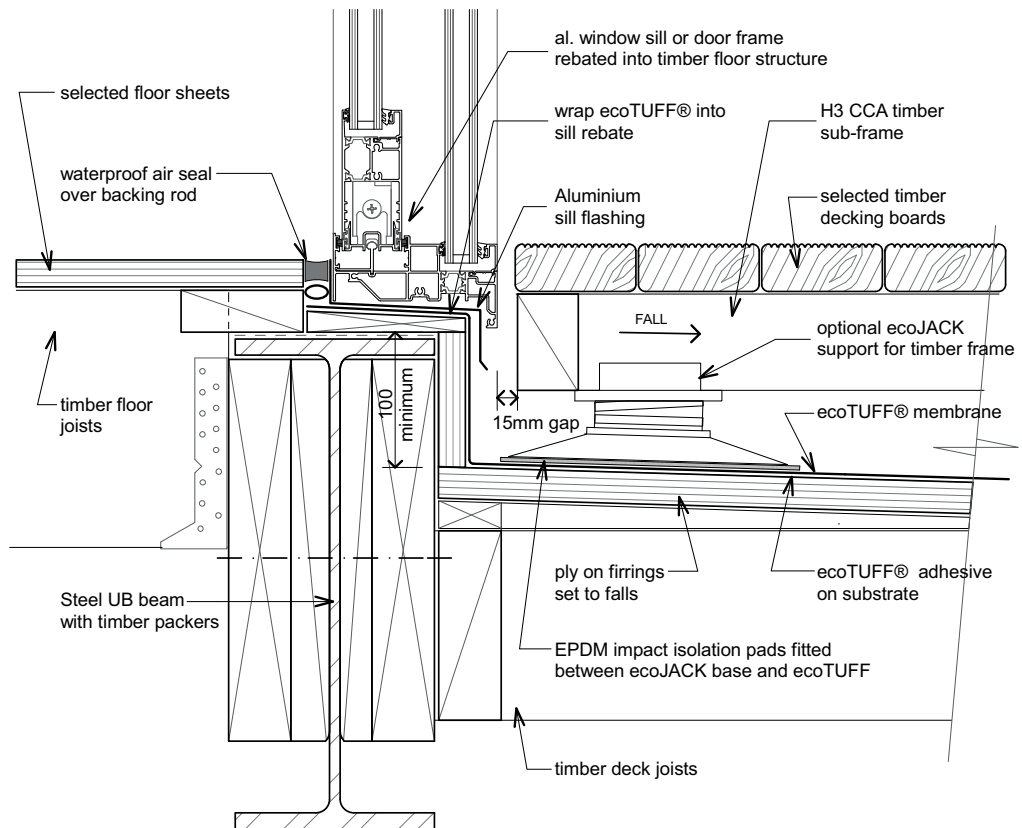


Detail Drawings



ecoT31 - timber raft floating deck - threshold detail - type 1

REVISION: 18 JULY 2014

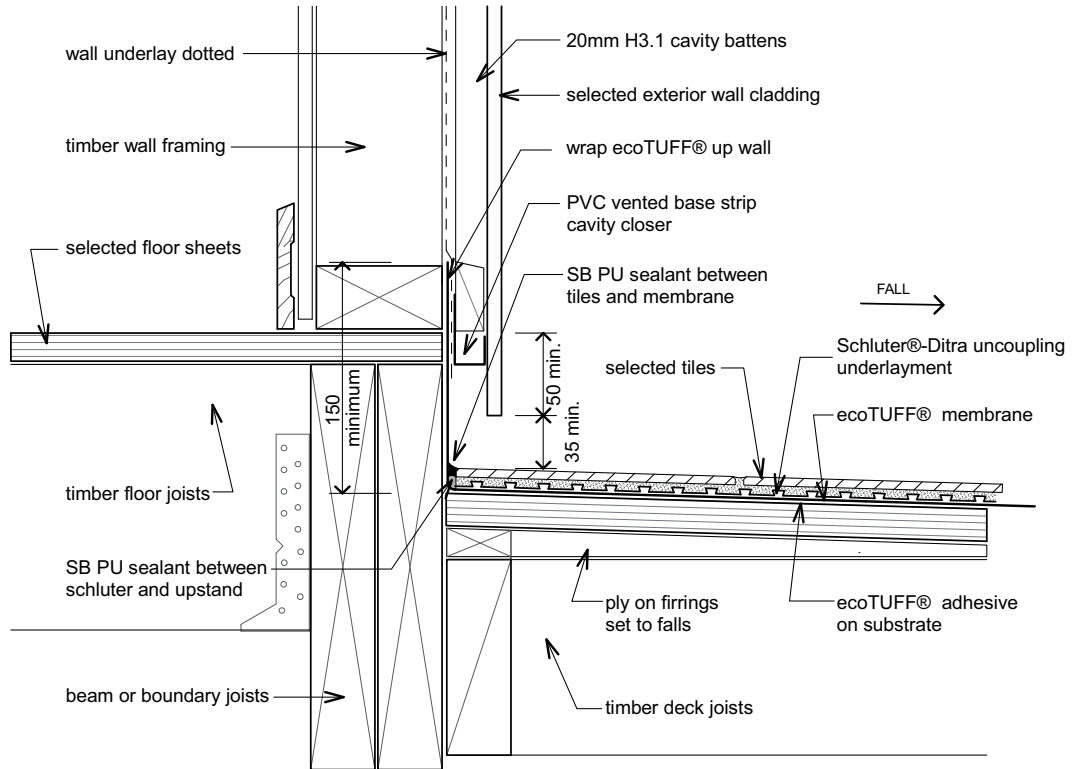


ecoT32 - timber raft floating deck-threshold detail - type 2

REVISION: 18 JULY 2014

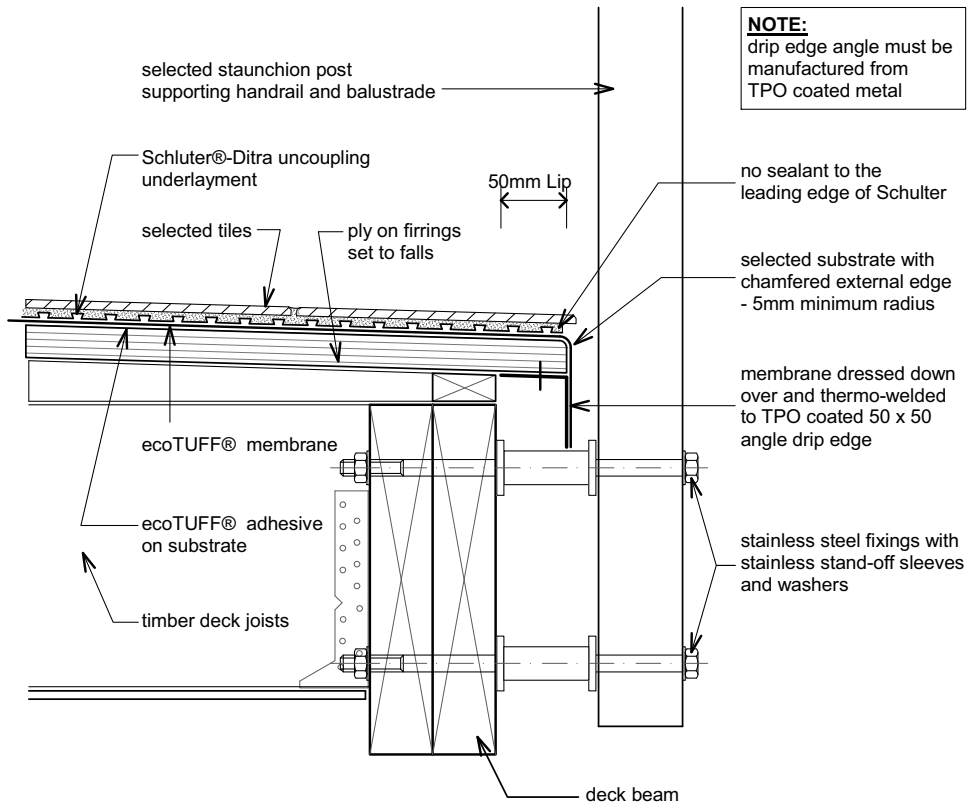


Detail Drawings



ecoT33 - Tiles (on Uncoupling underlay)-wall junction

REVISION: 18 JULY 2014

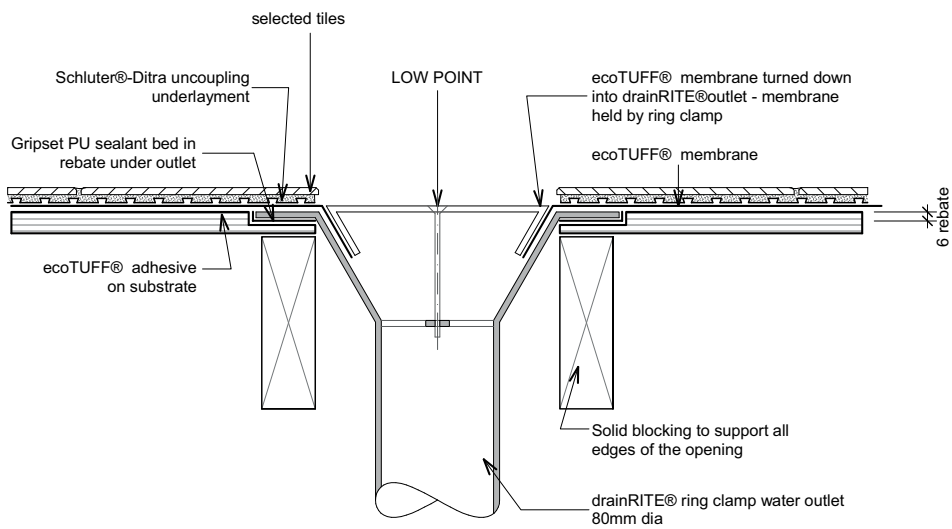


ecoT34 - Tiles-balustrade junction

REVISION: 18 JULY 2014

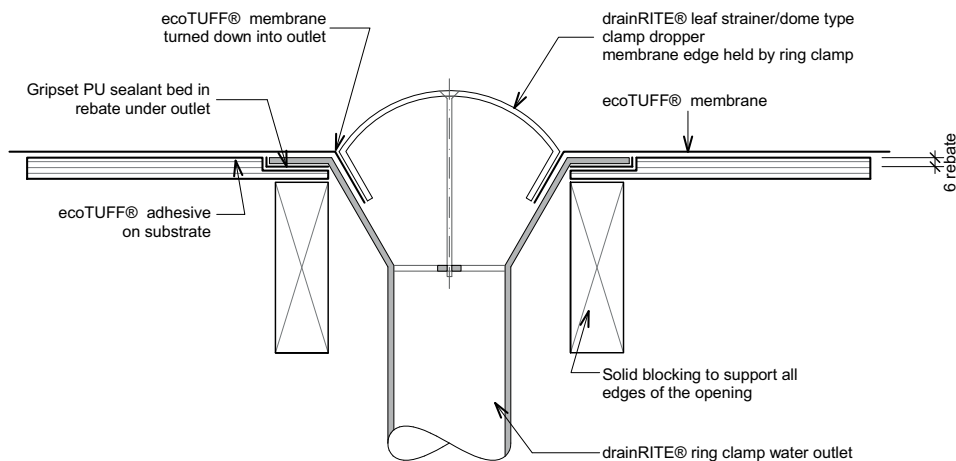


Detail Drawings



ecoT35 - drainRITE® water Outlet 2 - ring clamped

REVISION: 17 SEPTEMBER 2014

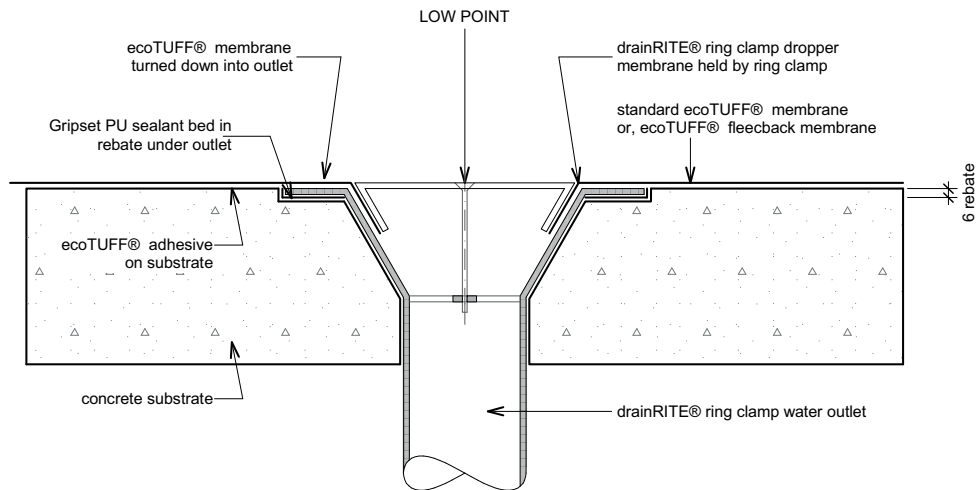


ecoT36 - drainRITE® Water Outlet 3 - ring clamped dome

REVISION: 17 SEPTEMBER 2014

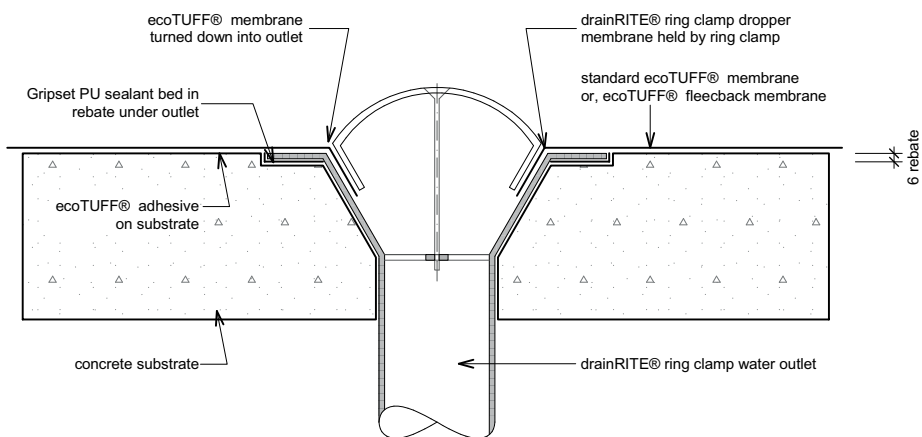


Detail Drawings



ecoT37 - drainRiTE® Water Outlet 4 - ring clamped

REVISION: 17 SEPTEMBER 2014

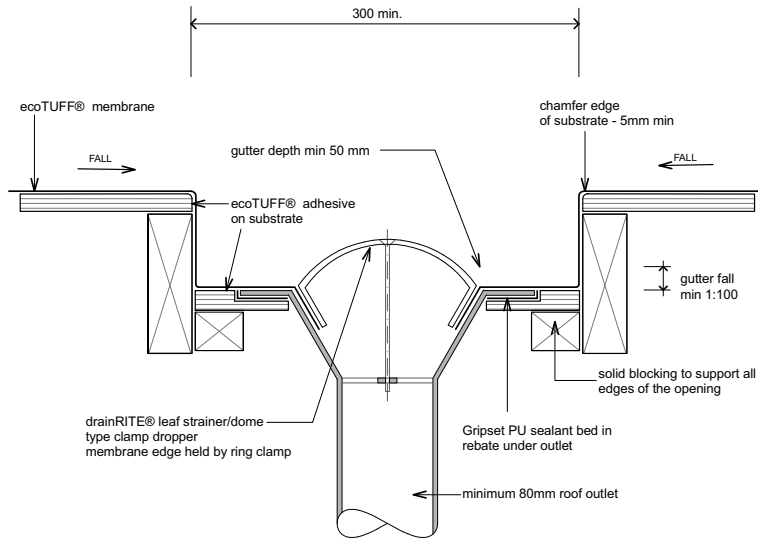


ecoT38 - drainRiTE® Water Outlet 5 - ring clamped dome

REVISION: 17 SEPTEMBER 2014

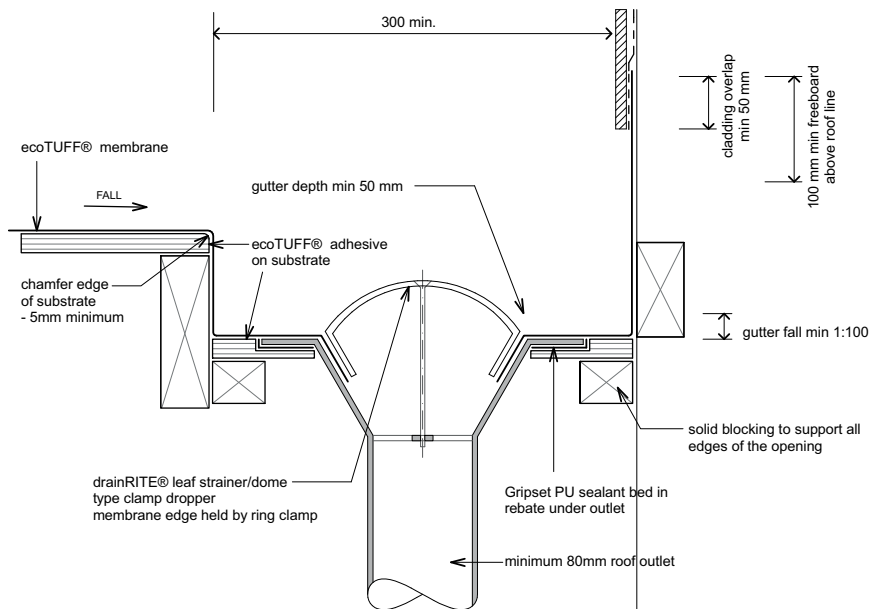


Detail Drawings



ecoT39 - drainRITE® Water Outlet 6 (dropper) - ring clamped dome

REVISION: 17 SEPTEMBER 2014



ecoT40 - drainRITE® Water Outlet 7 (dropper) ring clamped dome

REVISION: 17 SEPTEMBER 2014









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