Sealco
Waterproofing Systems

ARCHITECTURAL PRODUCT MANUAL

FlameSEAL Torch On Membranes

Version 19.01

Contents

THIS PUBLICATION

This manual provides the technical information necessary to correctly specify the FlameSEALtorch-on membrane system. It has also been designed for use by Sealco Ltd approved applicators, for training and quliaty management purposes.

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

Version 19.01

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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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.

BEAL APPRAISED

The Flameseal system has been appraised as an Acceptable Solution in terms of New Zealand Building Code compliance.

Please contact Sealco Ltd for a copy of this Appraisal Certificate

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

Introduction

PRODUCT DESCRIPTION

The FlameSEAL membrane system is comprised of a full range of torch-on membranes used in a wide range of waterproofing applications, including roofing, below ground tanking, carparks, bitumen re-roofing, planter boxes and green roof systems. The FlameSEAL system may be fully-torched, mechanically fixed or cold-applied using a bitumen adhesive, depending on the specific requirements of the project.

WHY FLAMESEAL

FlameSEAL has many outstanding product features, making it the ultimate choice when selecting torch-on products. Its superior qualities of tensile strength, puncture and tear resistance sets FlameSEAL apart as the ideal durable solution for your waterproofing requirements.

IN PARTICULAR, FLAMESEAL;

- Has high tensile strength and tear resistance.
- Has excellent puncture resistance.
- Is BRANZ Appraised

SCOPE OF USE

The FlameSEAL membrane system is used in a variety of waterproofing applications including;

- Low slope roofs and gutters
- Below ground tanking
- Decks and balconies (timber raft or eco jacks)
- Podiums
- Water tanks
- Retaining walls and planters
- Roof gardens and ballast roofs

PRODUCT LIMITATION

TRAFFICABLE DECKS

FlameSEAL is not designed for use as an exposed trafficable membrane. The DekMASTER® and 1.5mm EcoTuff membrane should be used in these situations.

TILED APPLICATIONS

Tiling directly onto torch-on membranes is not recommended. Alternatively, a loose-laid timber decking or paver system can be installed using the EcoJACK® paver stands. For an external tiled finish use EpiSPAN or EcoTUFF with the TileSEAL System.

PLYWOOD ROOFS

We recommend our two-layer FlameSEAL system, EpiSPAN EPDM, or EcoTUFF TPO membrane in these applications.

FLAMESEAL PRODUCT CHARACTERISTICS (TYPICAL VALUES)

Cap Sheet	COMBO	
Thickness	4.5kg/m2	EN 1849-1
Maximum slates loss	<5% chip loss	EN 12039
Modified bitumen top coating	APP - modified bitumen	
Reinforcement	180g/m2 composite reinforcement	
	Stabilised Polyester	
Overlap coating	APP-to-SBS Modified bitumen	
Overlap joint strength: shear resistance	750 N/50mm	EN12317-1
Overlap joint strength: peel resistance	150 N/50mm	EN12316
Tensile strength: (longitudinal)	850 N/50mm	EN1231-
Tensile strength: (transversal)	850/750 N/50mm	EN123-1
Elongation: (longitudinal & transverse)	45%	EN 1231-1
Flow resistance at elevated temperature:	150°C (APP) 100°C (SBS)	EN1110
External fire performance (= fire retardance)	Froof (International Code)	EN 13501-5
Expected lifetime Codemark	(cert. BBA) 30+ years	
Suitable for potable water collection	Yes	
Durability testing in New Zealand	Yes, 15+ years' service in NZ	

FEATURES OF FLAMESEAL SYSTEM

- Double layer protection (7mm thickness on double layer)
- Proven system and product
- High tensile strength
- High tear strength
- Excellent puncture resistance
- Resistant to rot
- Mineral chip UV protection
- High quality manufacturing

MAINTENANCE

Annual maintenance on all membrane roofs is require to ensure the product lasts the distance. Maintenance includes inspections, cleaning, checking outlets, laps and penetrations. Please see our website www.sealco.co.nz to download the full care and maintenance procedures.

WARRANTY

On completion of the application of the FlameSEAL system by an approved Sealco Ltd supplier a material warranty is supplied to the installer on request. This warranty is for material only and for up to 20 years on a pro-rata basis.

Introduction

DURABILITY

ROOFING APPLICATIONS

When fixed according to specification, the FlameSEAL system will meet the NZBC B2.3.1(b) requirements, being durable for 15 years.
The durability opinion given by BRANZ for the FlameSEAL system states that when subjected to normal conditions of environment and use, the system is expected to have a service life of at least 15 years.

TANKING APPLICATIONS

When fixed according to specification, the FlameSEAL system will meet the NZBC B2.3.1(a) requirements of 50 year durability.

PLEASE ALSO REFER TO:

- BRANZ Bulletin No. 345 "Flat Membrane Roofs – Design and Installation" published June 1996.
- BRANZ Bulletin No. 397 "Waterproofing Basements"
- published 2000.
- Department of Building and Housing Acceptable Solution
- E2/AS1, Third Edition dated July 2005.

QUALITY MANAGEMENT

Ensure quality control processes are carried out in strict accordance with Sealco Ltd's Quality control process. The quality control checklists can be downloaded from our website www.sealco.co.nz

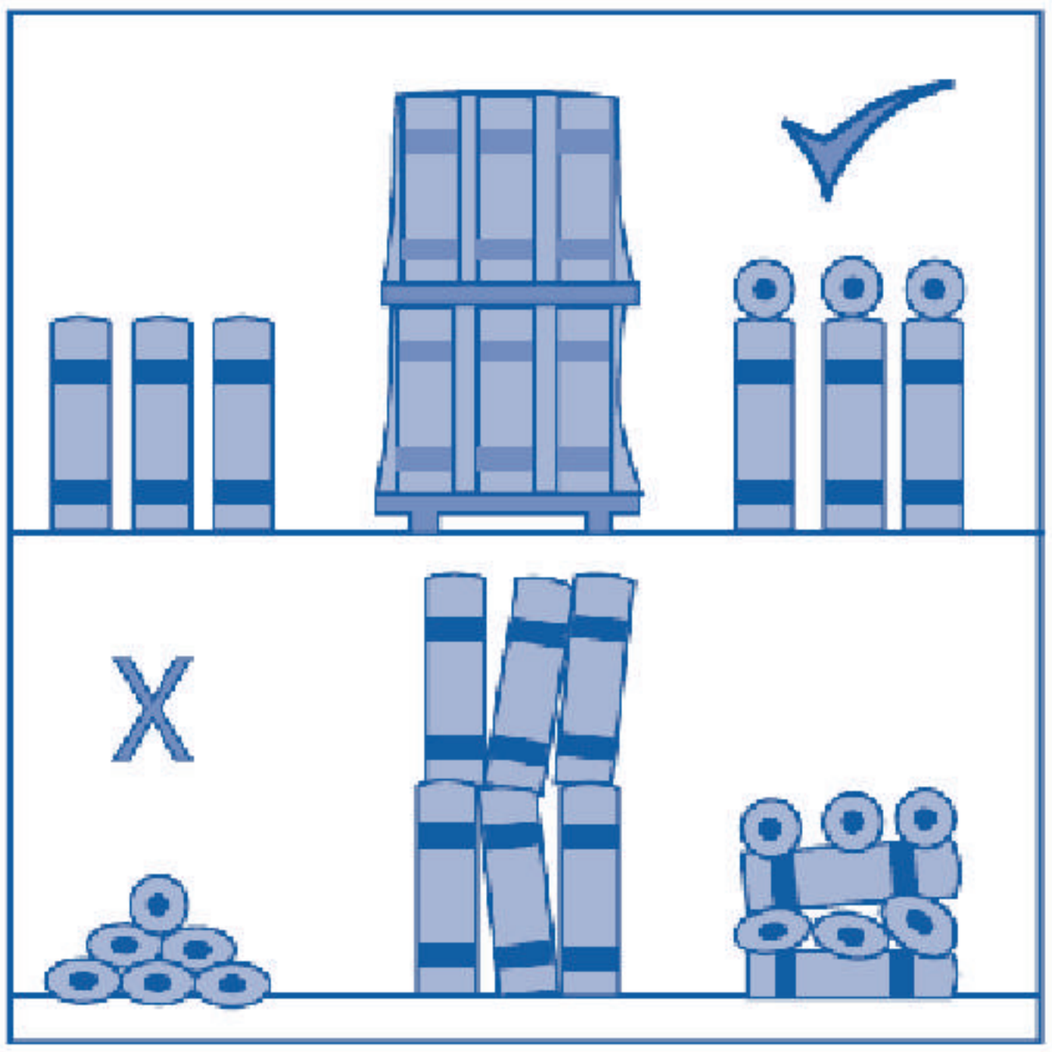
APPLICATOR TRAINING

Applicator training is provided through the Sealco Ltd training academy. A certificate of achievement and applicator approval will be provided on completion and passing of the training course to the applicator as verification of course completion and for their training level. Please see our training page on www.sealco.co.nz for further detailed information.

STORAGE

Store all rolls vertically on ends on a flat surface in a dry ventilated area. For best results, rolls should not be laid flat until ready for installation. Rolls should not be stored in direct sunlight as overheating can affect membrane. Similarly rolls should not be stored above 10°C for 48 hours before laying.

Ensure that rolls are not crushed by incorrect storage and transportation



WEATHER

The FlameSEAL system can only be applied in dry conditions. Note that a temperature of at least 6ºC is required before laying the membrane and the substrate must have a maximum moisture content of no more than 20% at the time of laying.

MATERIAL ACCEPTANCE

Ensure that the FlameSEAL rolls, primers and accessories are correct in quantity, colour and are received in good condition. Only sign the consignment note when satisfied.

Introduction

HEALTH AND SAFETY

The primers and aluminium UV coatings used in the FlameSEAL system are Class 3 flammable goods. Contractors should be aware of the Health & Safety precautions identified in the Material Safety Data Sheets.

Ensure you display appropriate signage, as shown below. Keep well away from flame and heat sources and use only in ventilated areas with suitable safety equipment.

MATERIAL SAFETY DATA SHEETS

A copy of all of the material safety data sheets can be downloaded from the product pages at www.sealco.co.nz

DANGER OF FIRE – GAS TORCHES/GAS BOTTLES

- Identify the presence of particularly flammable items such as building paper.
- Display suitable "no smoking" signs.
- Have a minimum number of gas bottles on the roof at one time.
- Keep all gas bottles at least 6m from flames, and store upright and away from pedestrian walkways or vehicle access areas.
- Guard cylinders from being knocked or from falling.
- Have fire extinguishers readily available at all times.
- Turn torches and gas bottles off when not in use and release the LPG pressure from the supply hoses.
- Have the gas bottle and connections checked regularly and make sure that the valves are turned off when moving a cylinder.
- Keep full and empty cylinders separate.
- Never use force when opening or closing valves.
- Know where the nearest fi re hose is located.
- Gas bottles should be fitted with a regulator or anti-flashback device.

SAFETY CLOTHING

Flame proof clothing and gloves must be worn. Safety shoes are a must.

Take care that sufficient heat is applied to ensure full bonding to substrate. Under or over heating the membrane will result in bubbling or possible destruction of the reinforcement. Good heat control is particularly important in windy conditions

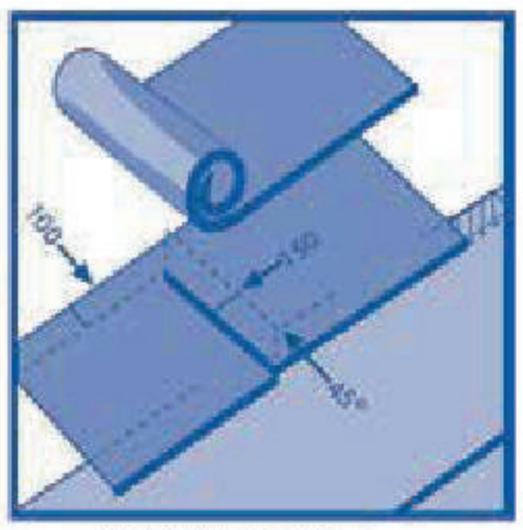
HEAT CONTROL

Good heat control is essential for effectively bonding the membrane to the substrate, and forming laps. Factors such as wind and membrane thickness determine the amount of heat required to form an adequate bond. When torching down, heat both the substrate and the membrane. In particular, ensure sufficient heat is applied to the roll to burn off the PE film and create a constant small bead of bitumen at the base of the roll. Install the membrane sheet to the substrate first and then form the lap separately. This enables you to focus on ensuring that you have full lap integrity, and gives better heat control.

FORMING LAPS

On plain-finished membranes all laps must be bonded the full width of the lap and then seamed off. To do this, run a hot trowel or torch down the face-edge of the lap, to ensure a bead of molten bitumen forms a fillet in the lap area. With granule-finished membranes, ensure a small bead of bitumen forms at the side lap edge, but don't over seam. This gives a better visual finish. Use the selvedge as a guide to form the side laps. When forming the end laps, heat the top of the membrane 150mm wide and remove the granules, to give bitumen-to-bitumen contact in the end lap area.
Where laps coincide giving a build-up of three or more layers, cut the outside edge of the lower membrane layers at a 45° angle. This gives a better visual finish.
Ensure all laps are fully torched their full width; 100mm (side laps) or 150mm (end laps).

Forming end laps



Unsightly Lap build up

Introduction

SINGLE OR TWO LAYER SYSTEMS?

Long term performance and durability are our over-riding goals, therefore we strongly recommend two-layer systems be installed wherever possible.
In roofing applications, fully-torched single-layer systems may only be used on cast in-situ concrete substrates that are cast over profiled metal or permanent formwork. In all other applications a two-layer system is required.

In below ground tanking applications, a two-layer system is also strongly recommended as it provides greater protection against mechanical damage by steel fixers, and other trades.

By definition, a two-layer system must comprise two waterproofing layers of membrane. For this reason a base sheet that is mechanically fixed, or a vented base sheet with its perforations, is not considered a layer.

When using multi-layer systems it is important that each layer is fully bonded to each other to prevent the likelihood of water being able to track between the layers

RELAXING ROLLS

Unroll the material and leave to relax for at least 30mins. In cooler conditions it may take some time for the material to relax adequately. If not relaxed properly, the rolls may wrinkle badly or shrink after laying, popping the laps.

In cool conditions, take care not to bang the rolls or handle them roughly. Unroll with care, as the material is inclined to be quite stiff in cold conditions. In order to adequately relax the rolls in very cold, icy conditions the rolls may need to be stored and relaxed in a warm room.

At this point, inspect the roll carefully to ensure that there are no defects and that the material is suitable to install.

TOOLS REQUIRED

- LPG torch handle with accelerator and idle burner.
- Short stem tube (300mm) with a 20mm head.
- Long stem tube (750mm) with a 50mm head.
- Gas bottle (9.0kg bottle is ideal for carrying onto roofs
- etc.) and 20m approved hose complete with regulator.
- LPG flint lighter.
- Stanley knife.
- Pointing trowel.
- Chalk line.
- Measuring tape.
- Leather gloves.
- Paint roller, tray and 4 inch brush.
- Kerosene for clean-up.
- Fire extinguisher.
- Substrate moisture metre.

The short stem tube with the 20mm burner head needs to be set up to be interchangeable with the long stem fitting. The short stem burner is used for detailing work and the long stem burner is used for laying the rolls of membrane. Roofers must wear flat-soled shoes to reduce possible footprints on the membrane.

Always have a fire extinguisher on each roof area you are working on. Locate the nearest fire hose if one is available. Identify any particular fire hazards such as building paper

SYSTEM COMPONENTS

The FlameSEAL modified bitumen system comprises of:
FlameSEAL water based primer
FlameSEAL Torchon base sheet
SpeedSEAL self adhesive base sheet
SpeedSEAL thermal adhered base sheet
FlameSEAL anti-roof tanking base sheet
FlameSEAL mineral chip cap sheet
SpeedSEAL self adhesive mineral chip cap sheet
FlameSEAL re-roof mineral chip cap sheet
FlameSEAL COMBO mineral chip cap sheet
Chrystalglaze clear top coating

SYSTEM ACCESSORIES

The FlameSEAL system comes complete with a full range of accessories and outlets comprising of:
DrainRITE scupper outlets
DrainRITE roof & deck drains
Sureflow roof outlets
DrainRITE moulded rainhead sumps
Leaf grates
VentRITE roof vents
FlashRITE pipe boots
FlameSEAL mineral chip

Roofing Applications

Introduction

PRODUCT OVERVIEW

FLAMESEAL PRIMER

A solvent-based, bituminous primer designed to penetrate concrete or ply surfaces and provide a bondable surface. Supplied in 20ltr metal pails.

BITUBOND® ADHESIVE

A water-based bitumen adhesive used for glue-fixing torch - on membranes to gutters, parapets and other tricky detailing areas. It is also used to fix single-layer FlameSEAL systems. Supplied in a 10ltr plastic pail.

FLAMESEAL BASE SHEET

An APP-modified bitumen membrane with a glass fibre mat reinforcement. FlameSEAL BS has a thin torch-off polyethylene film or polyester mat on the underside, and polyethylene film on the top surface. FlameSEAL BS is used as the base sheet in two-layer systems or as the under flashing membrane. A variety of FlameSEAL BS base sheets are available as outlined in table 1 below.

FLAMESEAL CAP SHEET

An APP-modified bitumen membrane with a 180gm/m² Spun bond composite polyester reinforcement. FlameSEAL CS has a thin torch-off polyethylene film on the underside, and polypropylene mat or mineral chip finish on the top surface. A variety of FlameSEAL CS cap sheets are available as outlined in table 1 below.

FLAMESEAL-ROOF MEMBRANE

A specifically designed re-roof membrane compatible with SBS and APP modified bitumen membranes. Plura comprises a low viscosity bitumen, enabling it to be applied directly over old granule-finished torch-on membranes. Available in 1m x 8m rolls in mineral finish.

FLAMESEAL CARPARK

An APP modified bitumen membrane specially designed for bridges, tunnels, car parks with concrete or asphalt overlay available in 10m x 8m x 5mm thick.

POLYSEAL UV COATING

A Polyurethane membrane used as a UV coating for FlameSEAL CS where a specific colour finish is required. It is important that light colours only are used. Colours with a light reflective value (LRV) of less than 40, should not be used as the substrate will draw too much heat and cause substrate movement. Water must not be allowed to pond on the surface for long periods.

CRYSTAL GLAZE

A Clear acrylic coating containing Moss and Lichen resistant chemicals. Crystal Glaze will also bind the mineral chip finish, preventing any loose chip getting into the drainage system

TABLE 1: OVERVIEW OF THE FLAMESEAL TORCH-ON MEMBRANES

Base Sheets	FlameSEAL BS	FlameSEAL BS SA	FlameSEAL VBS
Description	Standard Base-sheet used in fully torched applications	Self adhesive base-sheet used in cold applied applications.	Perforated, base sheet for ventilated applications 119 holes/m^2
Finish	PE film on both sides	A self-stick base sheet	PE Film on both sides
Nominal Thickness	3mm	3mm	2mm
Nominal Roll Size	1m x 10m	1m x 10m	1m x 10m

Cap Sheets	FlameSEAL CS	FlameSEAL CS	FlameSEAL Tanking
Description	Standard Polyester reinforced cap-sheet	FlameSEAL re-roof	Base sheet for tanking applications
Finish	Mineral Chip	Mineral Chip	Sand finish
Nominal Thickness	4mm (4.5 kg/m^2)	4mm	3mm
Nominal Roll size	1m x 10m	1m x 10m	1m x 10m
Colour	White, Green or Black Other colours on request	Black	Black

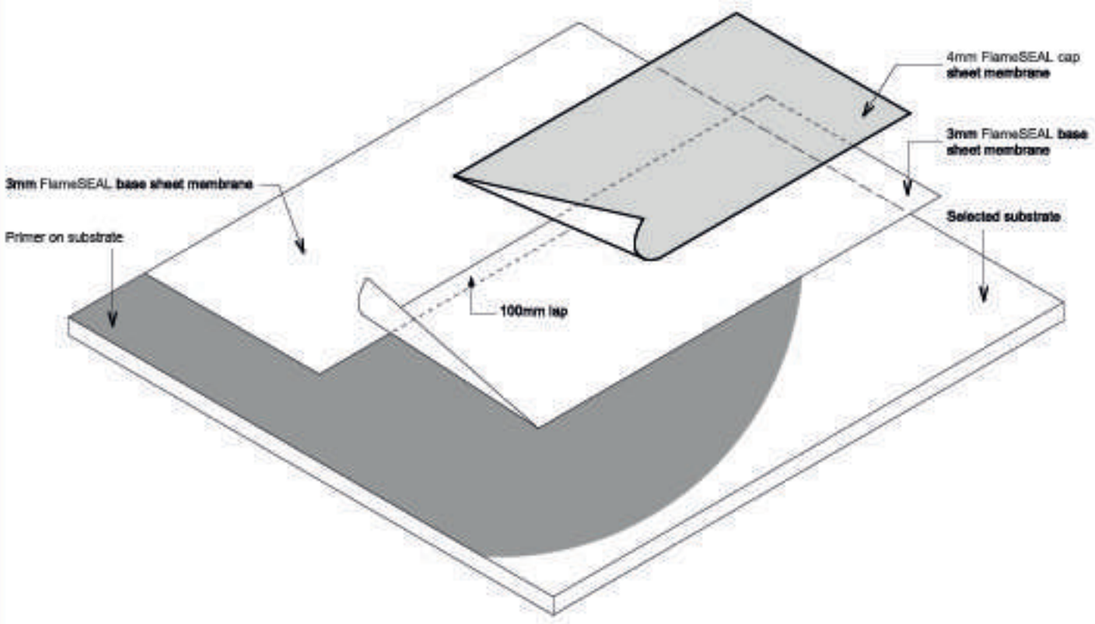
Introduction

ROOFING SYSTEMS AVAILABLE

Four primary FlameSEAL roofing installation options are available as follows; depending on the specific requirements of the project.

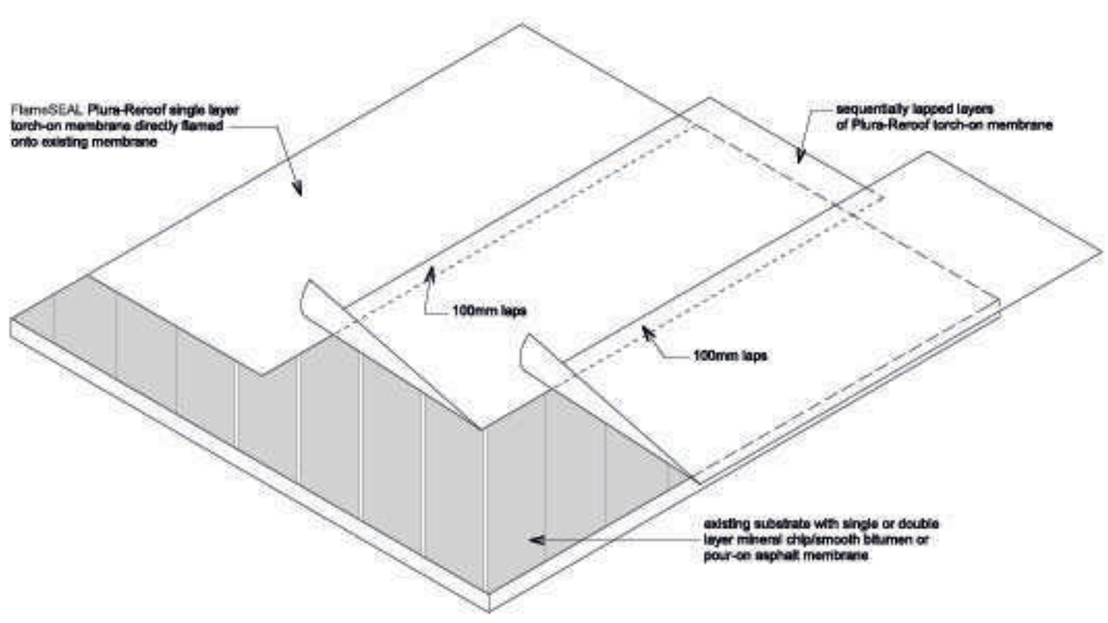
FULLY TORCHED AND PEEL & STICK

These are the most common installation methods and are used under normal circumstances. The FlameSEAL BS base sheet is fully torched or peel & stick, to the preferred substrate. The cap sheet is applied by torch or peel & stick.



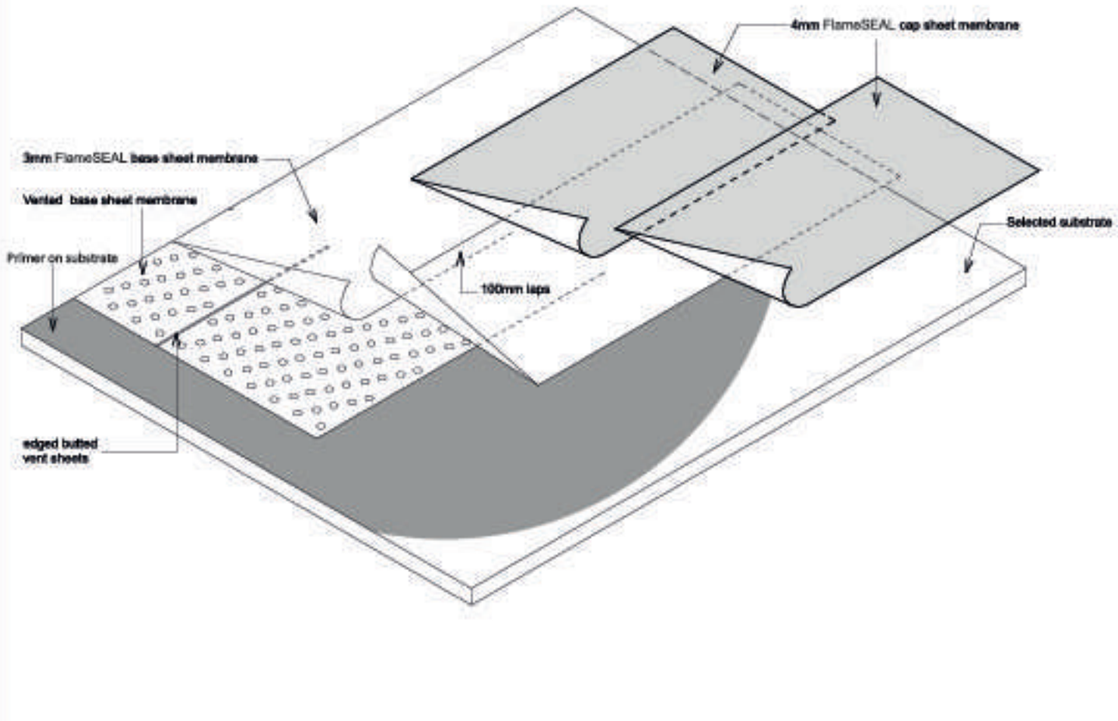
FlameSEAL RE-ROOF

Is a torch on membrane designed specifically for use as a refurbishment layer over old existing bitumen, asphalt membranes- especially those with mineral chip finishes.



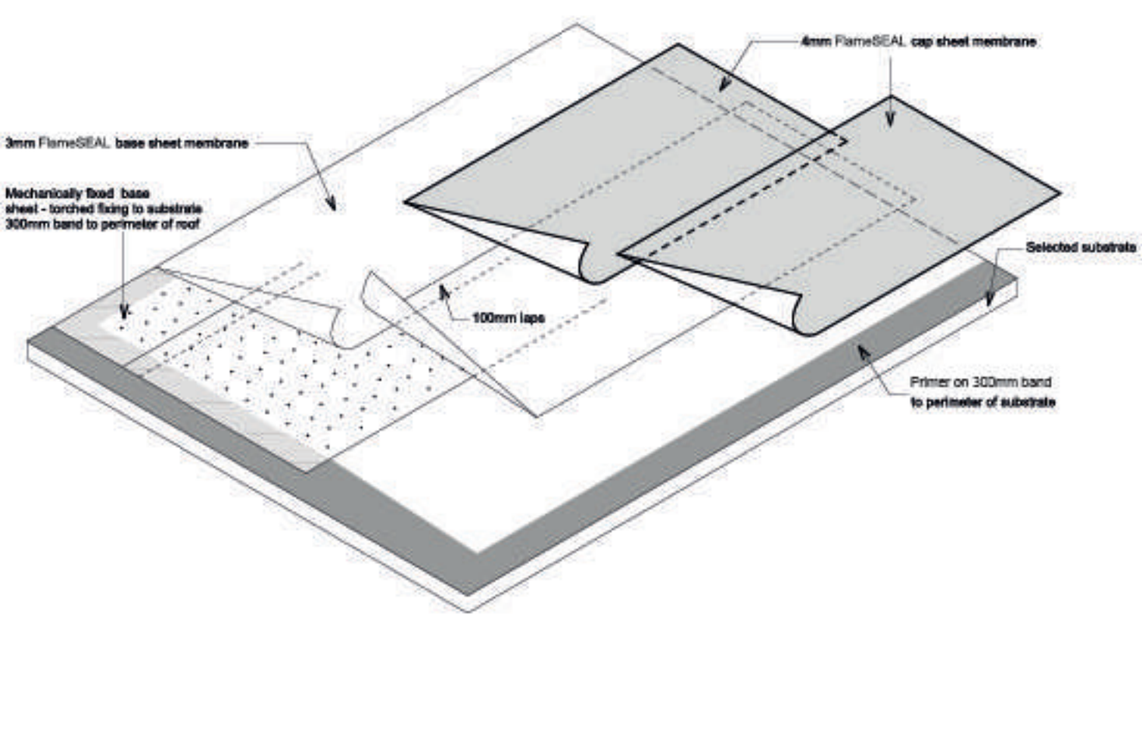
VENTED SYSTEM

The vented system uses the FlameSEAL VBS vented base sheet and is normally used where moisture may be present in the substrate. This moisture is able to move under the FlameSEAL system to a roof vent. Since the vented base sheet, with its perforations, has no waterproofing function, it is not counted as a membrane layer in two-layer applications.



MECHANICALLY FIXED SYSTEM

A mechanically-fixed system is usually used in repair applications, where an existing membrane system is present. The FlameSEAL BS base sheet is mechanically fixed using annular groove nails and washers at specified spacing's. Because the base-sheet is mechanically fixed it has no waterproofing function, so does not count as a waterproofing layer in two-layer applications.

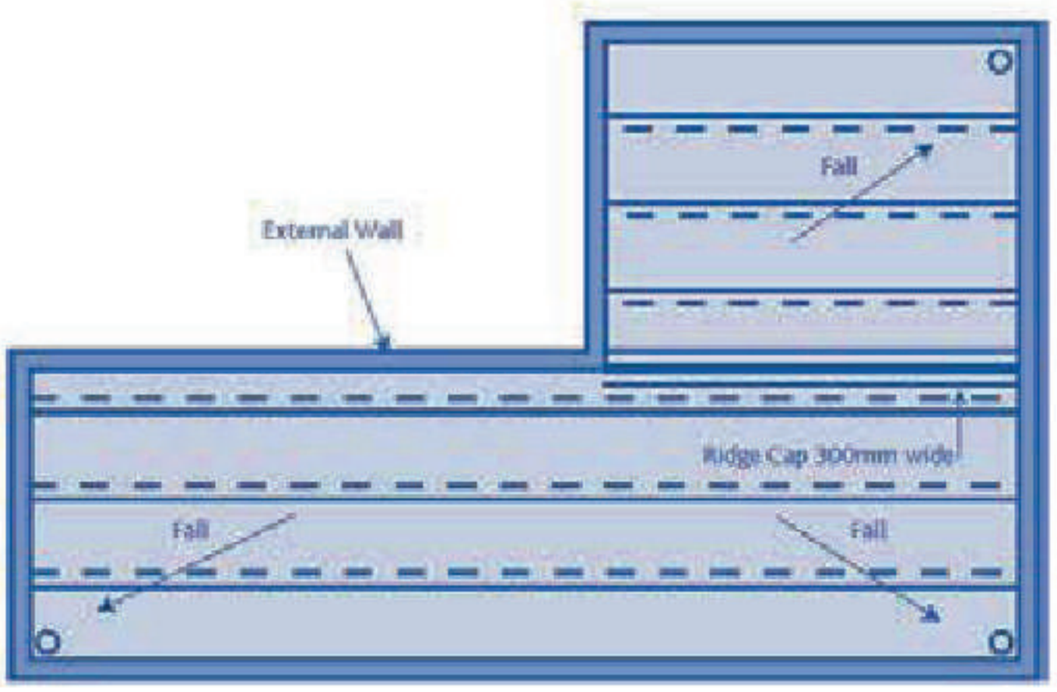


Installation

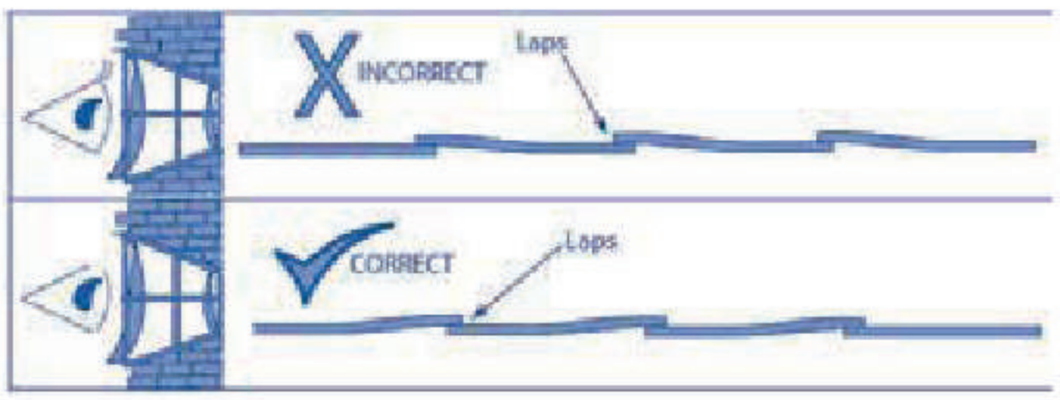
PLANNING THE INSTALLATION

Before commencing the installation it is important to plan the lay out of the membrane to ensure it meets this specification, while at the same time being visually appealing and minimising wastage. This is particularly important where the visual appearance of the roof is paramount.

The laps must lay perpendicular to the roof slope to ensure water sheds over the laps to the outlet.

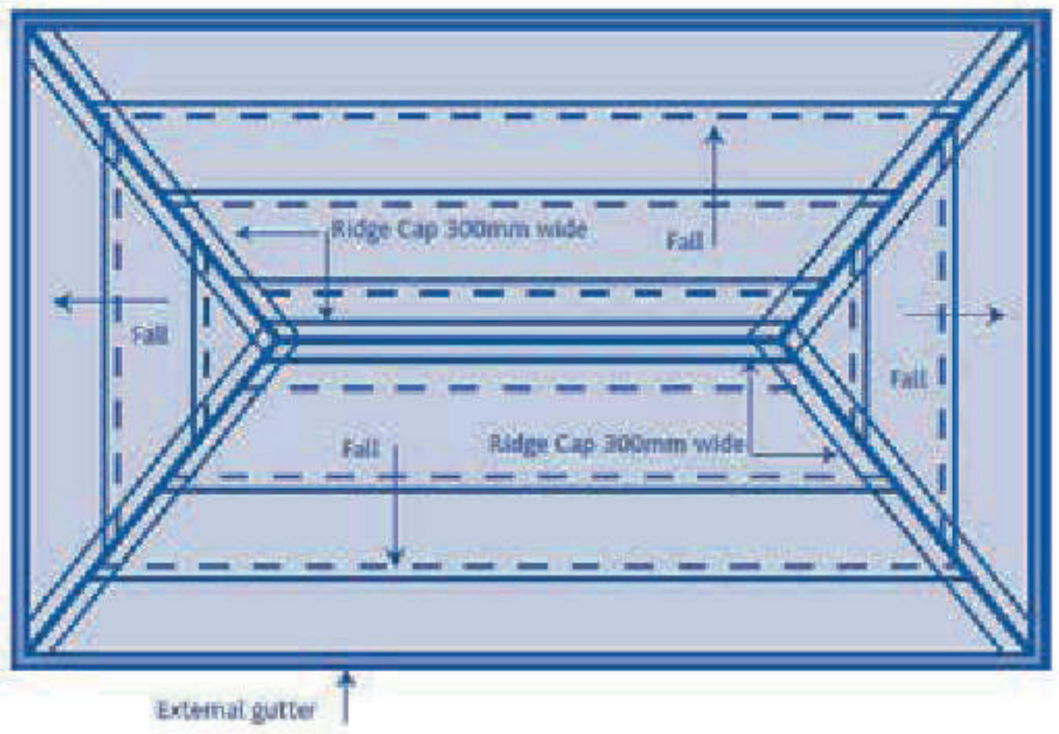


Where possible the laps must face away from any view within the building (eg in the split level home where occupants look out onto another roof area). This gives a much neater and seamless impression to the roof.



It is important to plan the roof layout before commencing. Failure to do so could result in a job that fails to meet specification (eg laps running the wrong way) and looks visually poor.

In hip roof designs, once the membrane system has been installed, membrane "ridge caps" are used to enhance the visual look of the roof.



Ridge caps are installed when roof membrane work is complete. Centre the ridge cap 150mm either side of the apex of the roof from the lower ridges to the highest point. This ensures water sheds over the laps.

Installation

QUALITY CONTROL AND INSPECTIONS.

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

SUBSTRATE REQUIREMENTS

CONCRETE SUBSTRATE SHOULD BE:

- Smooth, clean, thoroughly dry and fully cured.
- Firm with all soft areas ground off and all cracks or imperfections fixed using repair mortar.
- Fitted with mortar fillets to all roof-to-wall edges. Fillets should be a minimum of 20mm.
- All external edges chamfered to 5mm to remove sharp edges.
- Smooth-surface finish to be either U2 wood float or U3 steel trowel to NZS 3114. Steel floated finishes may require captive blasting, etching or grinding to permit penetration of FlameSEAL Primer
- Free of any curing agents. Any curing agents used must be removed by an abrasion method. Failure to adequately remove them can result in adhesion failure.
- Set to minimum falls of 2.0° 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:

- Laid on framing to NZS3604.
- Construction grade plywood (minimum C plugged face).
- CCA treated H3.2 grade plywood (do not use T&G Plywood) and complying with AS/NZS2269 (Do not use LOSP treated.) A minimum of 17mm thick for roofs and 20mm for decks.
- Laid tight-butted in a staggered pattern (offset all plywood sheets) with all edges supported with solid timber batons.
- Laid with the face grain at right angles to supports or cross members.
- Fixed at 150mm centres at sheet edges and 200mm in the girth.
- Fixed with grade 316 corrosion-resistant stainless steel countersunk screws, 10 gauge with a length three times the plywood thickness.
- Smooth, clean and dry (maximum moisture content 20%), and all lip edges sanded if necessary.
- Fitted with timber fillets to all roof-to-wall edges, with external corners chamfered to a rounded edge (5mm radius). Fillets should be a minimum of 20mm x 20mm.
- Install water diverter details at external wall gutter situations before installing the FlameSEAL membrane system.
- Set to minimum falls of 2.0° 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.

LAYING OVER OLD BITUMINOUS ROOFS:

The FlameSEAL Re-roof bitumen membrane gives a single application repair system to bituminous roofs needng repair. Contact the office for specifications covering preparation of old bitumen single layer and old mineral chip finished roofs, before installing the Plura R membrane.

PRIMING

Prime the substrate with bituPRIME at a rate of 5 ltr/m², ensuring good even coverage.

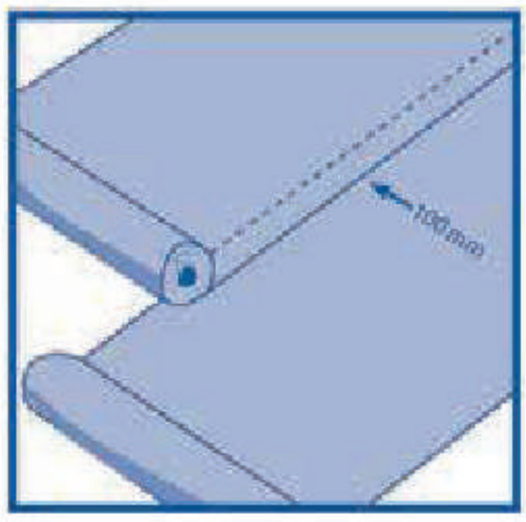
Allow reasonable time for the primer to dry (4-5 hours), otherwise adhesion problems may occur.

You may have to re-prime substrates if there is a delay in installing the membrane. These delays increase the likelihood of adhesion problems due to contamination.

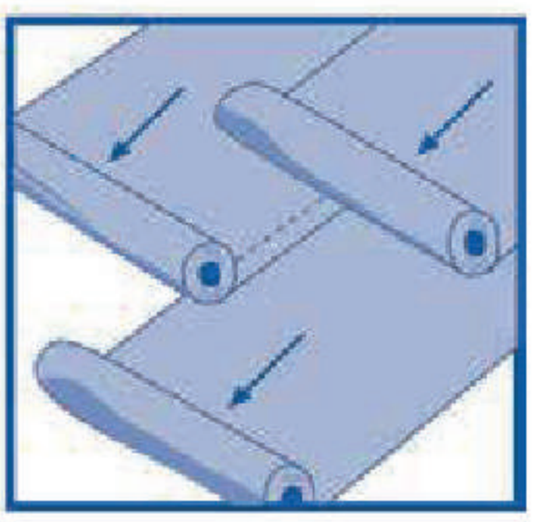
LAYING PATTERN

Start from the lowest point on the roof (i.e. at valleys, water outlets or gutters) and lay the membrane across the roof fall, working up to the highest point. This will ensure that water runs over the laps rather than down or into the lap edge.

Strike a chalk line, along the sheet to be overlapped, to mark the 100mm side lap. Set out subsequent rolls to that mark and continue, ensuring 150mm end laps are allowed for. Ensure that the FlameSEAL cap sheets are fully offset to the base-sheet.



All side laps to be 100mm



Cap Sheet from the Base Sheet

Check from time to time, that the membrane is running parallel by striking a chalk line from fixed points

DO NOT commence laying membrane until you are totally satisfied that the substrate is up to standard. Once you commence installation YOU accept responsibility for the substrate you are working on!

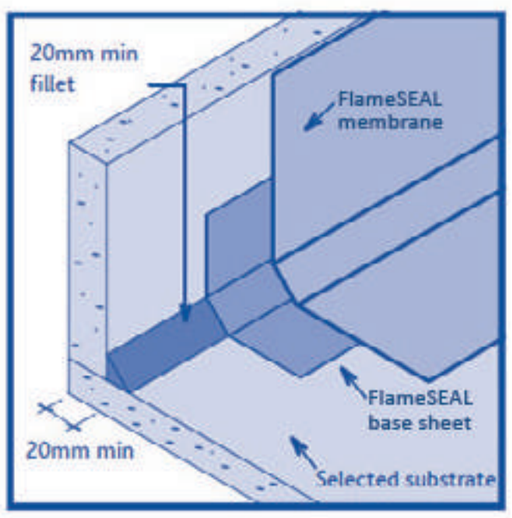
Installation

UNDER-FLASHING

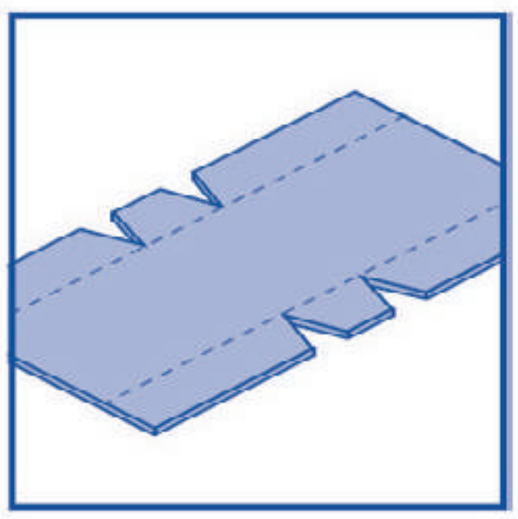
Detail Drawings: Page 23

Use standard timber or sand cement mortar fillets (as described on the previous page) at all up stands. In single-layer systems, under flash all internal and external corners, penetrations and all up stands (for the full length of the fillet).

In two-layer systems install a FlameSEAL BS under flashing membrane at all corners and penetrations. Fully torch the flashing membrane 100mm on the horizontal onto the fillet and 100mm up the vertical. Use the cutting pattern below to form the corner gussets.



Single-layer under flashing


Internal Corner Cutting Pattern

Use timber fillets on Plywood substrates, and sand cement fillets on concrete substrates

Once the gutter width exceeds 700mm there is no alternative but to install the membrane across the gutter rather than down its length

INSTALLING GUTTERS

Detail Drawings: Page 25 & 34

Ensure that the gutter is swept clean and is dry. Apply FlameSEAL primer (if torching gutters) or bituBOND® (if glue fixing gutters) to the substrate. Under flash all changes of direction with FlameSEAL BS (refer to previous section).

Calculate the length of the gutter (including the two end up stands), and the girth (including the two side up stands). Use a relaxed roll and cut to this size.

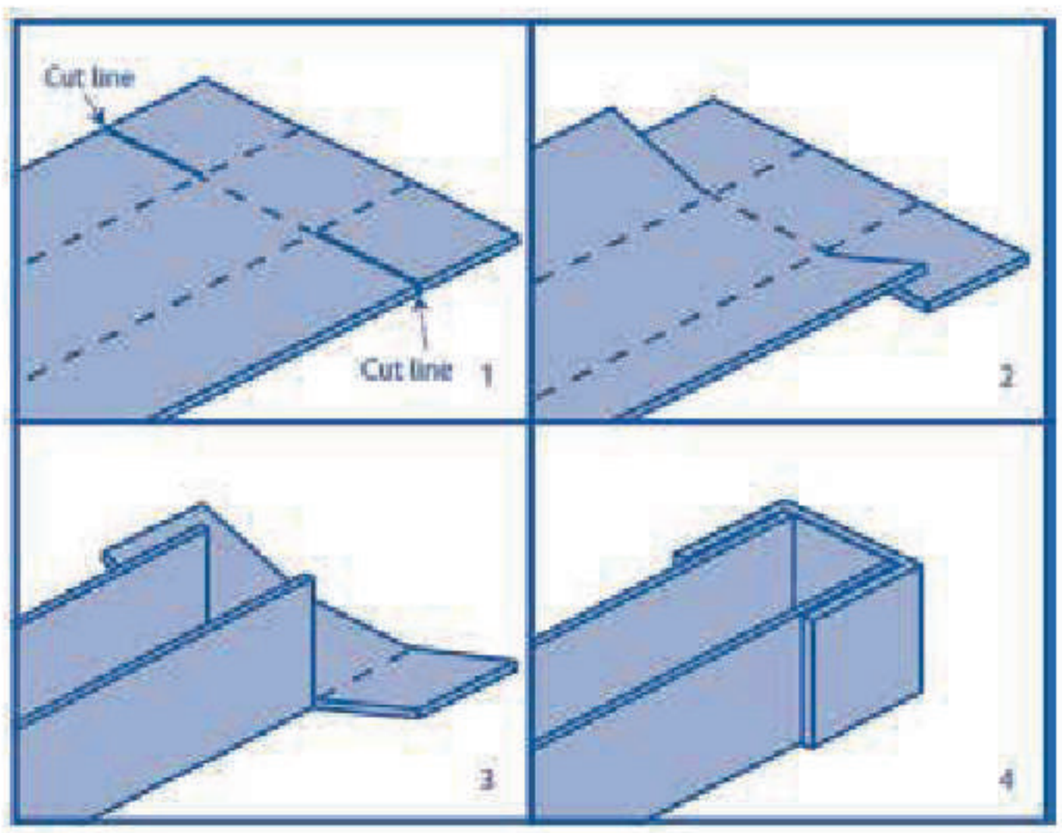
Mark out the end and side up stands and fold along the dotted lines shown in the diagram (1) below. Form creases along these lines in the material.
Open out and cut the membrane at the cut lines shown (1). Fold up the side up stand material (2). Fold up the end up stand material (3) and fold the cut flap material outside the side up stands (4).

Place the folded membrane into the gutter. If torching, roll up the membrane to half way. Slowly unroll and using the small torch head, torch to the primed base of the gutter ensuring you do not overheat the membrane.

Unfold the end up stands and torch to substrate. Then unfold the cut flaps and torch to the substrate. Once the end up stand is in place, unfold the side up-stands and torch to the substrate.

Alternatively, if adhesive-fixing, apply bituBOND® to the gutter base (refer page 15). Turn the folded membrane upside down and burn the polyethylene film off the membrane. Place the folded membrane into the adhesive.

Apply bituBOND® to the sides and ends of the gutter. Burn the polyethylene film off the back of the membrane and place into the adhesive.



Installing Gutters

Installation

TORCHING DOWN MEMBRANE

Prepare and install the under flashing membrane as described on page 13.

After relaxing the rolls, position the membrane to be installed and roll back up half way. Roll out this portion of the roll and as you do so, slowly move the torch across the back of the roll.

Burn off the polyethylene film and create a small bead of molten bitumen that rolls along with the roll. Once this half is installed, repeat with the opposite half. Once the roll is installed, go back over and seam weld all laps.

Ensure rolls run straight and that the 100mm side lap is maintained.

When torching the granule chip finish, take care not to burn the chip coating and minimise the amount of bitumen that oozes out the side lap. This will ensure a good visual finish.

Once the gutter width exceeds 700mm it is very important gaps are offset so they don't run through the drainRITE dropper fittings

MECHANICALLY-FIXED SYSTEMS

Prepare and install the under flashing membrane as described on page 13. Prime and fully torch the base-sheet 200mm around the roof perimeter. Fix the remaining base-sheet by s/s screwing & washers to an unprimed substrate at 300mm centres

When fixing to construction plywood, use 25mm x 2.8mm stainless steel screws with a minimum of 25mm diameter washers. Ensure good coverage of the screw head over the washers, and take care not to 'cup' the washer which may damage the cap-sheet.

Spot adhere with bituBOND adhesive over lightweight foam concrete screed.

Install a further FlameSEAL base-sheet layer and cap-sheet in the normal manner.

HIGH WIND LOAD AREAS

Fully torch the base sheet 200mm around the roof perimeter. Increase the fixings to one every 200 centres. Contact Sealco for more specific fixing instructions for very high wind loads, especially where the wind speed calculations are considered extreme.

DO NOT install the cap sheet onto the base sheet using the cold applied process as the adhesive will not cure.

VENTED SYSTEMS

Lay out the FlameSEAL VBS vented base sheet without any allowance for side laps or end laps. Fully torch the FlameSEAL BS base-sheet over the vented base-sheet in the normal way. Install the cap-sheet.

ADHESIVE-FIXING MEMBRANES

Installing the torch-on membrane using a cold-applied bitumen adhesive is an alternative to fully torching the membrane.

Adhesive-fixing the tricky details is quicker, easier and gives a much neater finish. We recommend that parapets and gutters be adhesive-fixed. Have the membrane to be installed turned upside down and handy. Apply bituBOND® primer to the substrate at a rate of 3m²/l, ensuring a good, even coverage. On the membrane to be glued, lightly torch the back to remove the polyethylene foil and make the bitumen soft and tacky. Do not heat too much. Without delay place the membrane onto the adhesive and dress into place. Torch and seam-weld any laps. Refer also to the section on installing gutters (Page 14).

We also recommend that single-layer roofing systems be torch-applied. When adhesive -fixing the roof membrane, apply bituBOND® adhesive primer to the substrate and allow to dry. Place the roll of membrane to be installed into position and slowly roll out. While doing so, burn the polyethylene film off the back of the membrane and activate the bitumen. Do not over heat.

ADHESIVE-FIXING DO'S AND DON'TS

- While bituBOND® adhesive-fixing is quick, neat and time saving, there are a number of situations to be aware of;
- On metal and other non-porous substrates, allow the adhesive to fully cure before installing the membrane.
- Reactivate the adhesive by lightly torching it just prior to placing membrane on top.
- With colour steel finishing trims, clean the surface to be coated with bituBOND® with methylated spirits prior to the application. If this is not done, delamination of the membrane could take place.
- bituBOND® will generally skin within five hours and
- At this point may stand a shower of rain. However if bituBOND® is caught in rainfall while in wet form, it will wash out and it is possible a rusty coloured water stain may contaminate other surfaces.
- When using bituBOND® on substrates other than concrete or plywood, please contact Sealco for advice.

DO NOT apply the adhesive too thickly, or when too hot as skinning of the surface will affect its performance.

Installation

PEEL & STICK SYSTEMS

Prepare and install any under flashings with the peel & stick membrane as described on page 13. Ensure the primer is dry and the minimum temperature is 8 degC. Roll out the rolls in position and allow a minimum of 20 minutes to relax. Whilst ensuring the sheet is held in position, carefully start at one end removing the inside centre of the plastic backing gently pulling it out to the side of the membrane sheet. Continue this all the way down until the backing has been fully removed and then repeat on the other side. Ensure the rolls run straight and that the 100mm side lap is maintained. Once laid, roll the entire sheets with a heavy roller.

For any laps remove the lap backing plastic and roll with a roller then test the lap for adhesion. If you find the temperature is low then the lap may not bond then you may need to use a leister type hot air gun to heat up the laps or gently use a small hand torch by holding open the lap with a trowel and a light flame between the sheets. DO NOT use a hand torch on the base sheet when installing over polyiso panels.

Once the base sheet has been completed, lay the cap sheet over the top ensuring to stagger the laps. Install in the same manner as the base sheet.

Detailing is completed by removing the chip from the top surface and using a heat welder, form the P&S cap sheet as per standard drawings on page 23 & 24.

ROOF SPACE & MOISTURE VENTING

Detail Drawings: Page 31,33

WHY VENT?

When working on substrates where moisture is present, it is vital to vent under the membrane. Failure to do so will allow the entrapped moisture to vaporize under the membrane causing bubbling. When moisture venting, the FlameSEAL vented base sheet must be used, prior to installing the base sheet and cap-sheet.

Roof-space venting of confined skillion type roofs creates airflow and equalises roof-space pressure. Roof space venting minimises temperature variations across the roof and so reduces substrate movement due to thermal expansion and contraction.

If a HVAC ventilation system is going to be installed by another contractor, DO NOT install roof-space vents consult SEALCO Ltd.

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.

When moisture venting, layout the FlameSEAL VBS vented base sheet. Locate the roof vent and fix into place with stainless steel screws. When fixing to concrete, fix using a nail gun.

When roof-space venting the vented base sheet may not be required. Cut a 20mm hole through the substrate before fixing the vent. Dress the vent by installing the FlameSEAL base-sheet up the vent flange and neatly around the shaft of the vent.

Install the cap-sheet in a similar manner. Over flash around the up stand using the FlameSEAL cap-sheet.

ventRite Roof Vent

Roof Space ventilation must be approved by the specifier as other design factors need to be considered.

Installation

ROOF DRAINS, SUMPS AND OVERFLOWS

Detail Drawings: Page 30,32,33,34

Ensure that there is a 6mm recess formed to fit the diameter of the drainRITE rainwater outlet flange and also ensure that the drain outlet has been formed. Make sure this is primed.

Cut out a flashing membrane to fit the recess and torch or glue-fix into place. Carefully cut out the membrane over the outlet hole and seam around the edge. Heat the surface of the flashing membrane to create molten bitumen. Fit outlet into place by pushing it into molten bitumen.
Install the membrane in the normal way. Cut out the exit hole and seam-weld around outlet edge using a pointing trowel.

drainFLOW overflow sump

drainRITE Roof Drain and Ring Clamp

flowRITE FlameSEAL Scupper

TERMINATION

Detail Drawings: Page 26

It is important that the membrane terminations are detailed correctly so water cannot track behind the membrane.

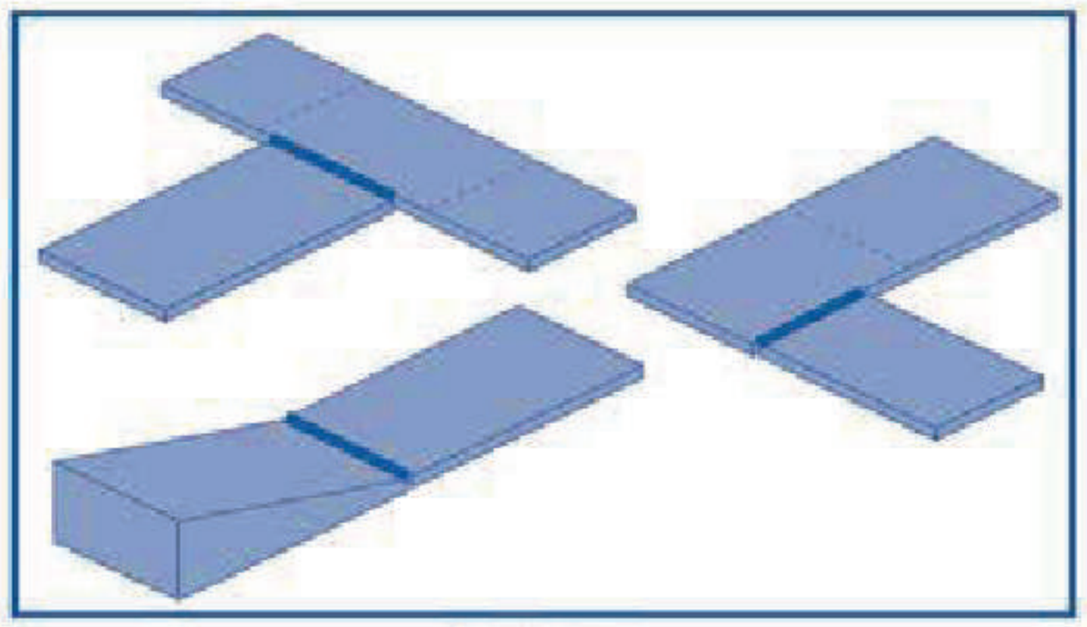
The FlameSEAL membrane can be terminated into a chase, behind a wall cladding system, under a cap flashing or with a compression flashing.

MOVEMENT JOINTS

Detail Drawings: Page 27

Purpose-made expansion joints and flashings must be installed to meet the specific stresses expected and be compatible with APP modified bitumen membranes.
Movement joints should be allowed for in the following situations:

- Around the perimeter of the roof or deck, allowing a 5mm gap at all abutments.
- Around the 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. This means movement joints should be allowed for at all "T" or "L" type junctions or wings (see bold line in drawings below).
- Where construction plywood abuts a concrete slab or wall.
- In large plywood roof or deck areas where flex or dimensional movement will be present - a suitable movement detail and location will need to be developed (see dotted lines in drawings below).



Movement joints

All movement joints and their locations should be approved by an architect.

UV COATING (SAND FINISHED & MINERAL CHIP MEMBRANES ONLY)

Once the membrane is fully installed, sweep clean removing all dust and debris. Repair any imperfections and check all laps are fully seamed.
The following coating options exist:

POLYSEAL POLYURETHANE COATING

- Always prime with Bondseal 2 part primer
- Apply two or more coats of Polyseal to give a good even coverage.
- Ensure the specified coat weight is applied to a minimum of 0.8-1.00mm dry film thickness.

PolySEAL and Flammable items must be stored, transported and used with care. Refer to Material Safety Data sheets for further information.

Installation

GREENSEAL APPLICATIONS

Drawings: Page 41 - 44

The FlameSEAL torch-on system can also be used in environmentally friendly green roof systems. The green roof system incorporates the FlameSEAL torch-on system, drainage cell, filler 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

FLAMESEAL ANTI-ROOT MEMBRANE

An APP-modified bitumen membrane with a 180gm/m² spun bond composite polyester reinforcement. FlameSEAL AR has a thin torch-off polyethylene foil permanently fixed to the underside, and polypropylene or mineral chip finish on the top surface.

FlameSEAL AR anti-root membrane has the prevental B2 antiroot additive incorporated into the bitumen giving high resistance to both root penetration and aggressive chemical attack from fertilisers and herbicides. This anti-root additive does not in any way affect the plant.
The FlameSEAL AR membrane is used in the ecoROOF® green roof system and in planter box applications.

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 Q-Drain 10mm drainage cell is used in pebble ballast roofs and will drain all water from the roof.

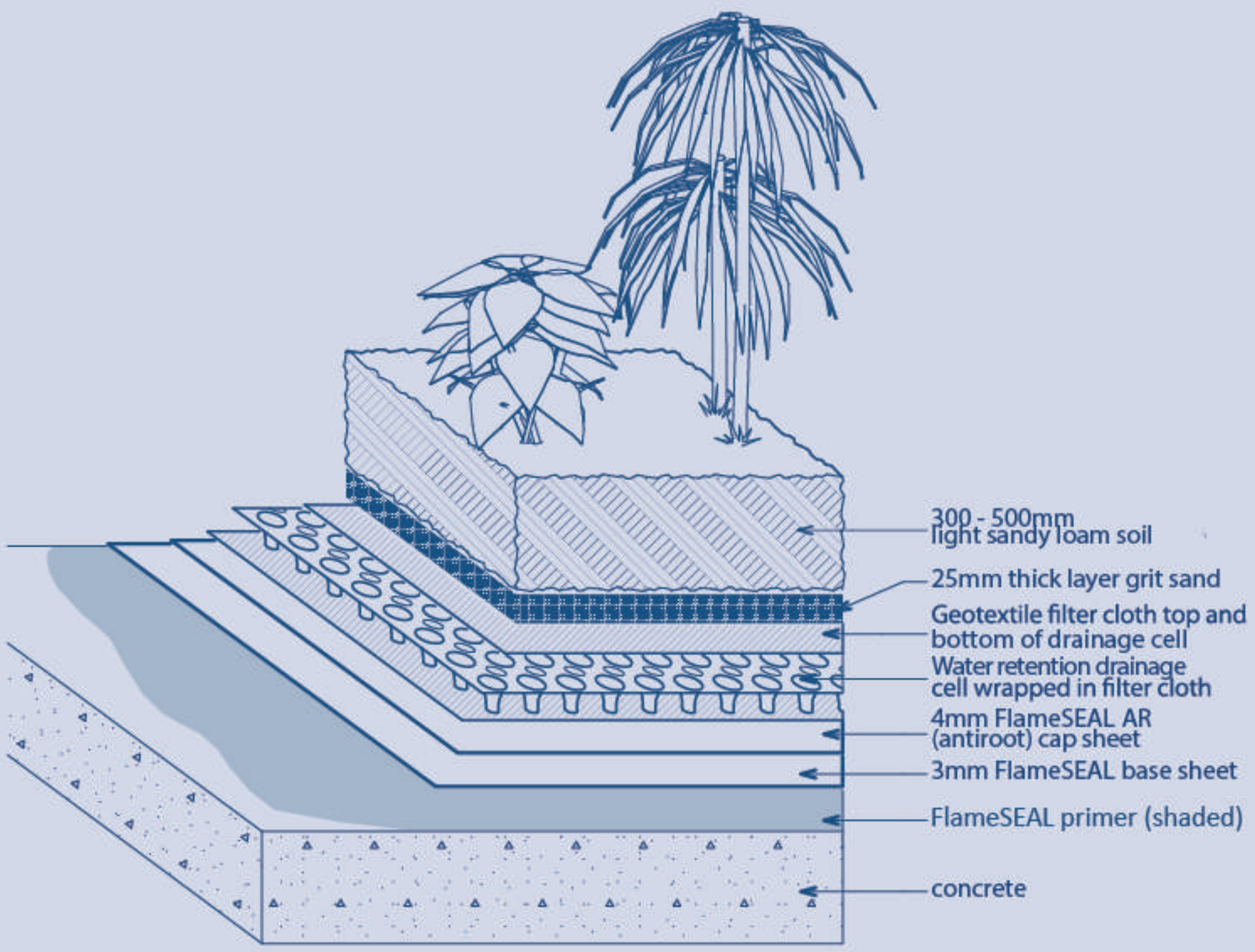
FILTER FABRIC

It is important that the filter fabric stops fines getting into the drainage cell, preventing the flow of water. The 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.

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.



ecoROOF™ 3D CUTAWAY

GREENSEAL APPLICATIONS (CONT)

FLAMESEAL AR MEMBRANE INSTALLATION

The two-layer fully torched FlameSEAL system is installed as outlined on pages 12-16. Ensure the two layers are fully torched and that all laps and penetration details are neatly formed and watertight.

GREENROOF SYSTEMS

ROOF DRAINS.

Detail drawings: page 41, 43

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.

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.

SCUPPER AND OVERFLOW OUTLETS

Detail drawings: page 41

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

Detail drawings: page 42

It is important that the membrane terminations are detailed correctly so water cannot track behind the membrane. The FlameSEAL 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 chocked off over time with soil fines. Refer to page 18 Green Roof Detail.

SOIL COVER

Cover the Greenseal system withlight 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 WPS

PEBBLE BALLAST SYSTEMS

Detail drawings: page 40, 41

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.

Installation

WARMSEAL ROOF SYSTEMS

SEALCO WARM ROOF PRODUCT DESCRIPTION

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

POLYISO INSULATION

Sealco's Isolex insulation is a polyiso board with a fibreglass face to allow the application of membranes to the top surface including peel & stick FlameSEAL bitymen.

The polyiso board is specifically designed as a warm roof insulation and comes with the system gurantee.

The boards can be supplied in various thicknesses to give the desired R-values.

CUT TO FALLS

Polyiso boards 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.

FIRE BEHAVOUR

Sealco Isolex plyiso boards meet the AST E84 flame spread index of ≤75 and smoke development ≤450 for code requirements of foam plastic roof insulation. Detailed physical properties can be downloaded from the warmseal web page on www.sealco.co.nz

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 WarmSEAL 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 flood test should be carried out after the membrane has been installed

Installation

DECK APPLICATIONS

Refer to page 12 for substrate requirements. On timber decks, the supporting joists are to be installed at 400mm centres in each direction with 19mm CCA treated H3.2 grade plywood, glue and screw fixed.

The membrane is installed in the same way as outlined on pages 12 - 14, with the following additional requirements or adjustments.

1. TILED DECK APPLICATIONS

For a tiled deck application we recommend EpiSPAN or EcoTUFF with DeckSEAL system for Tiling .

DO NOT tile directly onto the FlameSEAL waterproofing Membrane

2. LOOSE-LAID DUCKBOARD / PAVED APPLICATIONS

Lay the timber bearers so that water will be able to flow freely to the water outlet. Install EPDM impact isolation pads placed at 300mm centres to ensure the FlameSEAL 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.

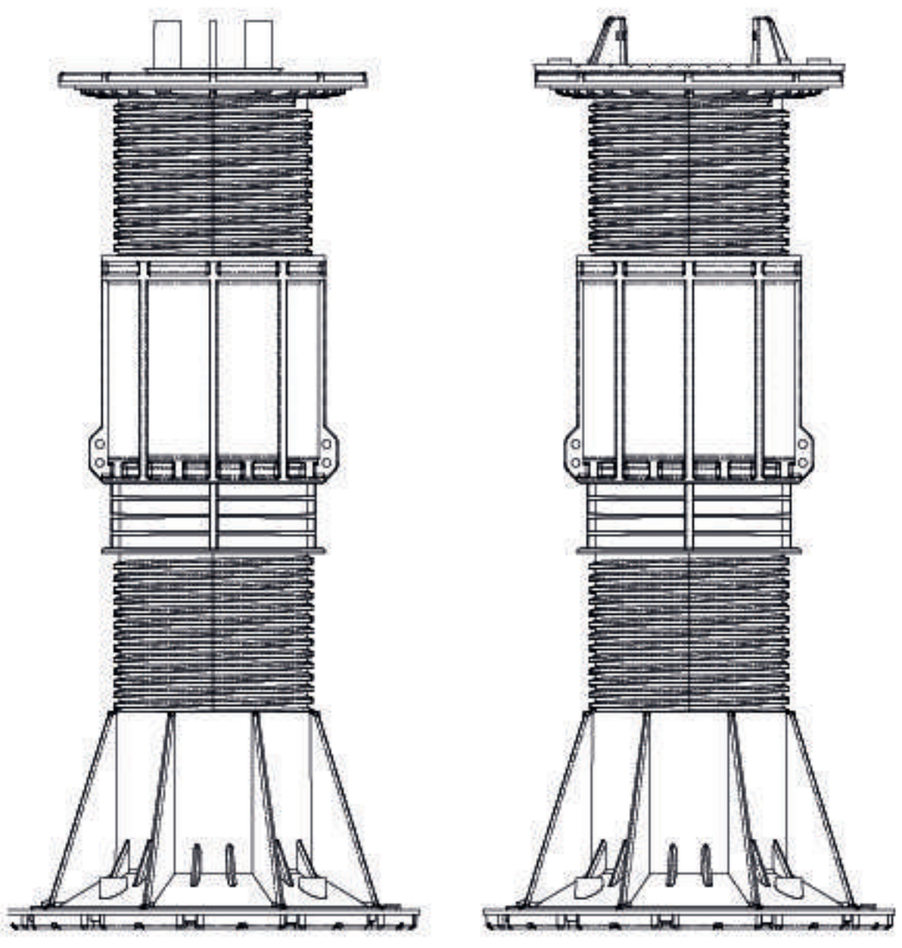
Timber raft systems can also be used on ecoJACKS using the timber Bearer fitting in place on the spacer tab.

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.

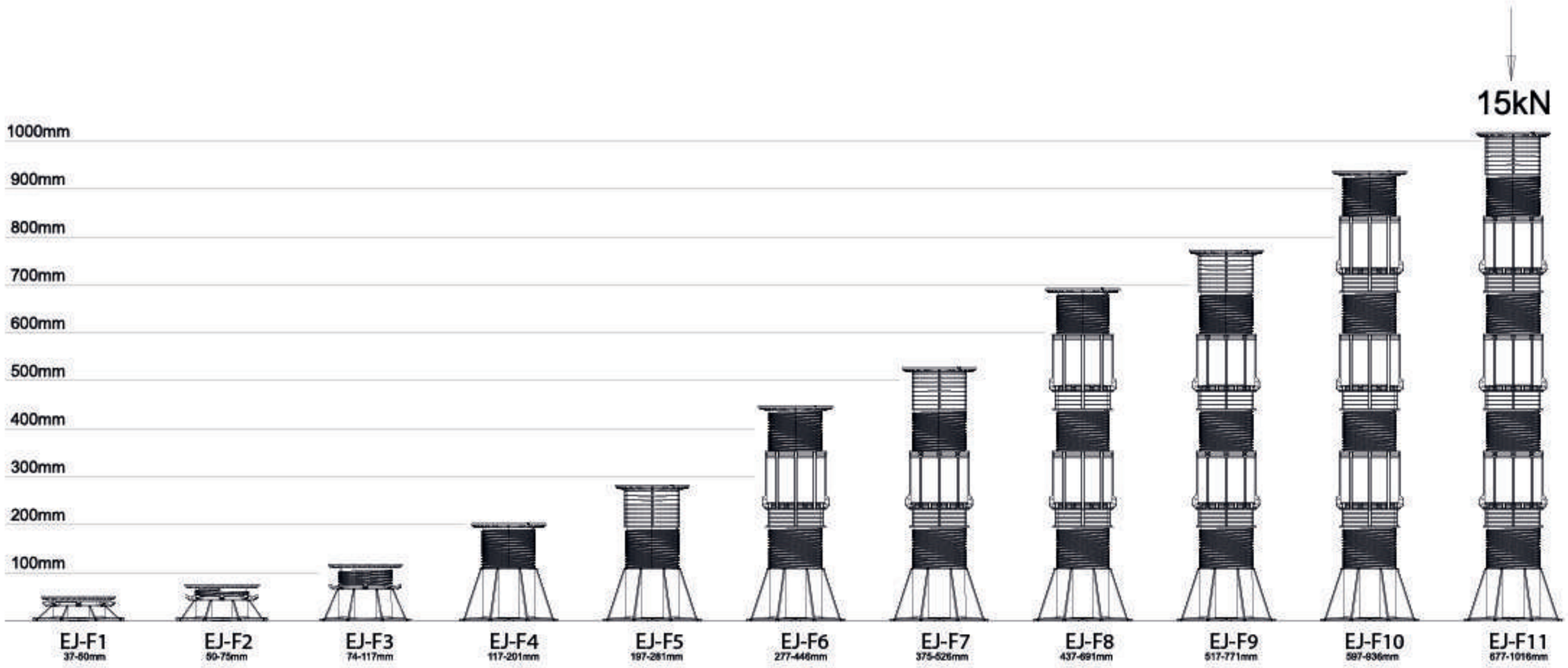
EcoJACK paver supports can be installed directly onto the FlameSEAL membrane. They are available in a 20mm to 50mm fixed height support, or in a range of adjustable supports.

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.

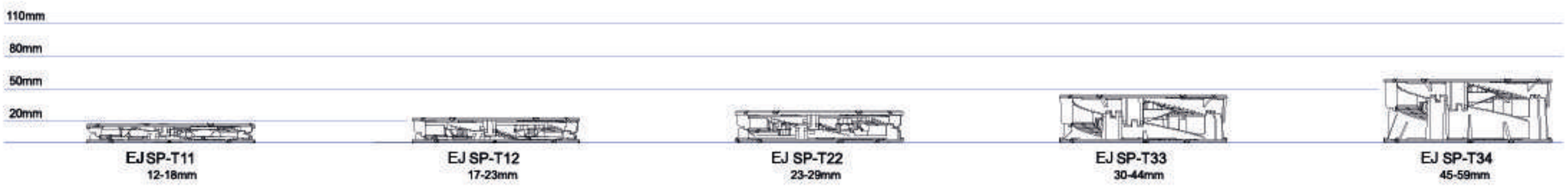


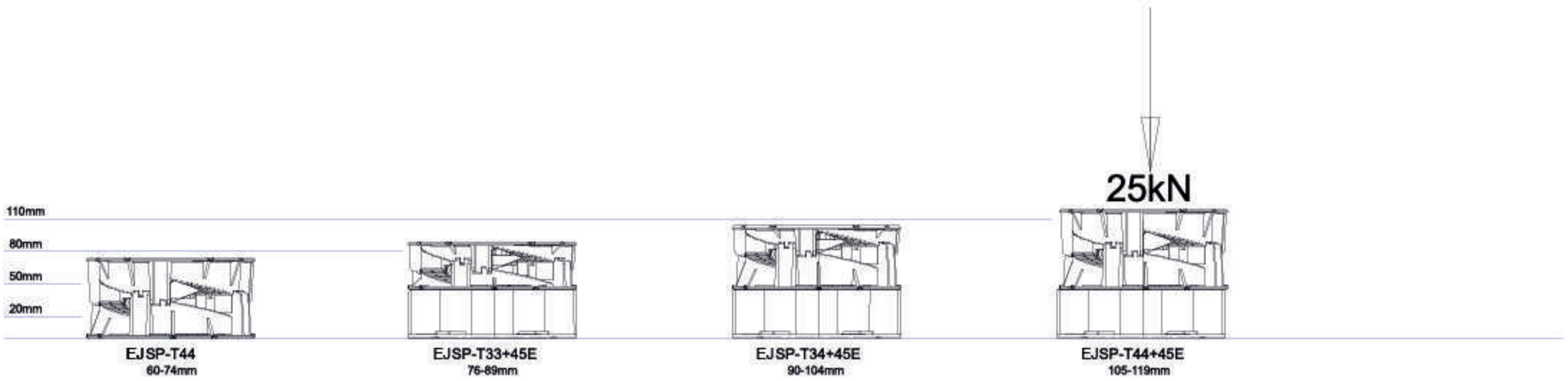
Example of EcoJACK Paver Support

ECOJACK Drawings

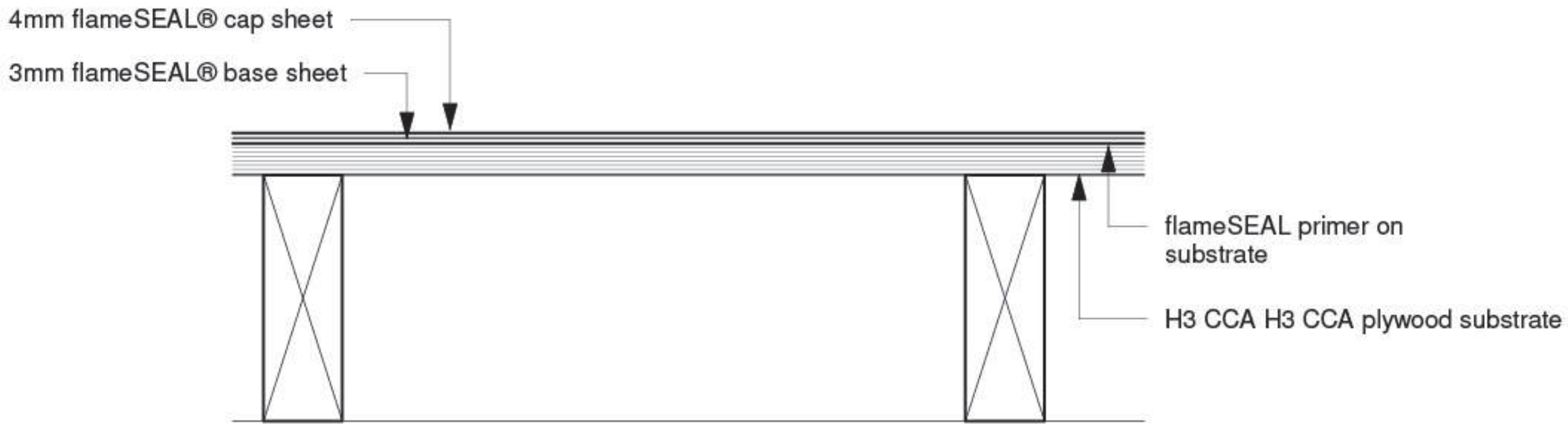


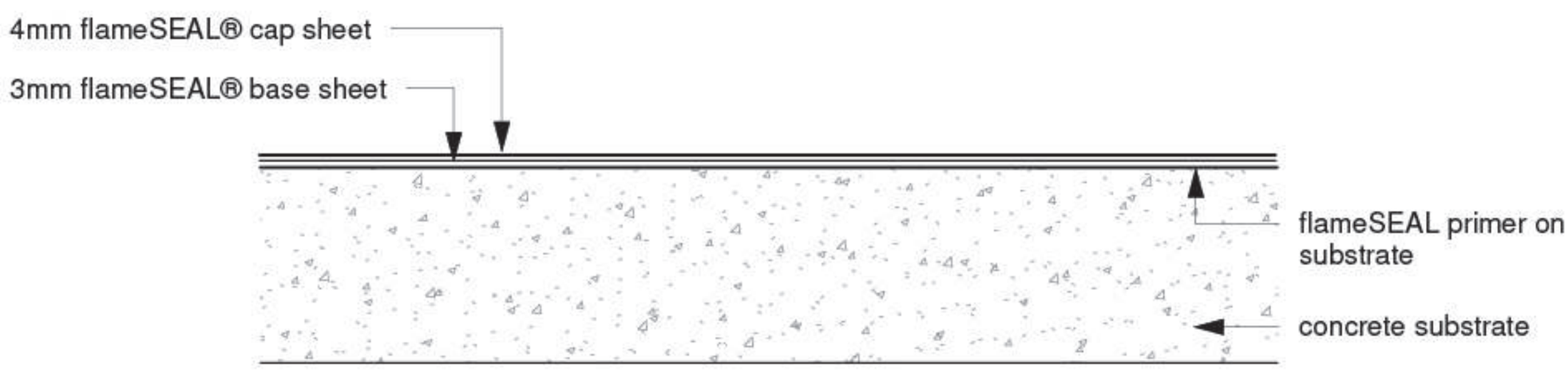
ECOJACK HEIGHT CHART





Detail Drawings

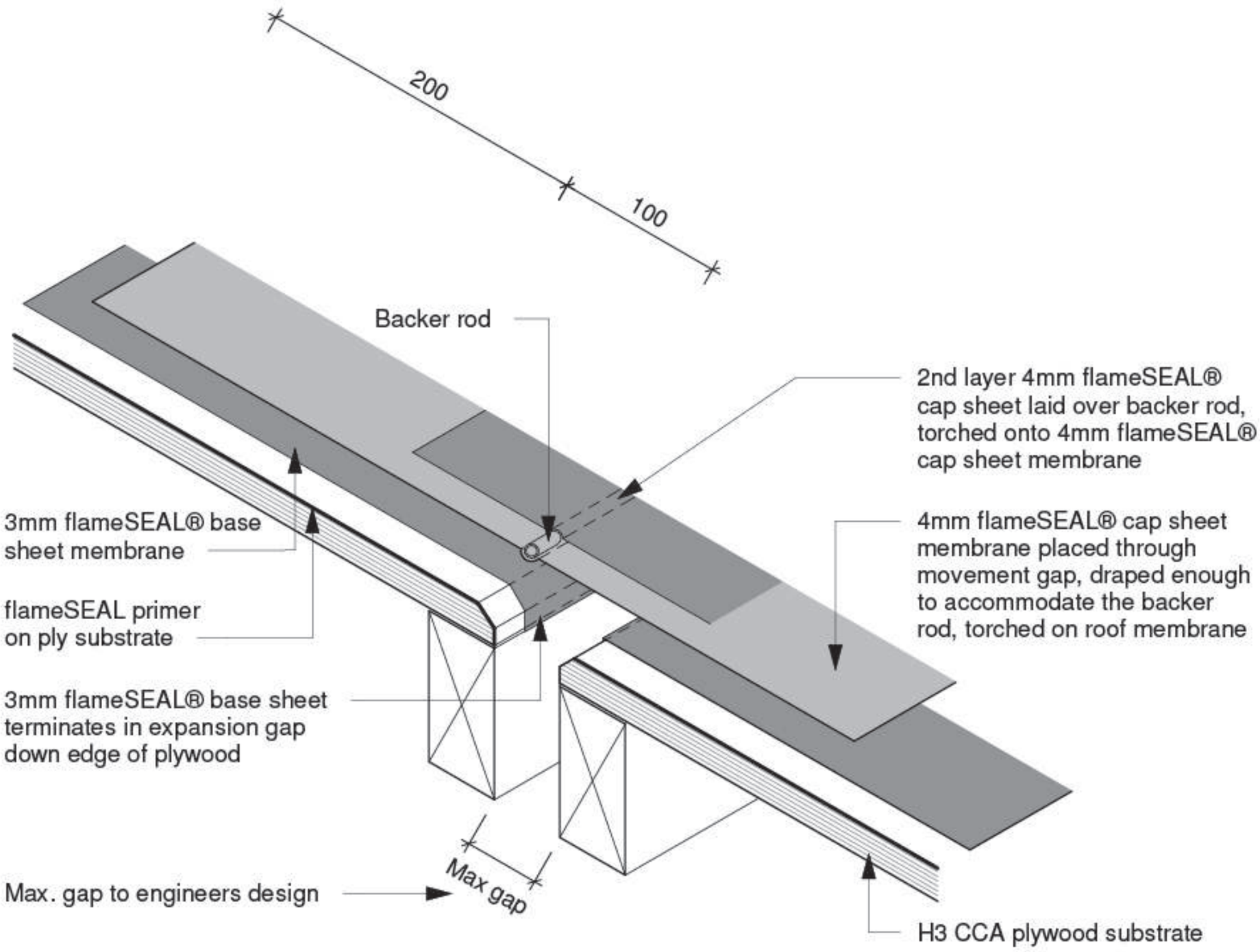




fS D01 - Substrate Options

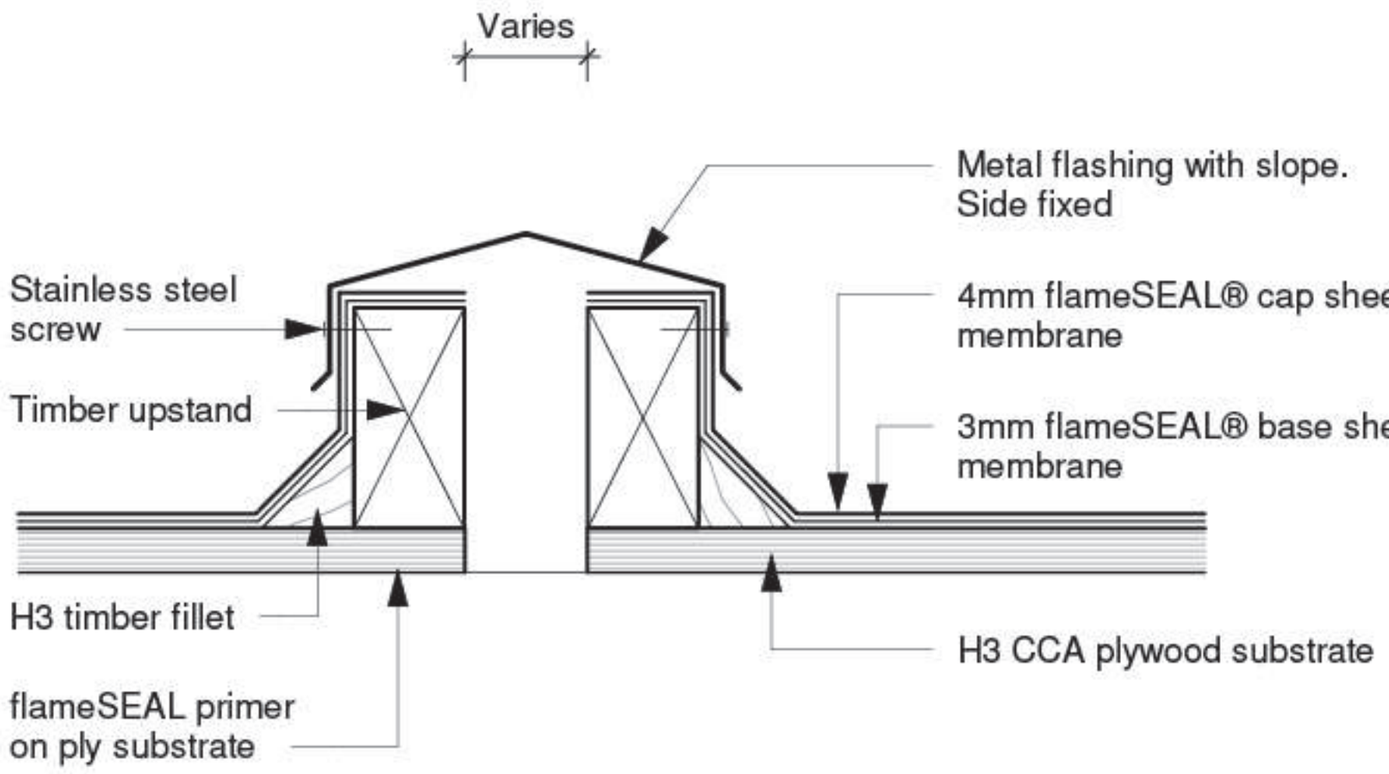
Revision: 10 September 2019

Detail Drawings



fS D02 - Ply Substrate Expansion Joint

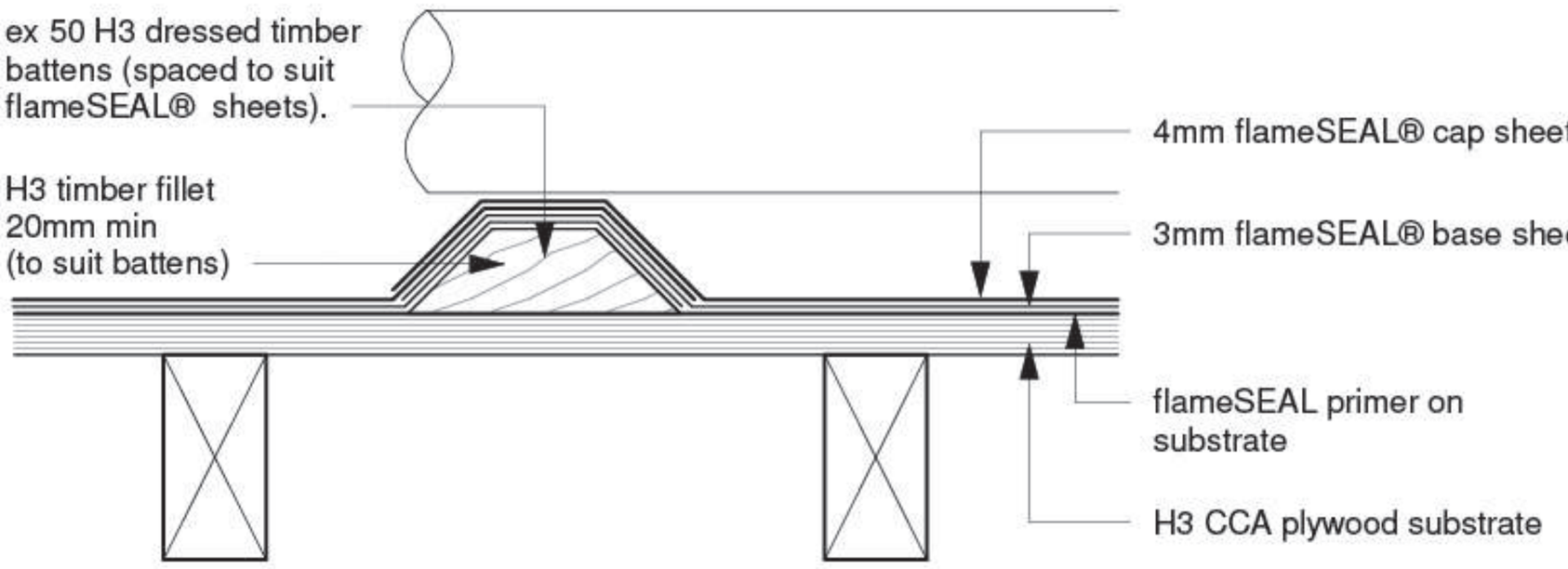
Revision: 10 September 2019



fS D03 - Roof expansion cap detail

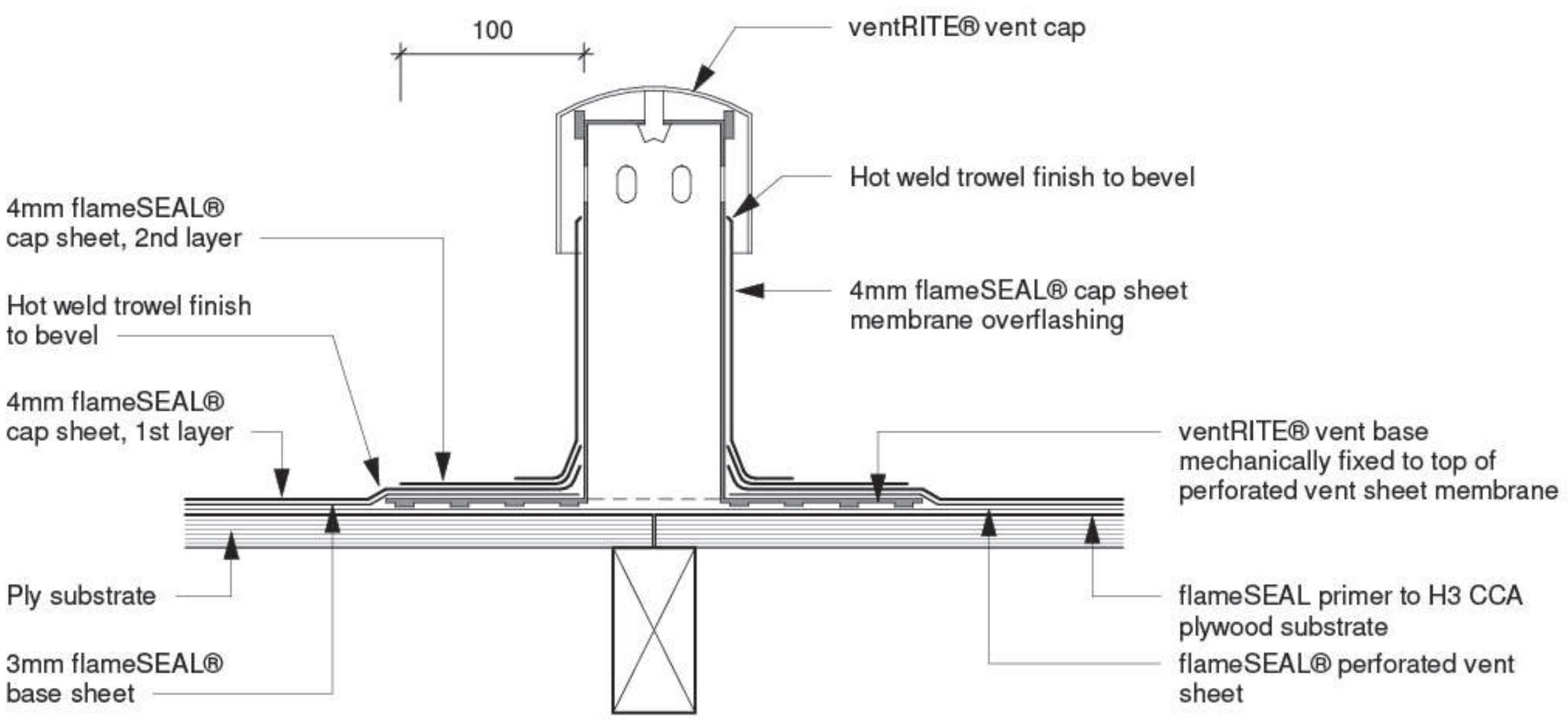
Revision: 10 September 2019

Detail Drawings



fS D04 - Batten Join for Services

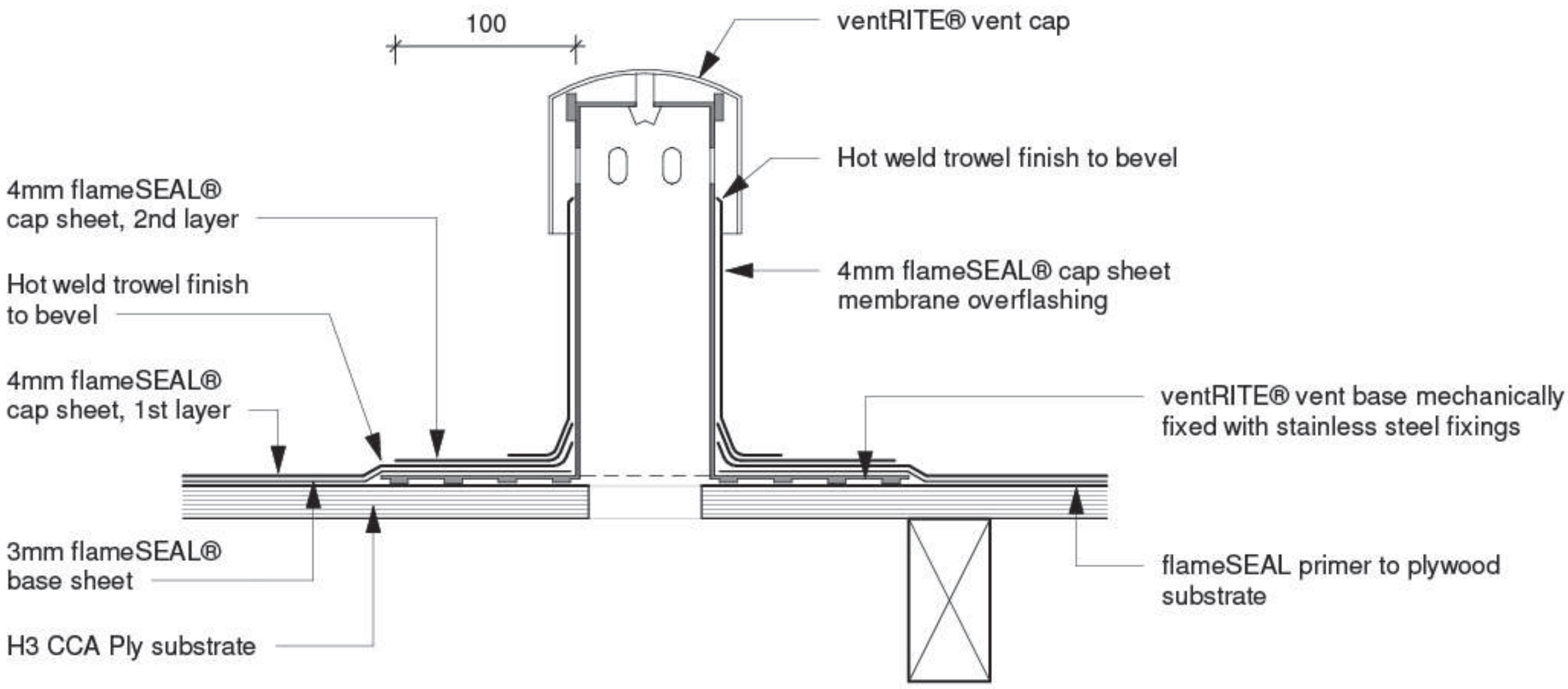
Revision: 10 September 2019



fS D05 - ventRITE® Moisture Vent Type 1

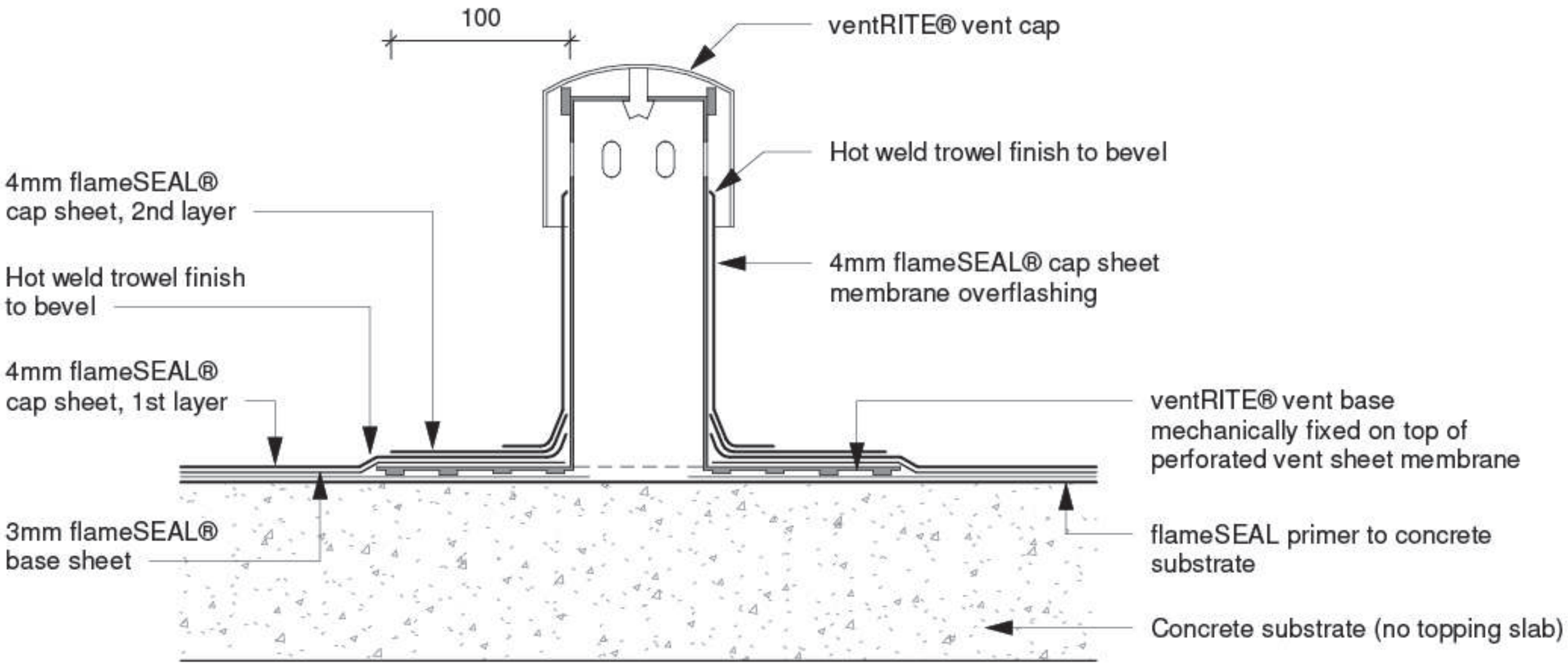
Revision: 10 September 2019

Detail Drawings



fS D06 - ventRITE® Moisture Vent Type 2

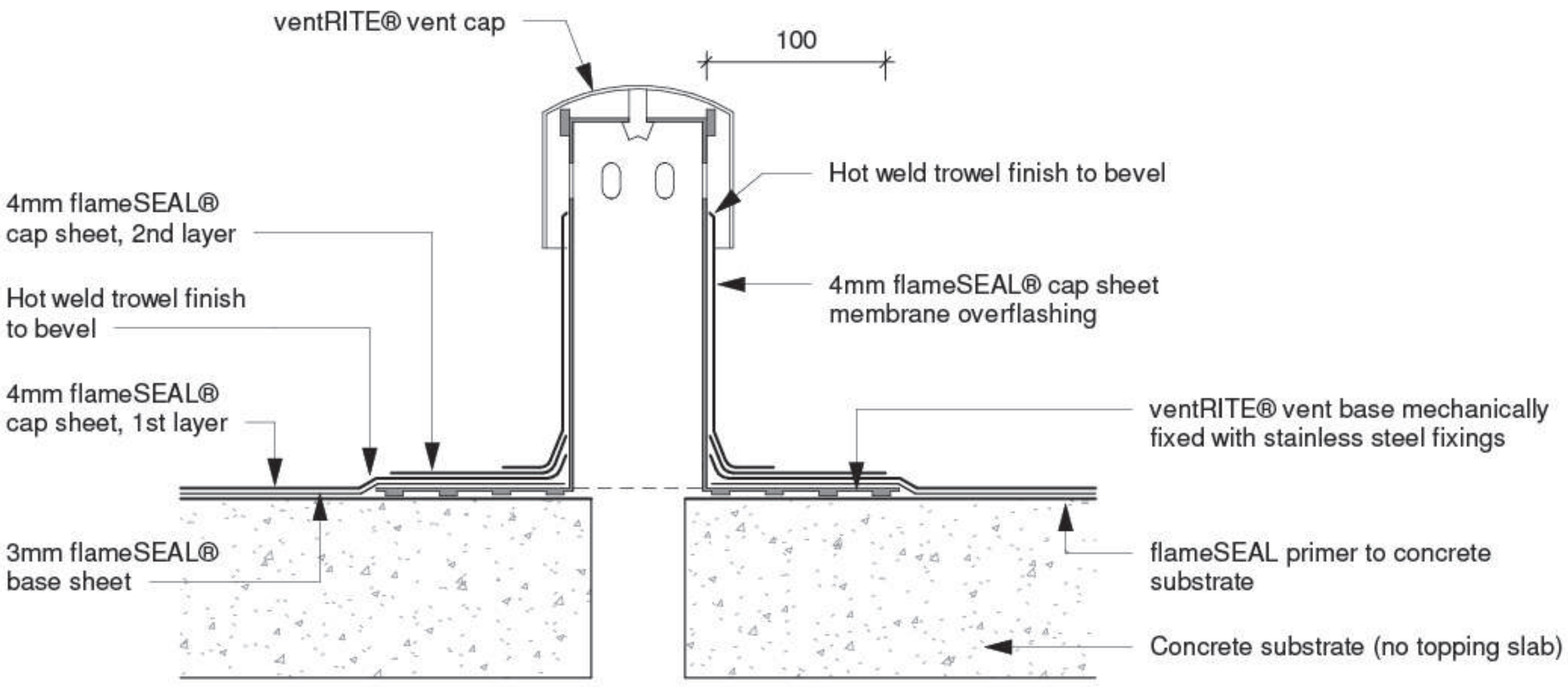
Revision: 10 September 2019



fS D07 - ventRITE® Moisture Vent Type 1

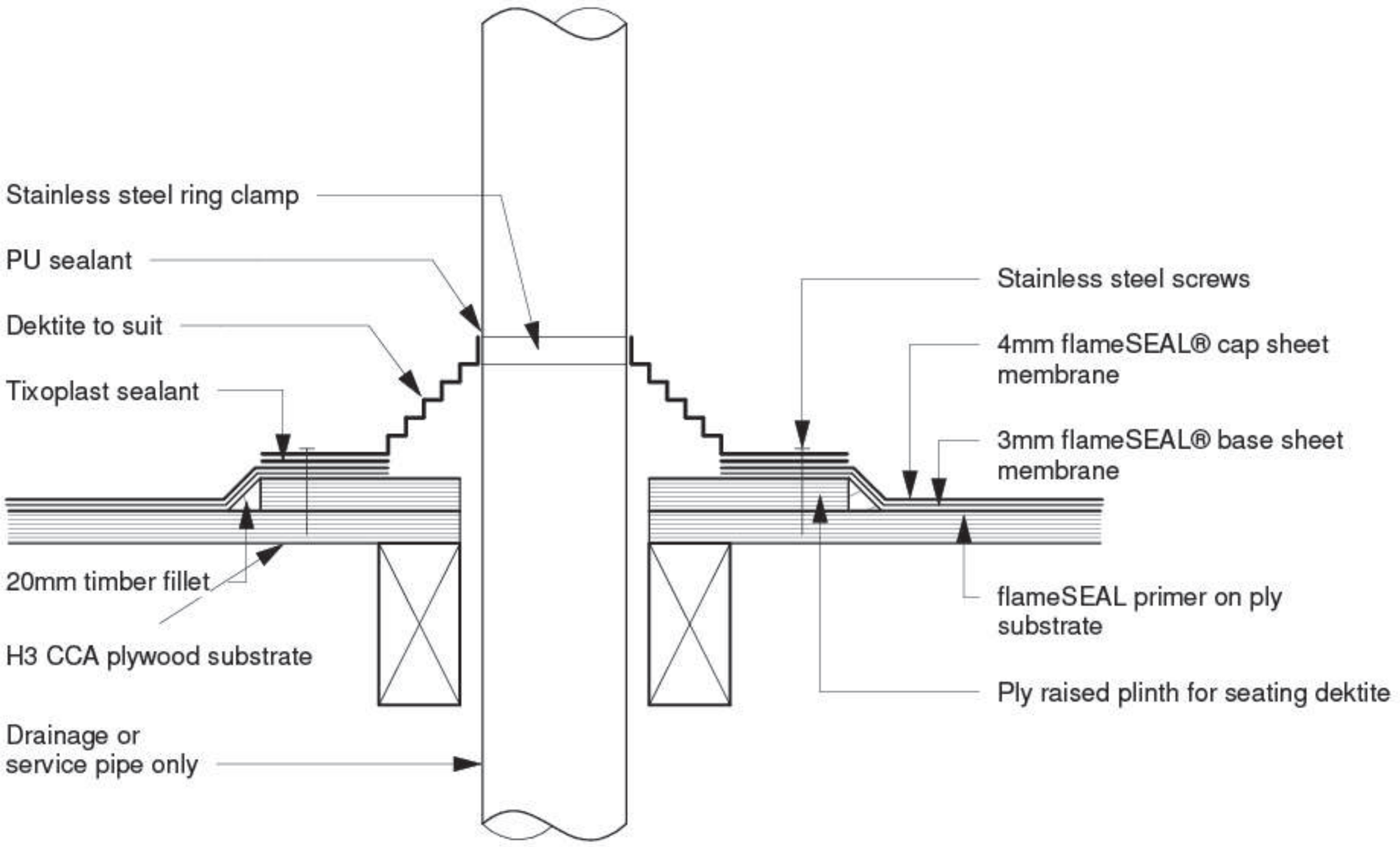
Revision: 10 September 2019

Detail Drawings



fS D06 - ventRITE® Moisture Vent Type 2

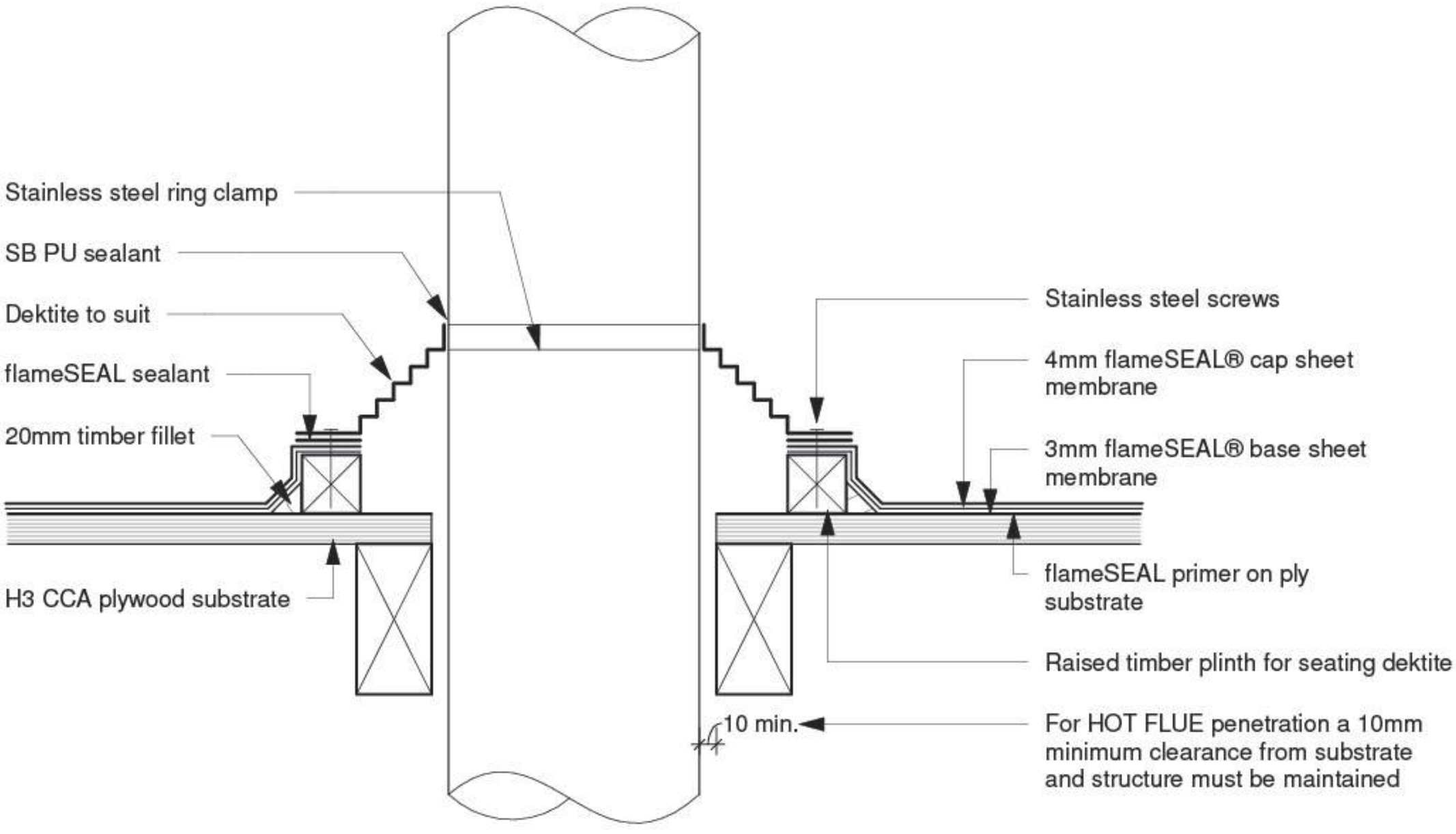
Revision: 10 September 2019



fS D09 - Pipe Penetration - Dektite

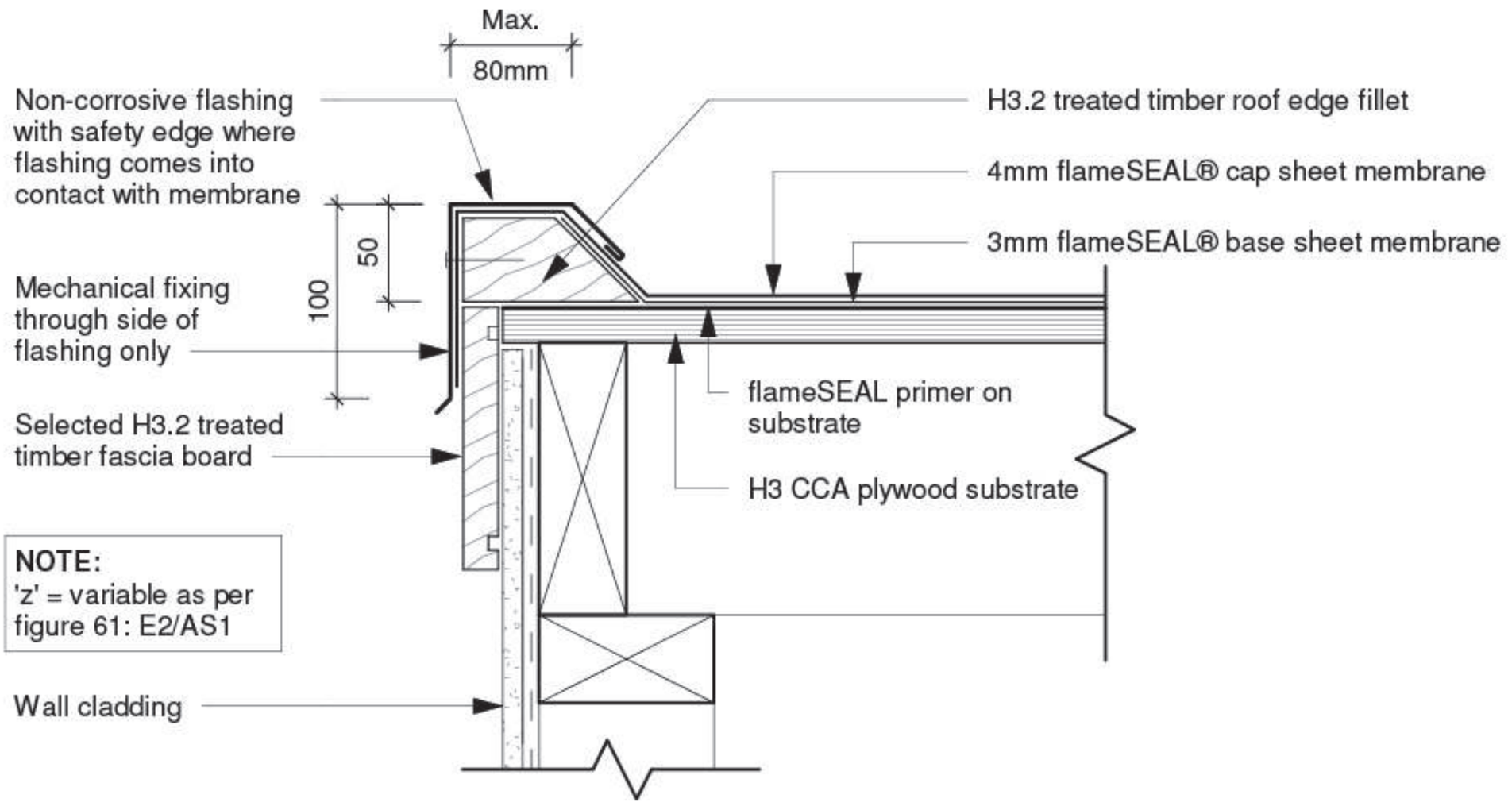
Revision: 10 September 2019

Detail Drawings



fS D10 - Flue Penetration - Dektite

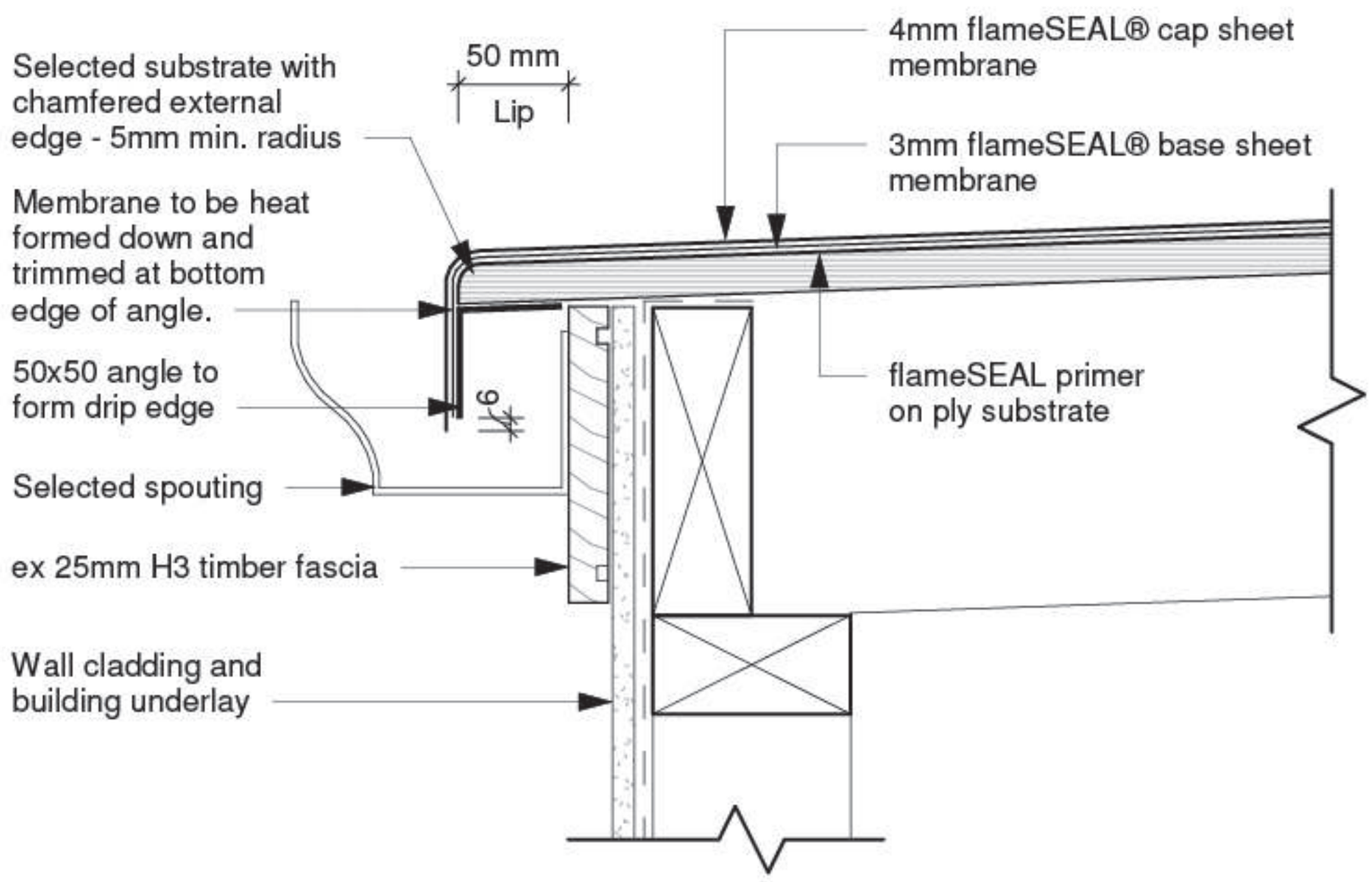
Revision: 10 September 2019



fS D11 - Barge Detail

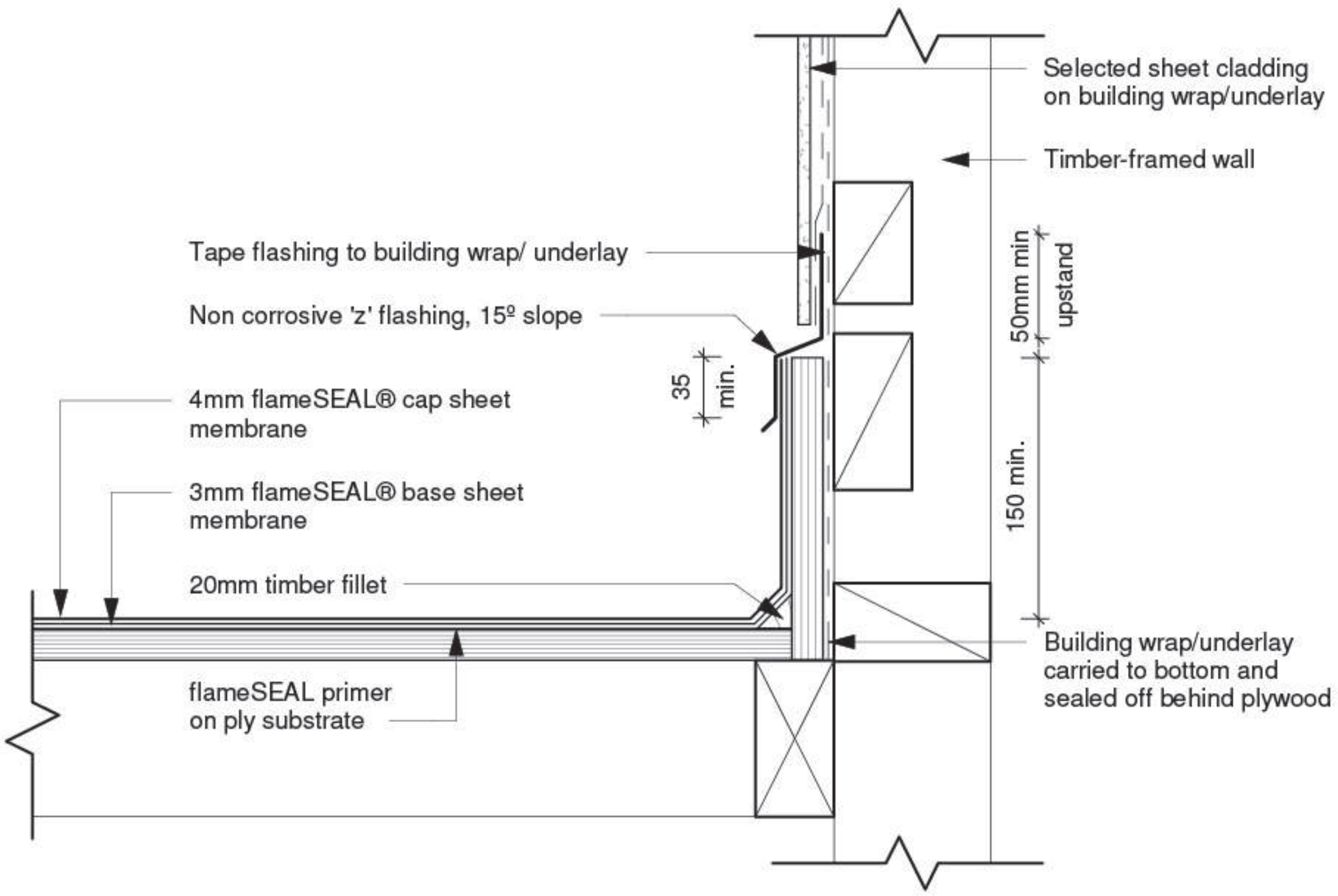
Revision: 10 September 2019

Detail Drawings



fS D12 - External Gutter

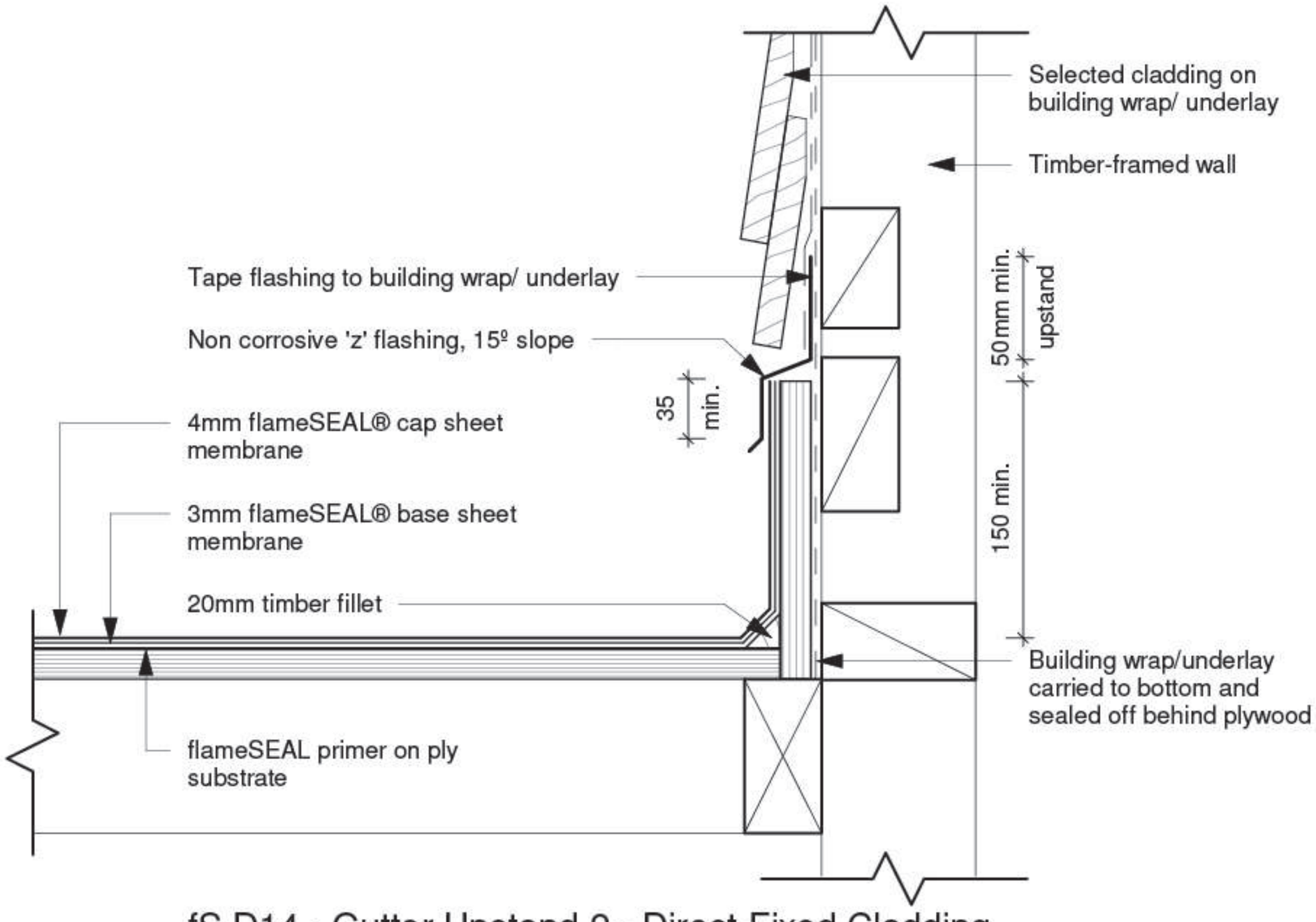
Revision: 10 September 2019



fS D13 - Gutter Upstand 1 - Direct-Fixed Cladding

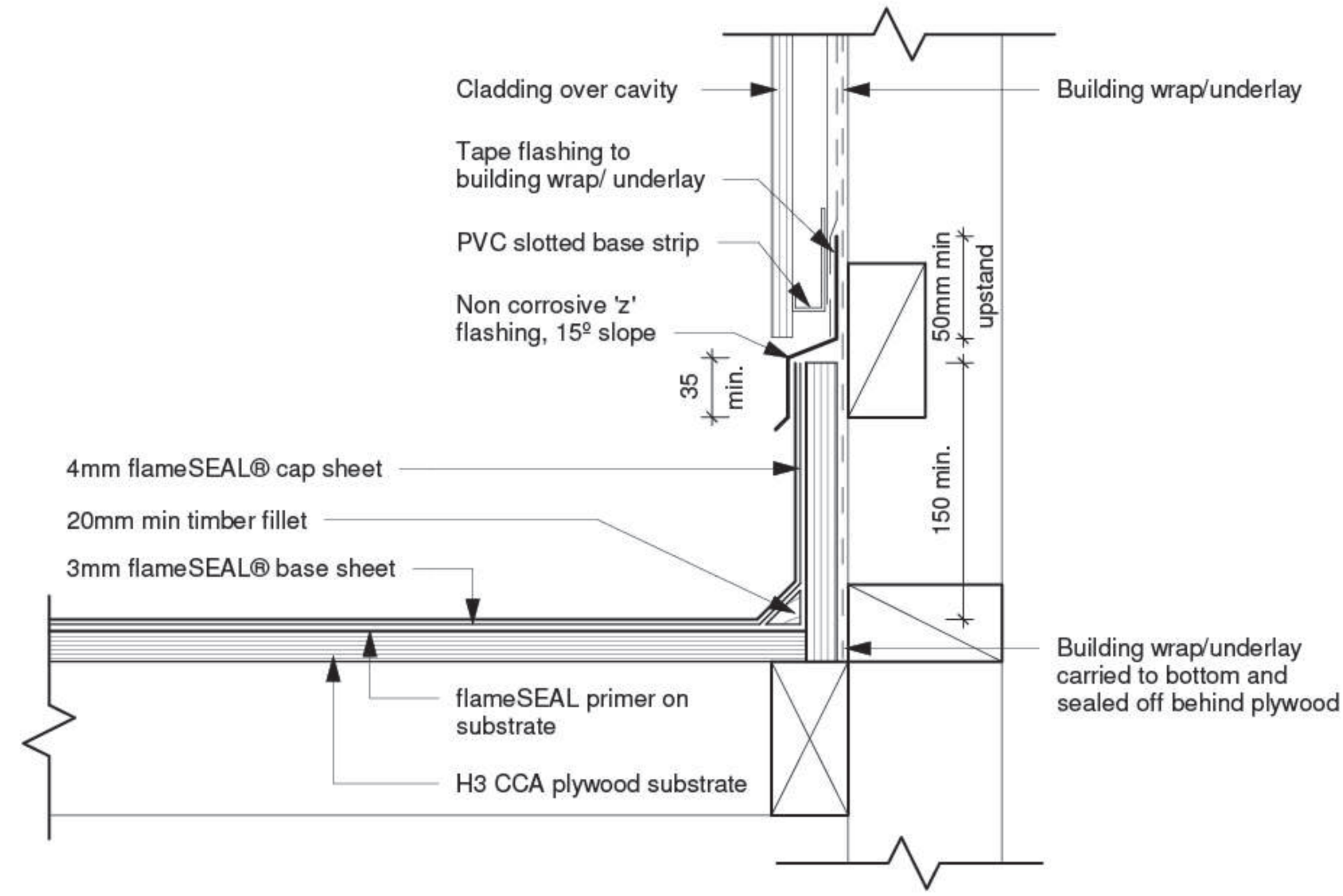
Revision: 10 September 2019

Detail Drawings



fS D14 - Gutter Upstand 2 - Direct-Fixed Cladding

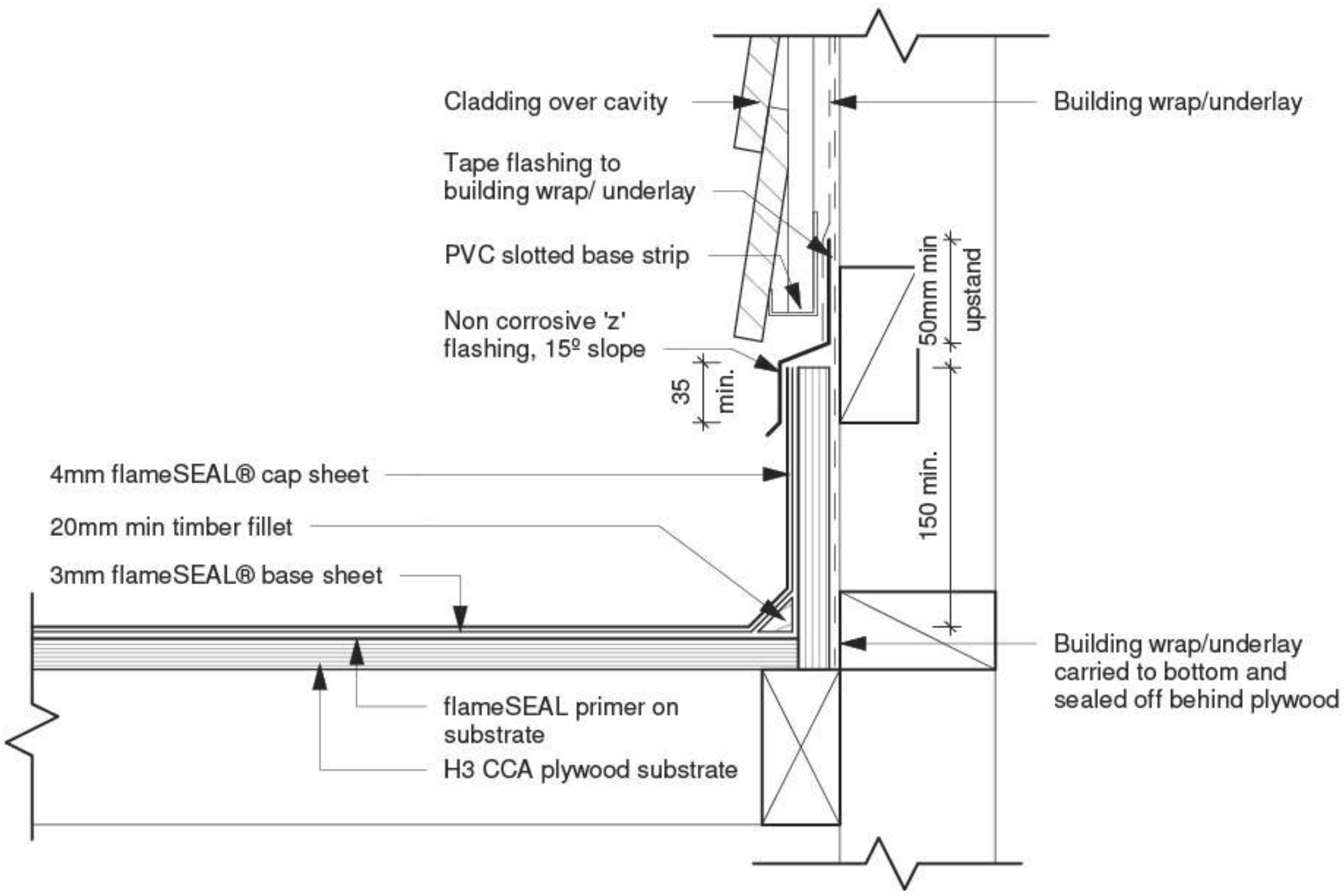
Revision: 10 September 2019



fS D15 - Gutter Upstand - Cladding over Cavity Type 1

Revision: 10 September 2019

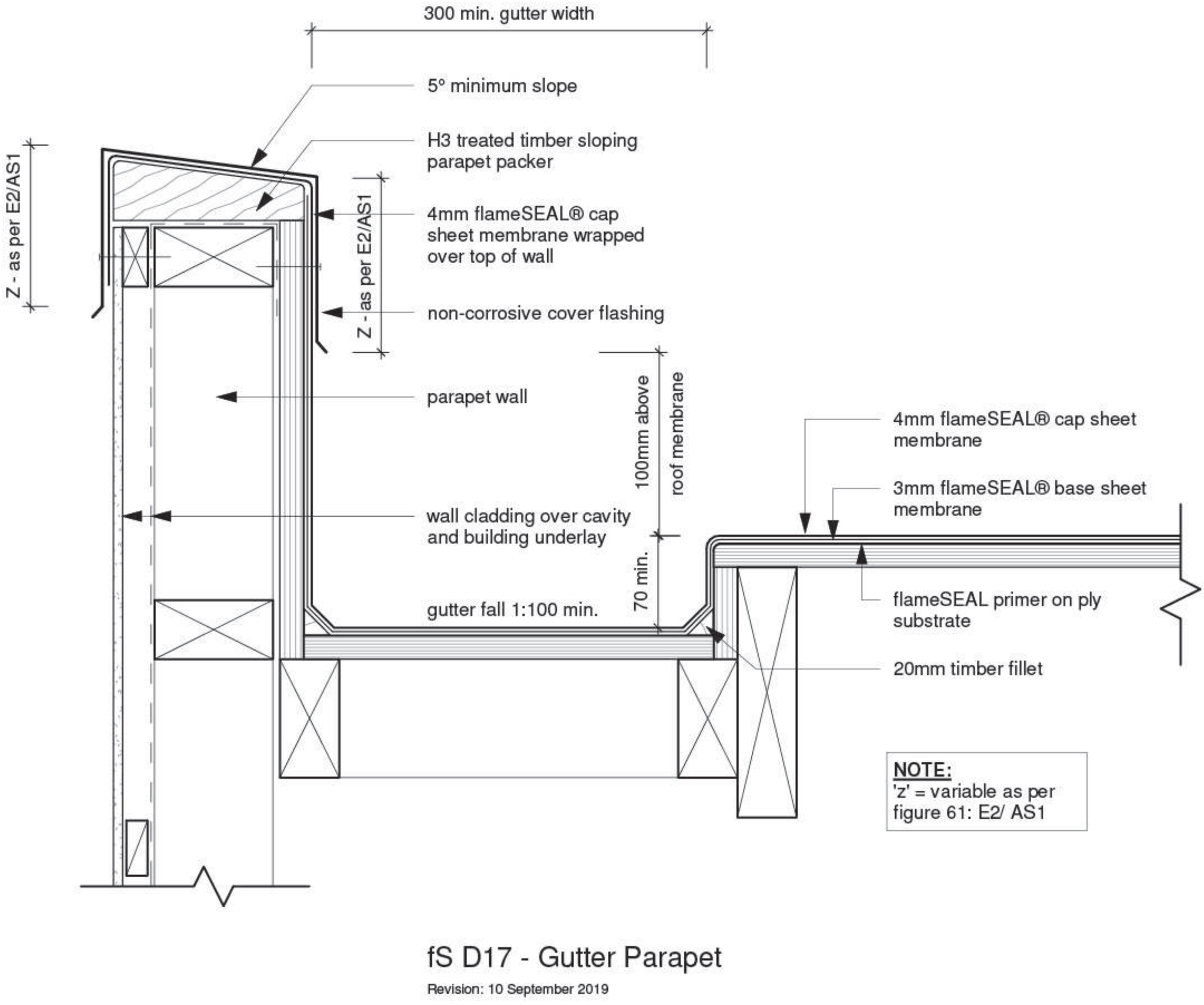
Detail Drawings



fS D16 - Gutter Upstand - Cladding over Cavity Type 2

Revision: 10 September 2019

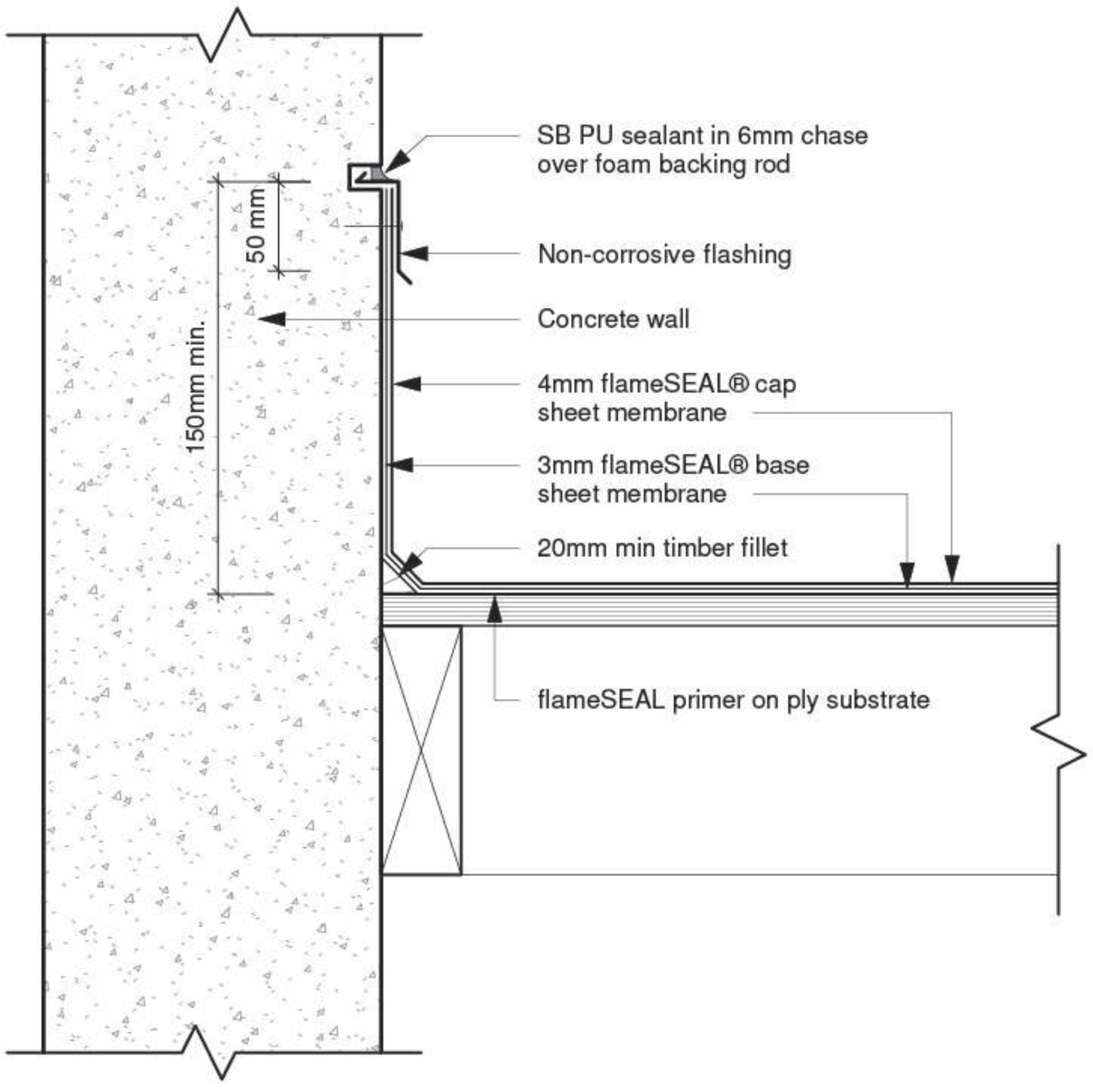
Detail Drawings



fS D17 - Gutter Parapet

Revision: 10 September 2019

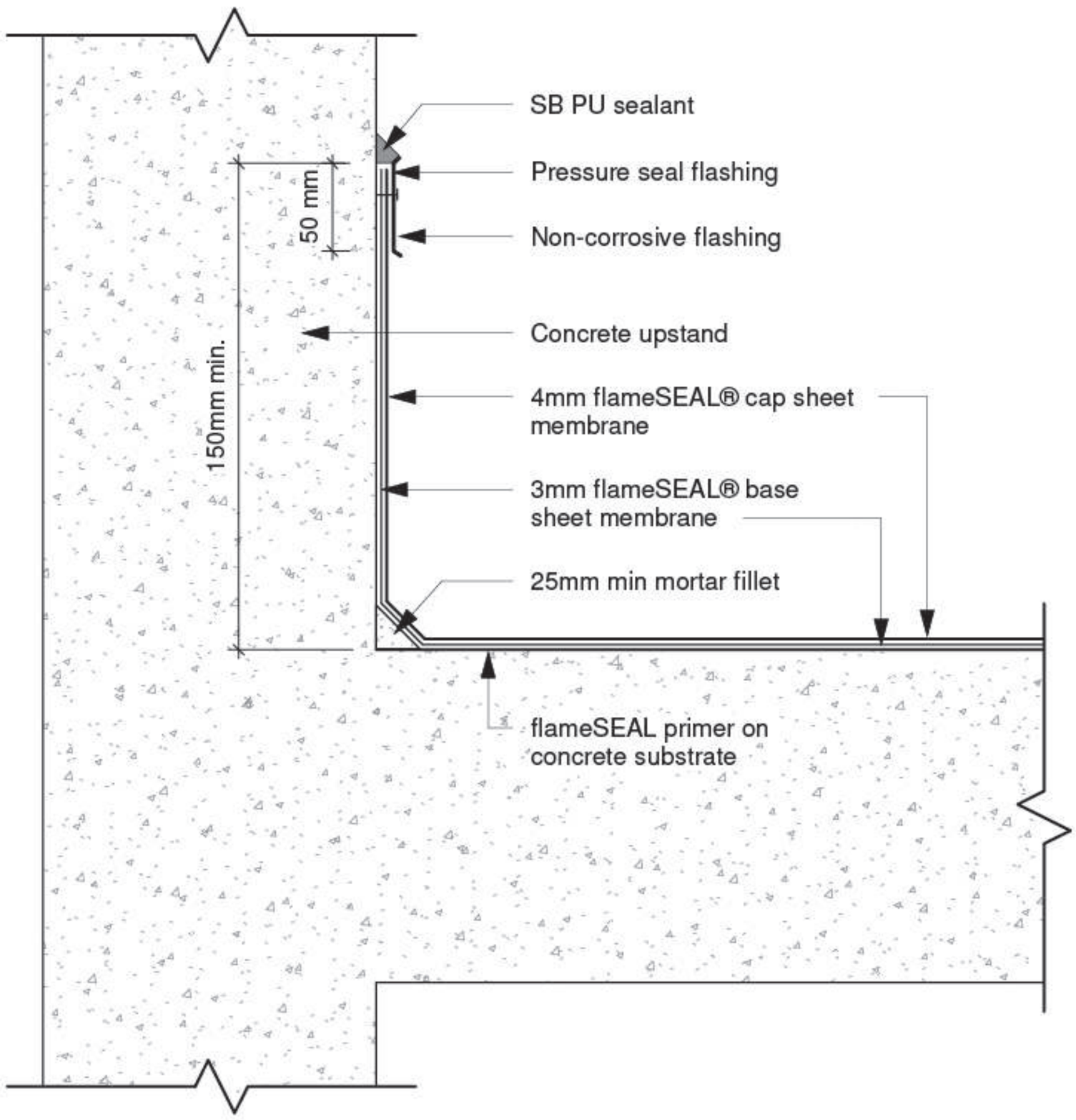
Detail Drawings



fS D18 - Chase Termination

Revision: 10 September 2019

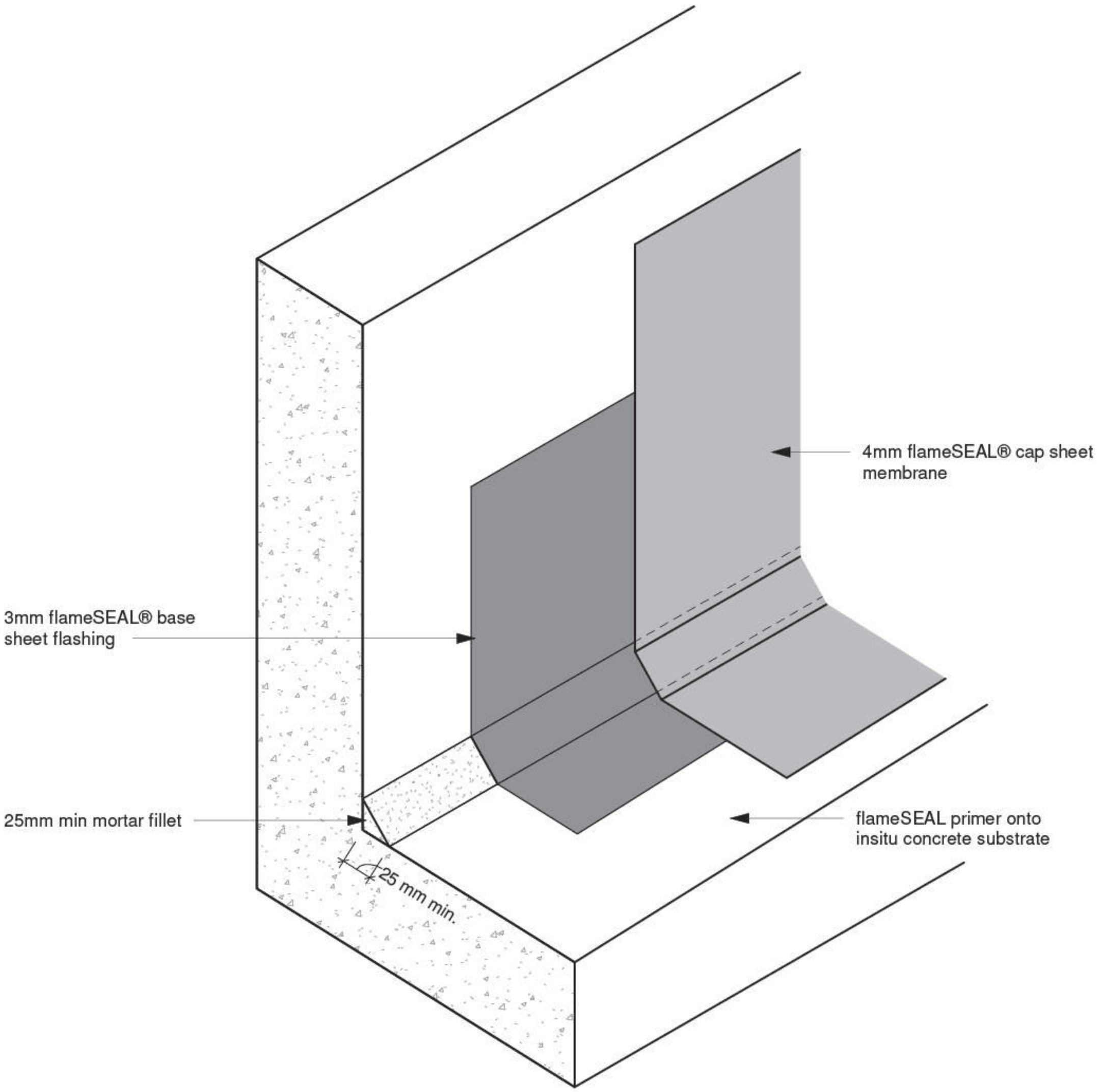
Detail Drawings



fS D19 - Compressed Termination

Revision: 10 September 2019

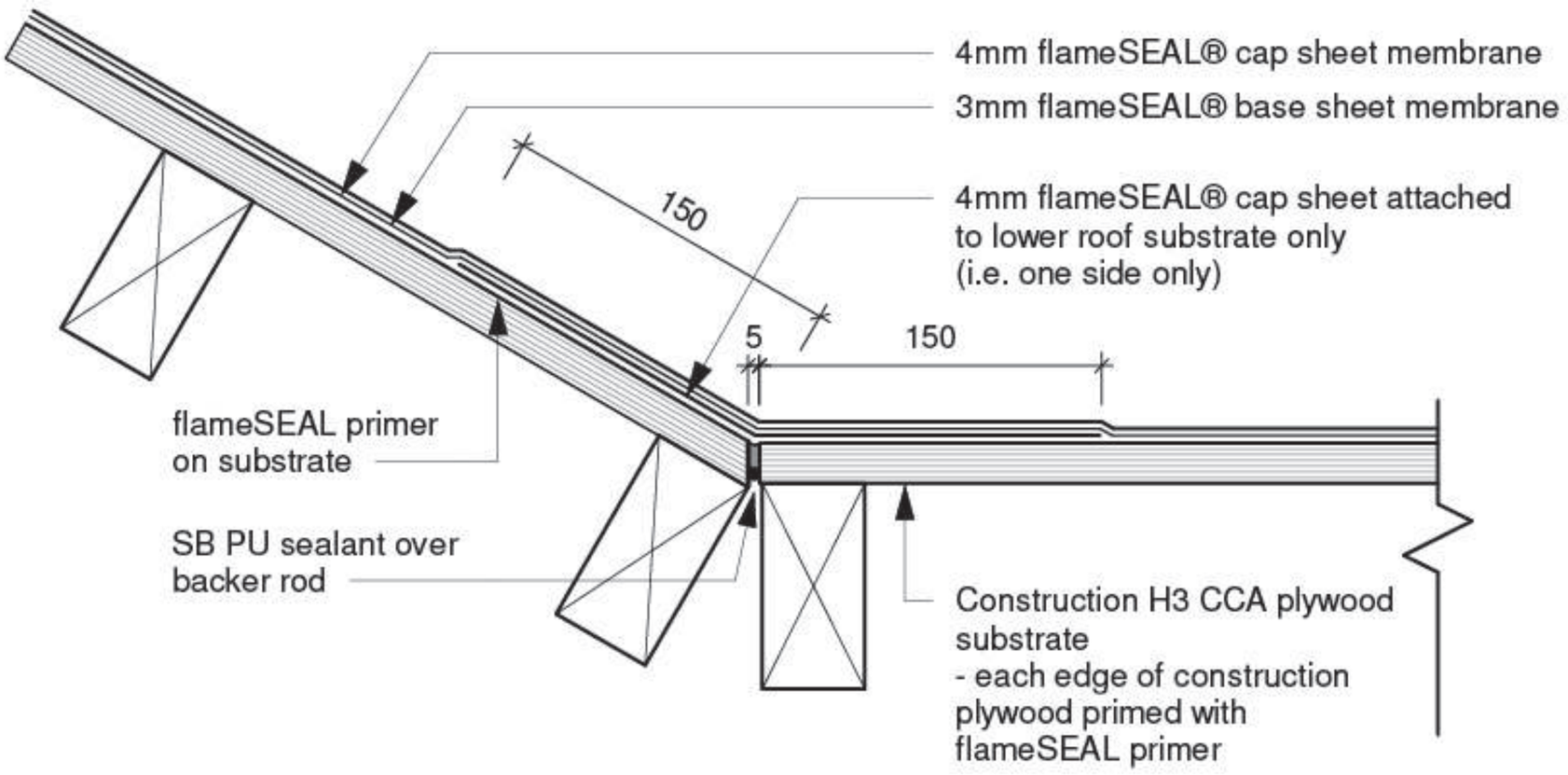
Detail Drawings



fS D20 - Concrete Upstand Cut-away

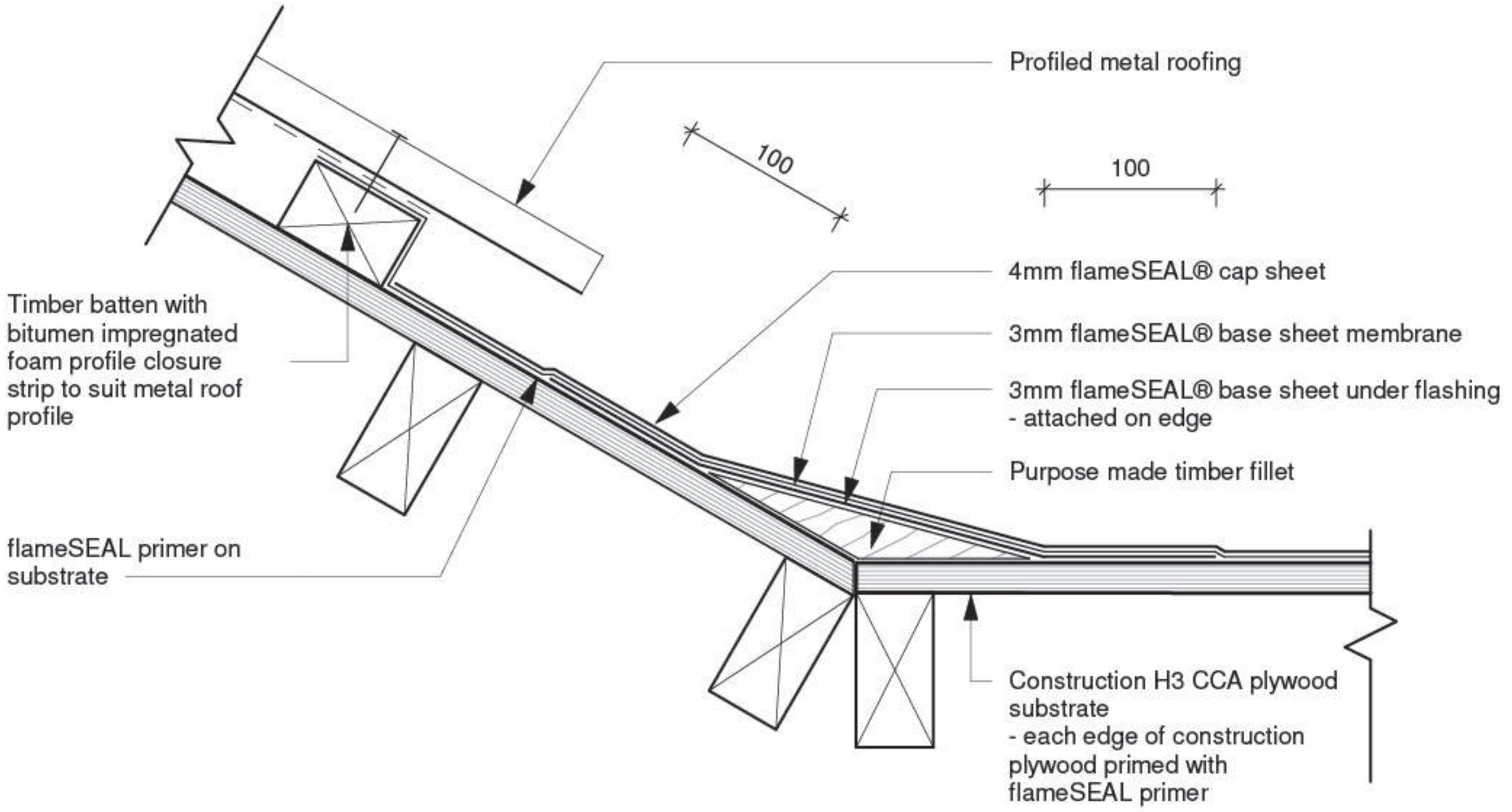
Revision: 10 September 2019

Detail Drawings



fS D21 - Internal Ply Angle - Type 1

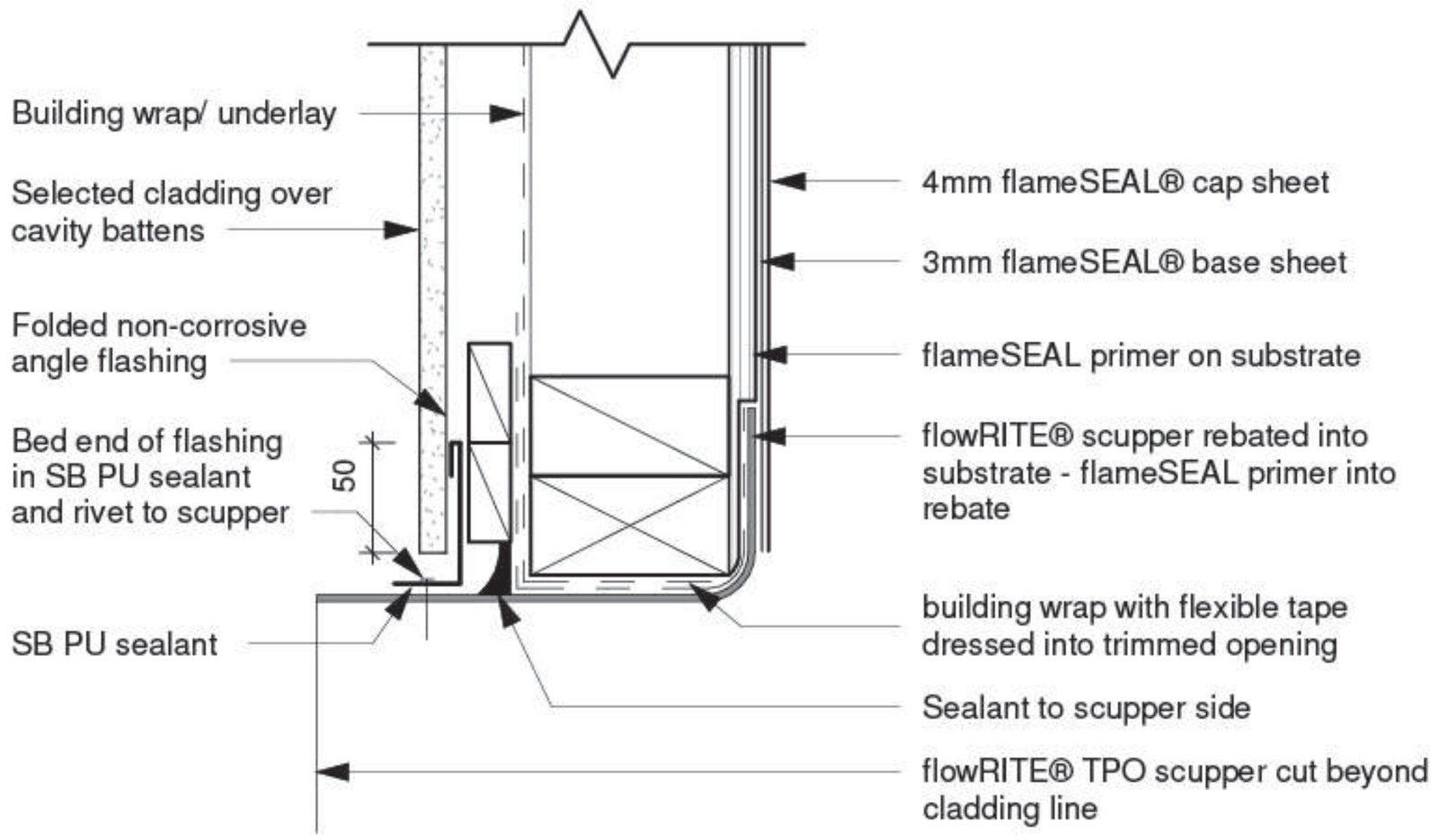
Revision: 10 September 2019



fS D22 - Internal Ply Angle - Type 2

Revision: 10 September 2019

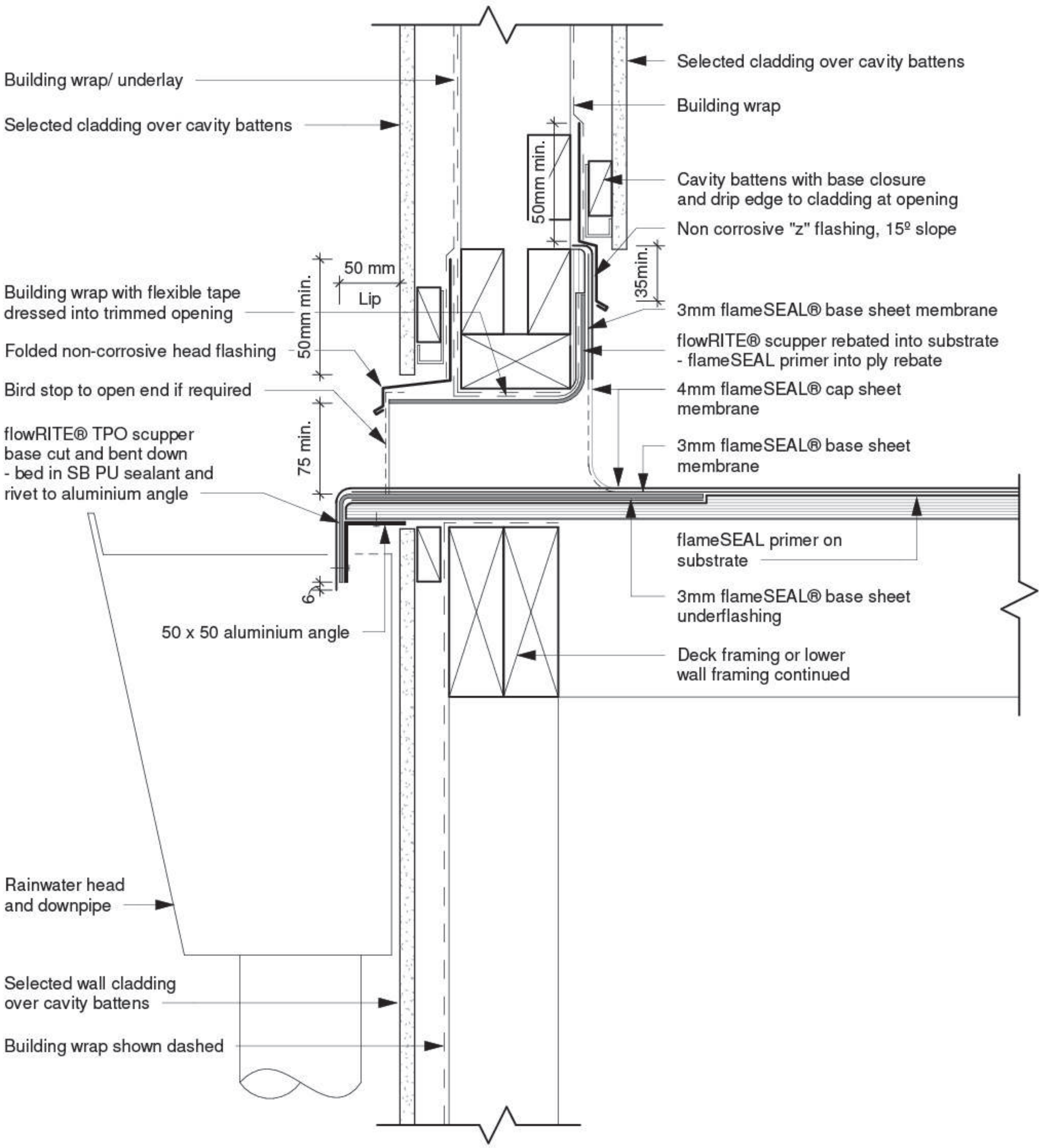
Detail Drawings



fS D23 - flowRITE® Outlet Scupper Plan

Revision: July 2019

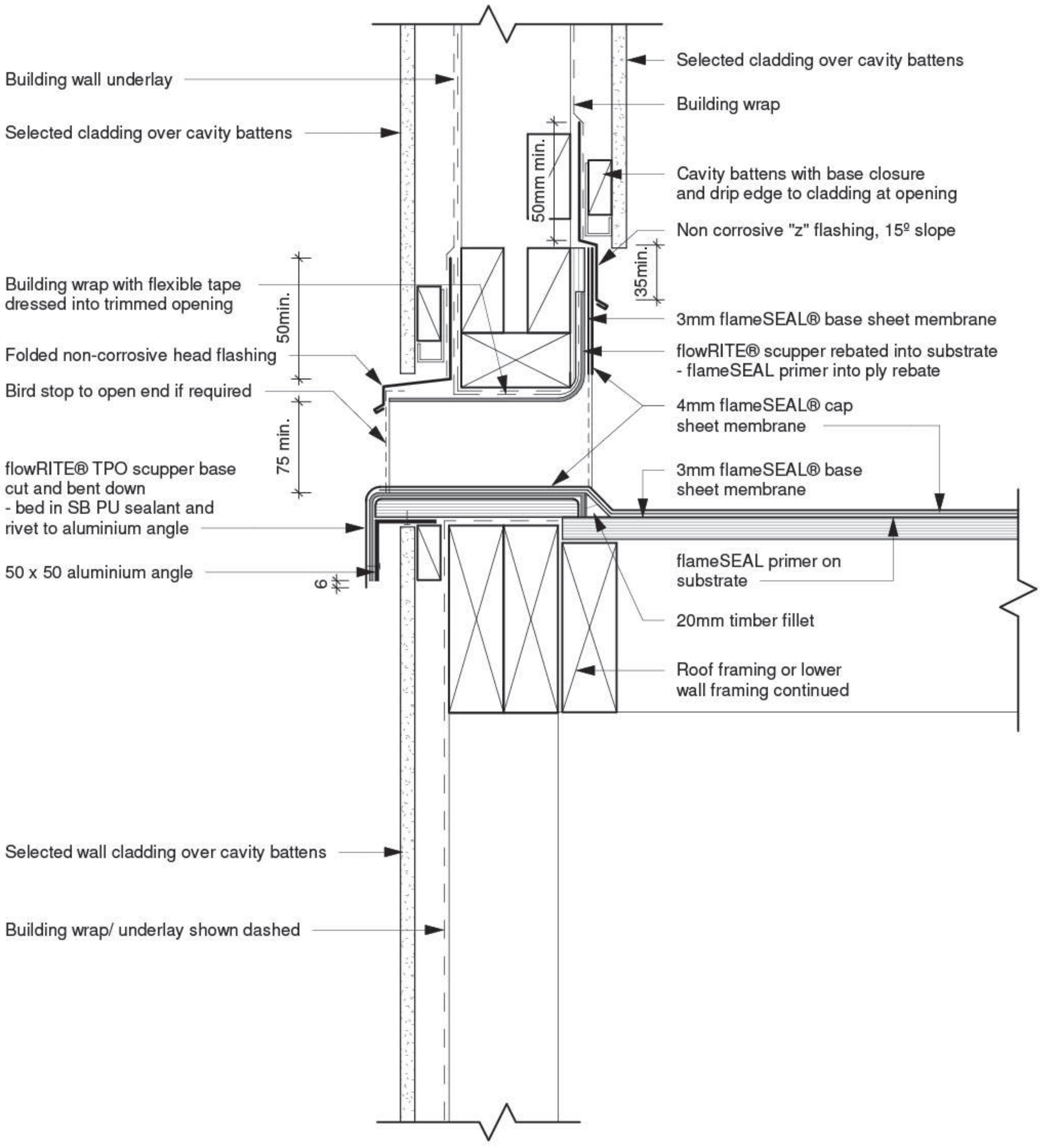
Detail Drawings



fS D24 - flowRITE® Outlet Scupper Section

Revision: 10 September 2019

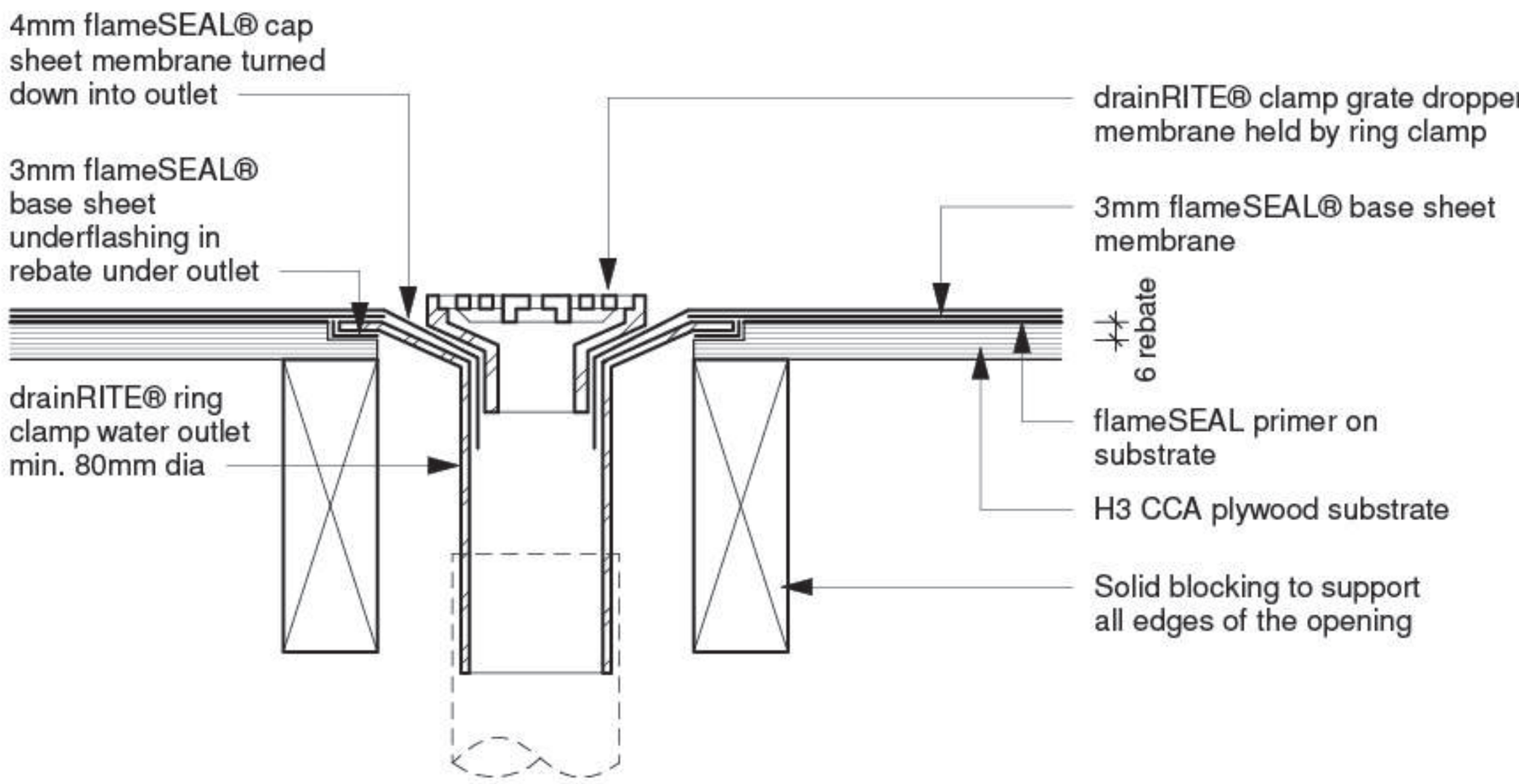
Detail Drawings



fS D25 - flowRITE® Outlet Scupper Section 1

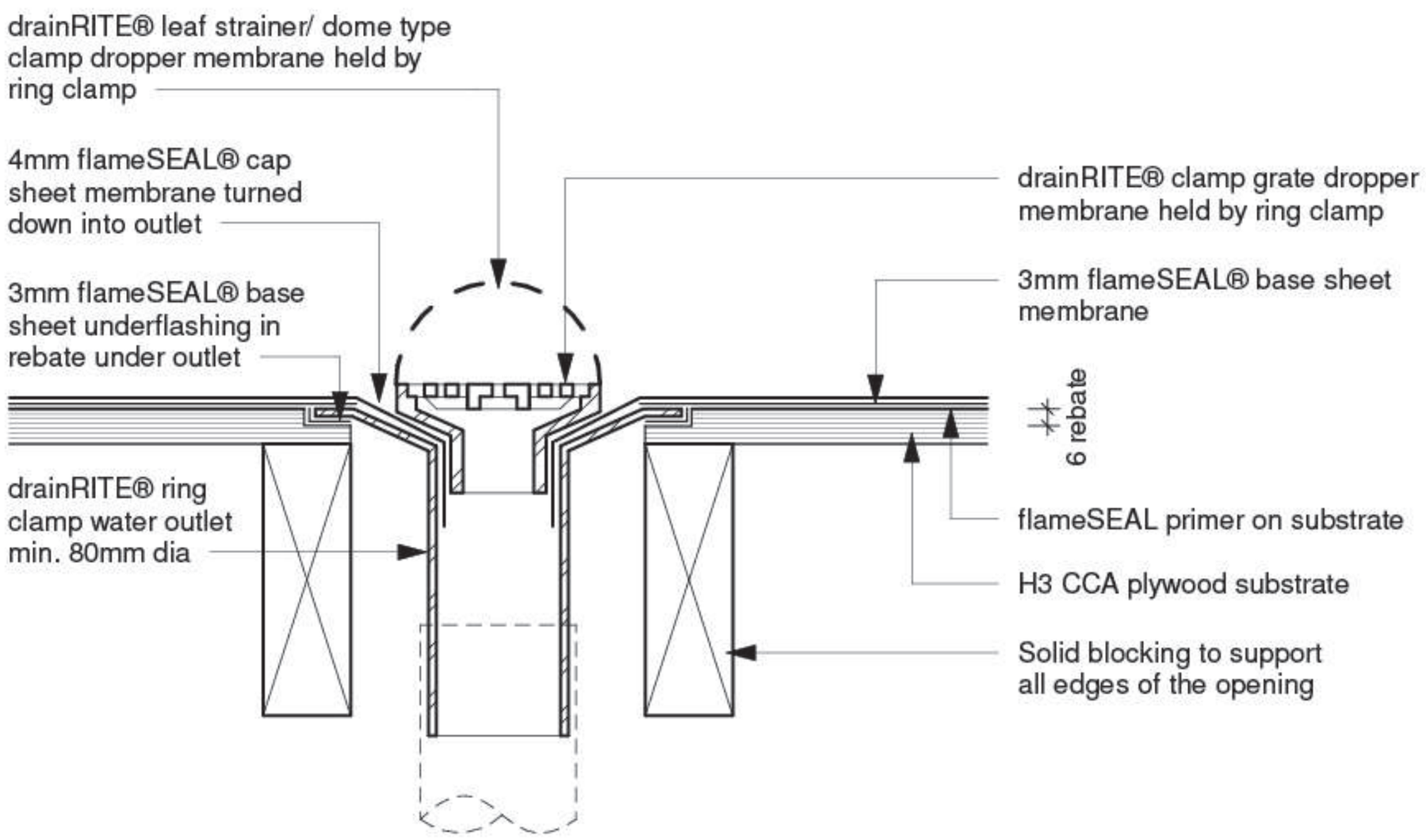
Revision: 10 September 2019

Detail Drawings



fS D26 - drainRITE® Water Outlet 1 - Ring Clamped

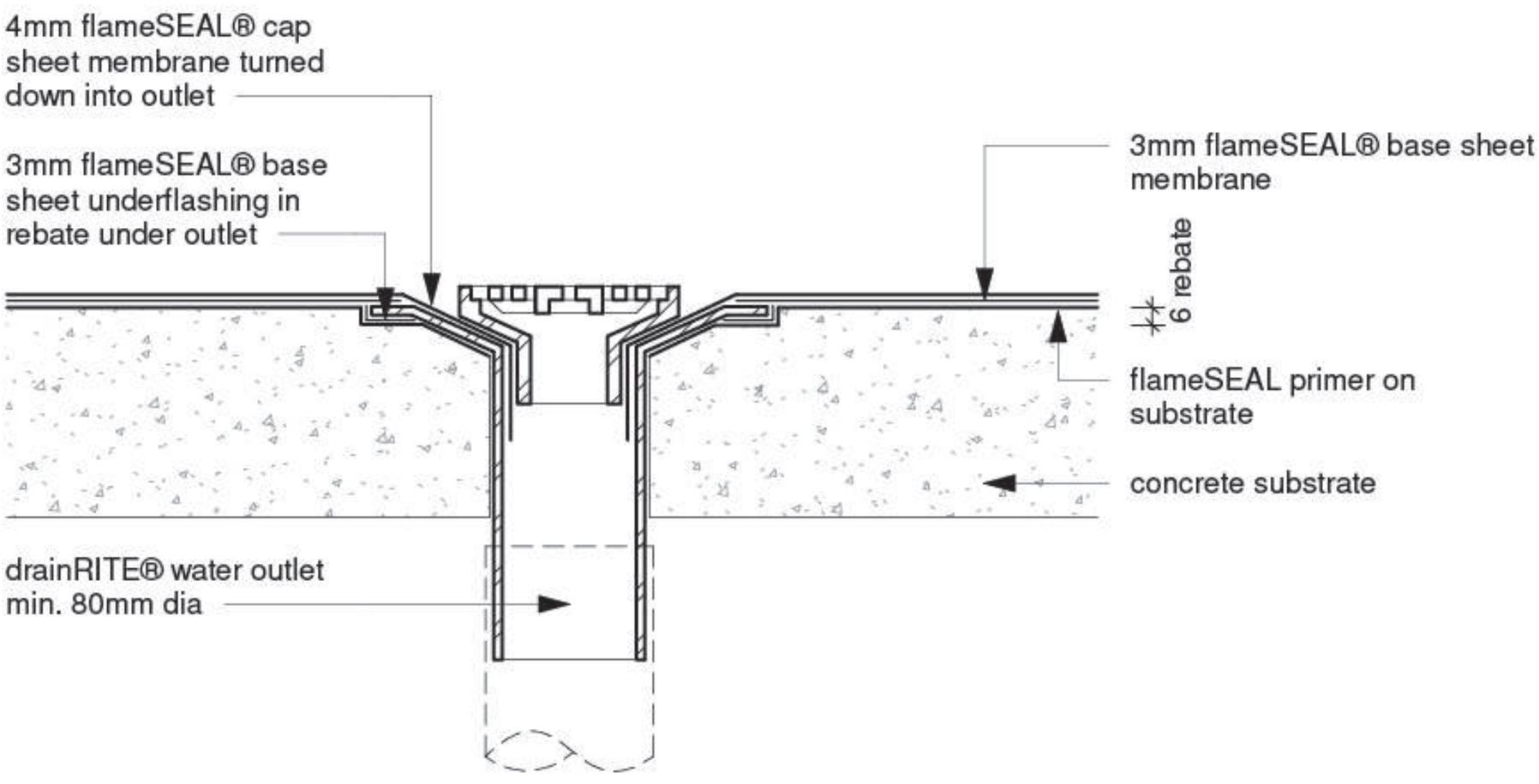
Revision: 10 September 2019



fS D27 - drainRITE® Water Outlet 2 - Ring Clamped Dome

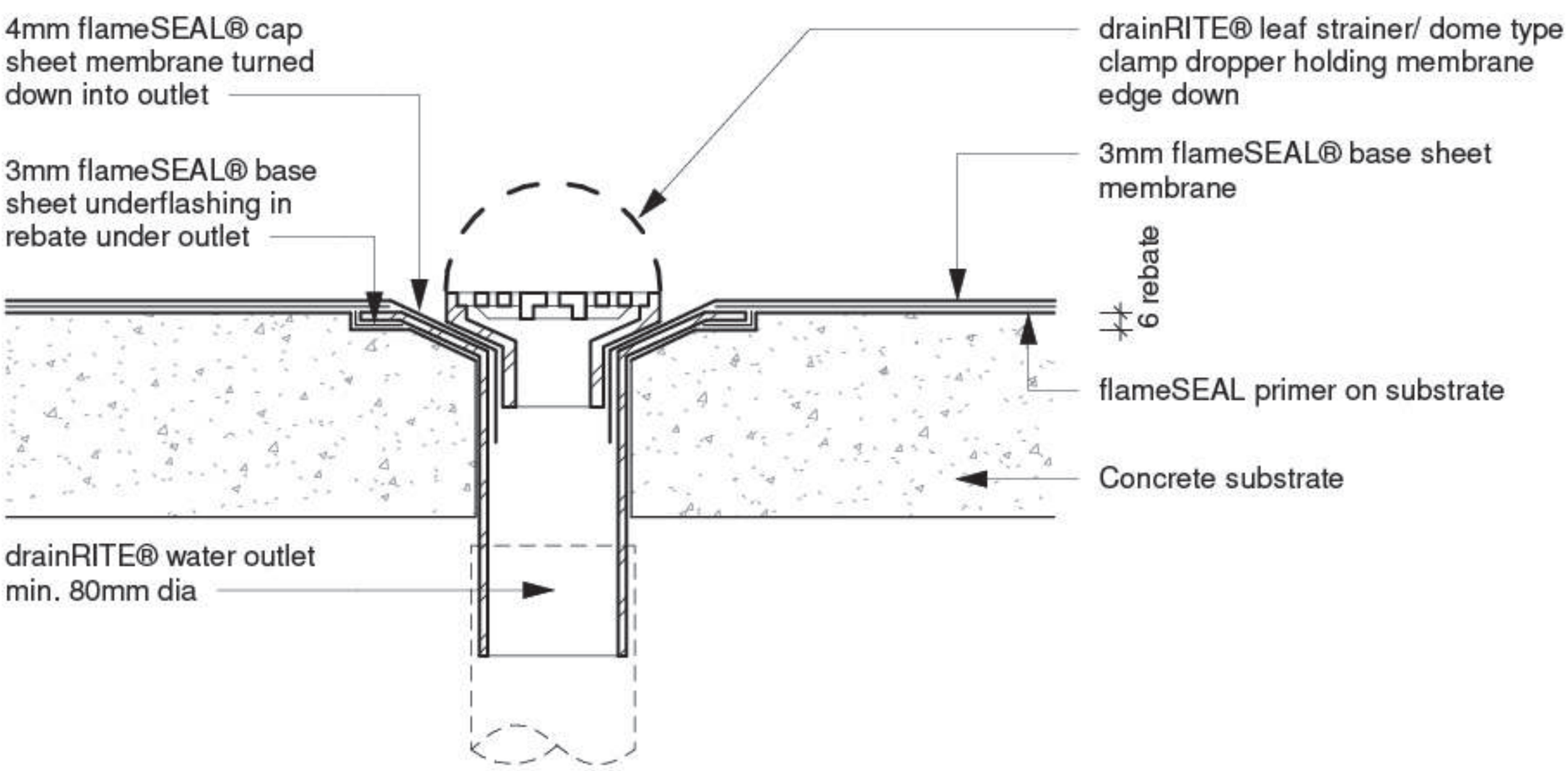
Revision: 10 September 2019

Detail Drawings



fS D28 - drainRITE® Water Outlet 3 - Ring Clamped

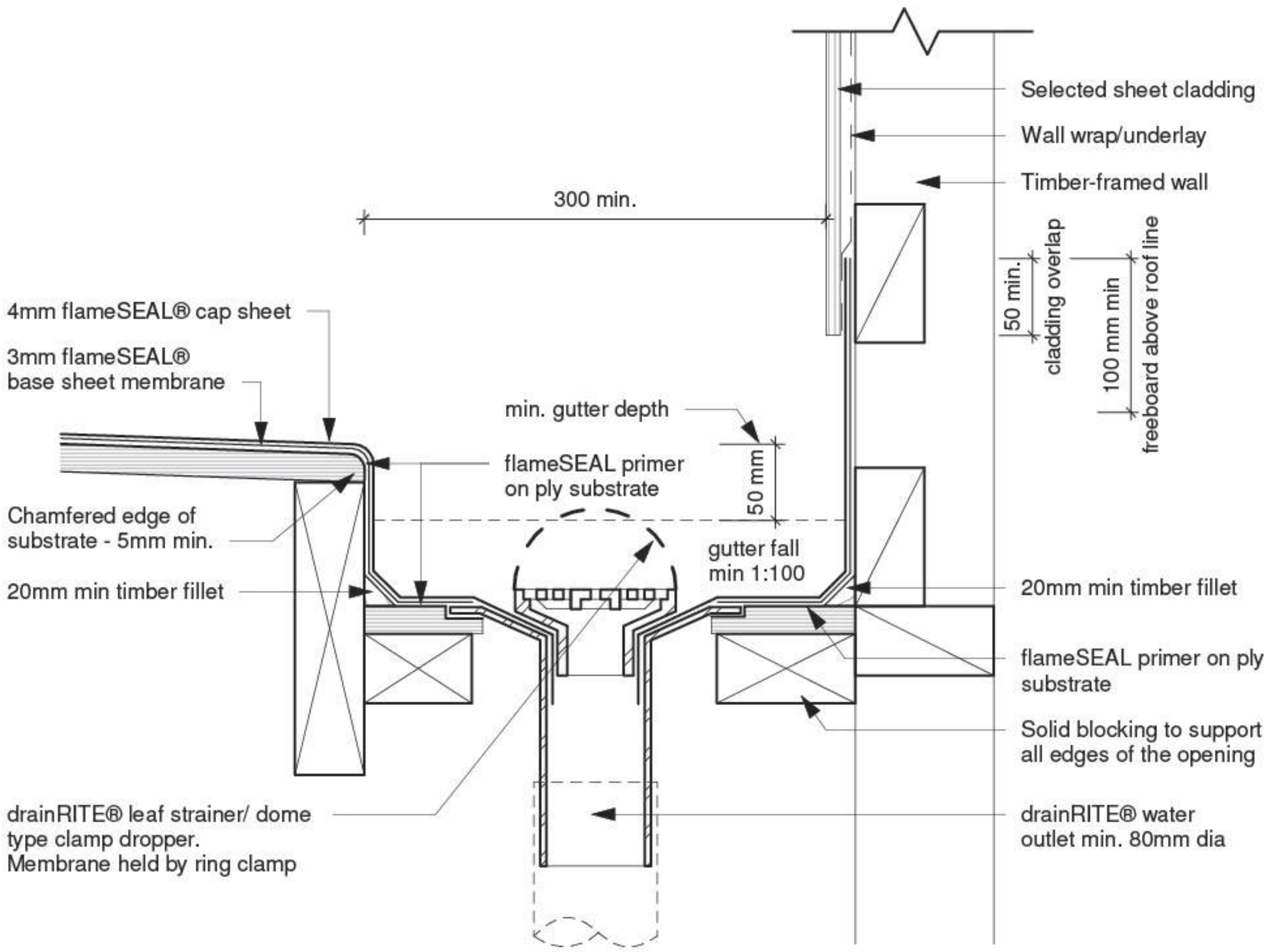
Revision: 10 September 2019



fS D29 - drainRITE® Water Outlet 4 - Ring Clamped Domed

Revision: 10 September 2019

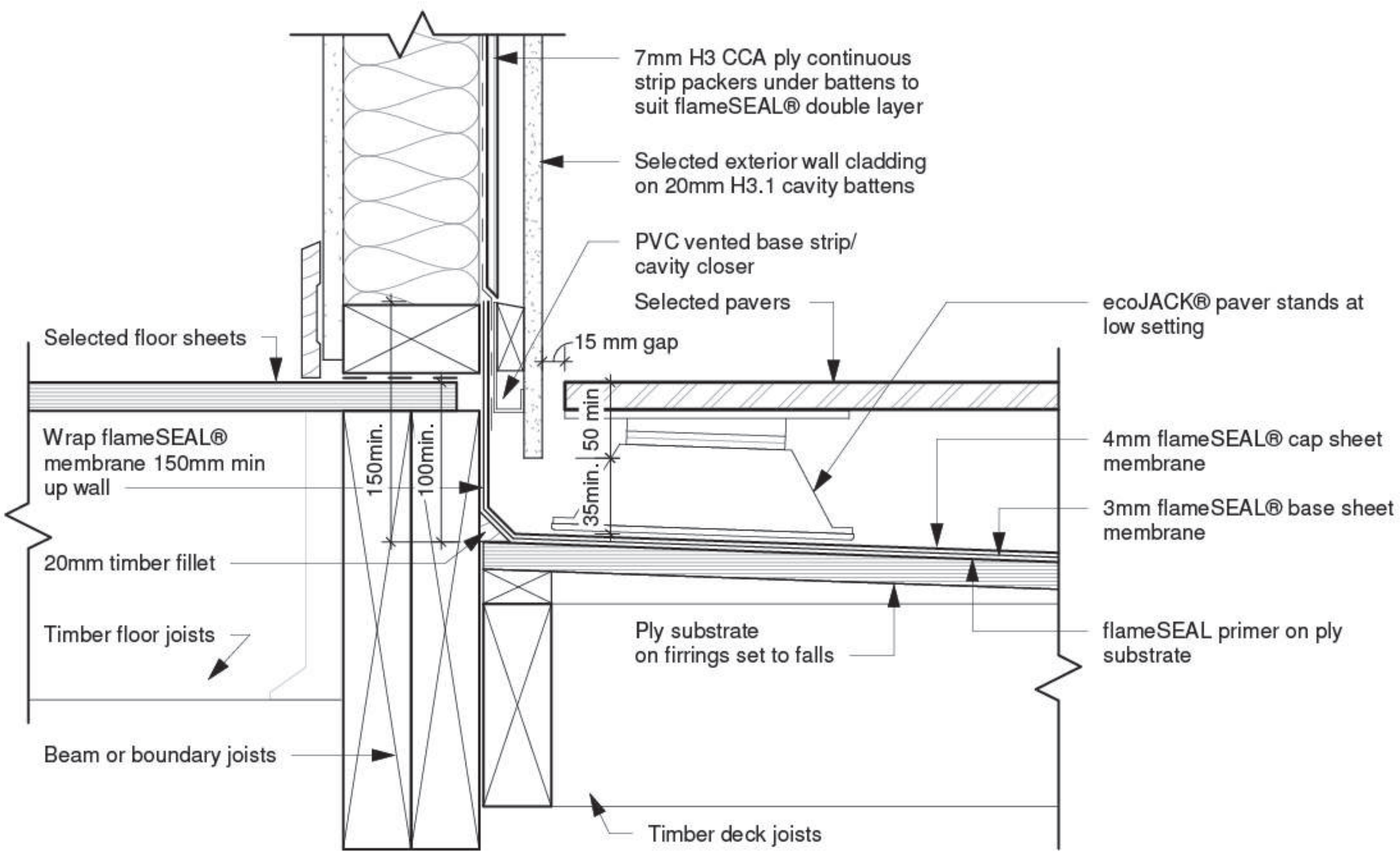
Detail Drawings



fS D30 - drainRITE® Water Outlet 5 (Dropper) - Ring Clamped Dome

Revision: 10 September 2019

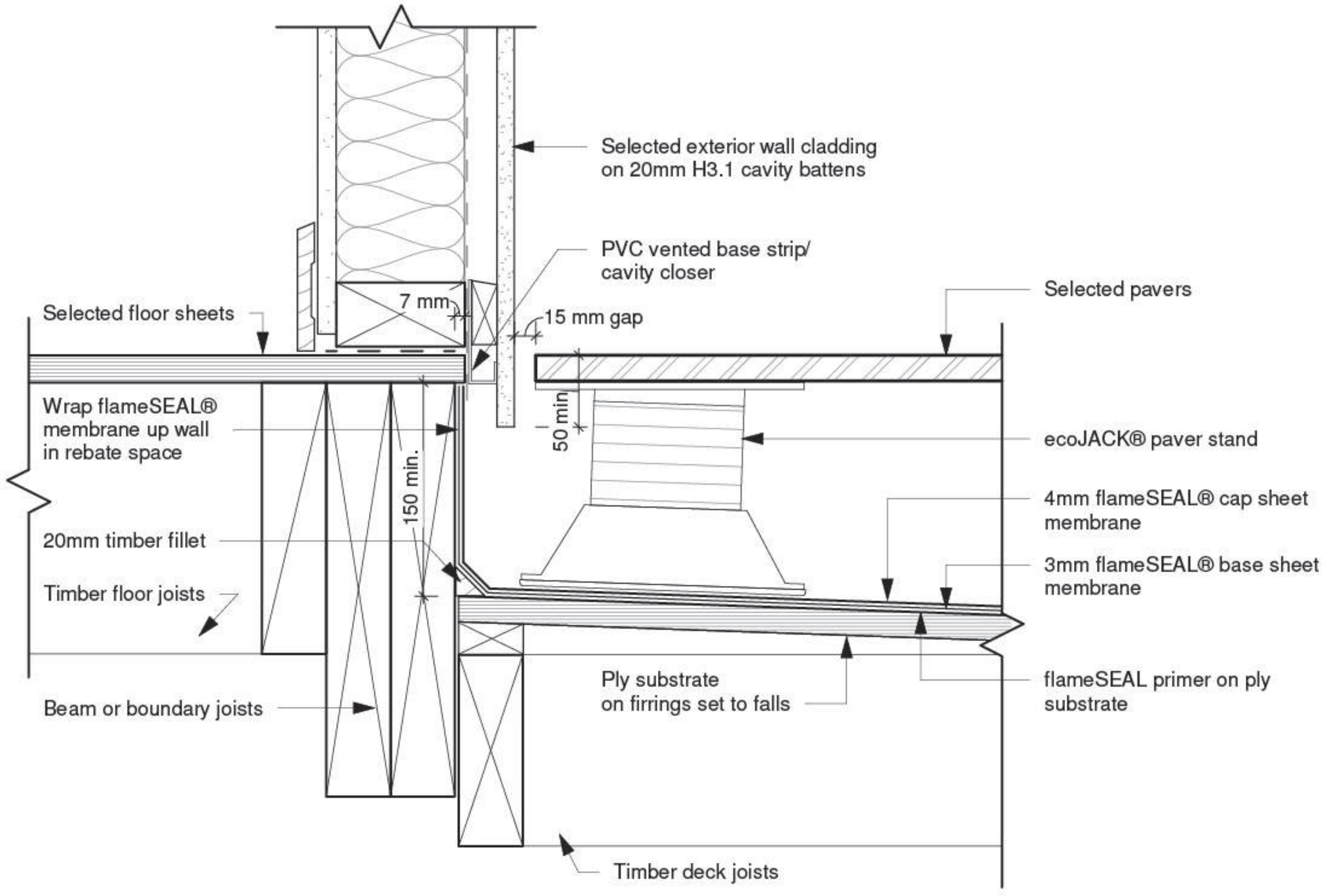
Detail Drawings



fS D31 - ecoJACK® Paver - Wall Detail - Type 1

Revision: 10 September 2019

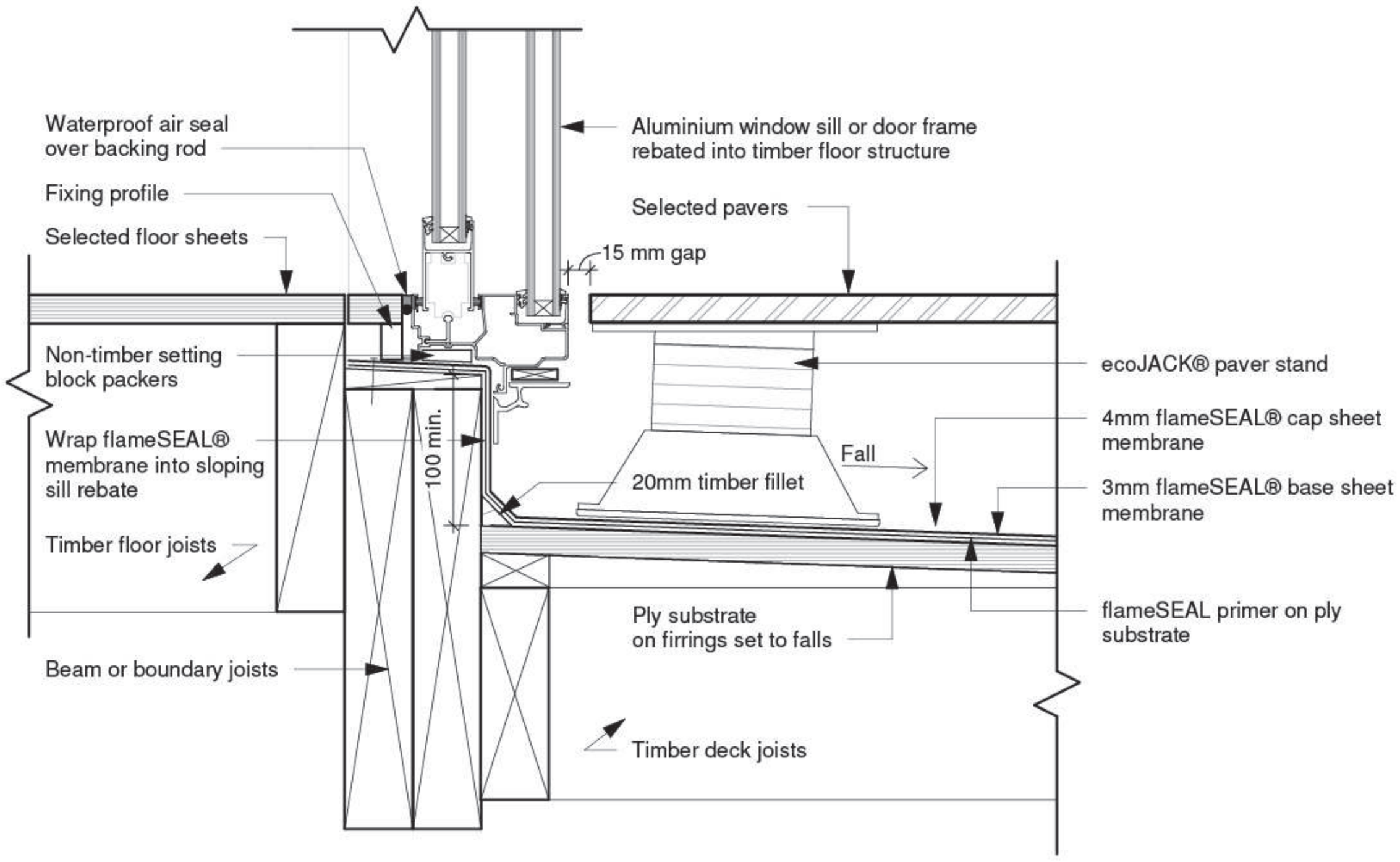
Detail Drawings



fS D32 - ecoJACK® Paver - Wall Detail - Type 2

Revision: 10 September 2019

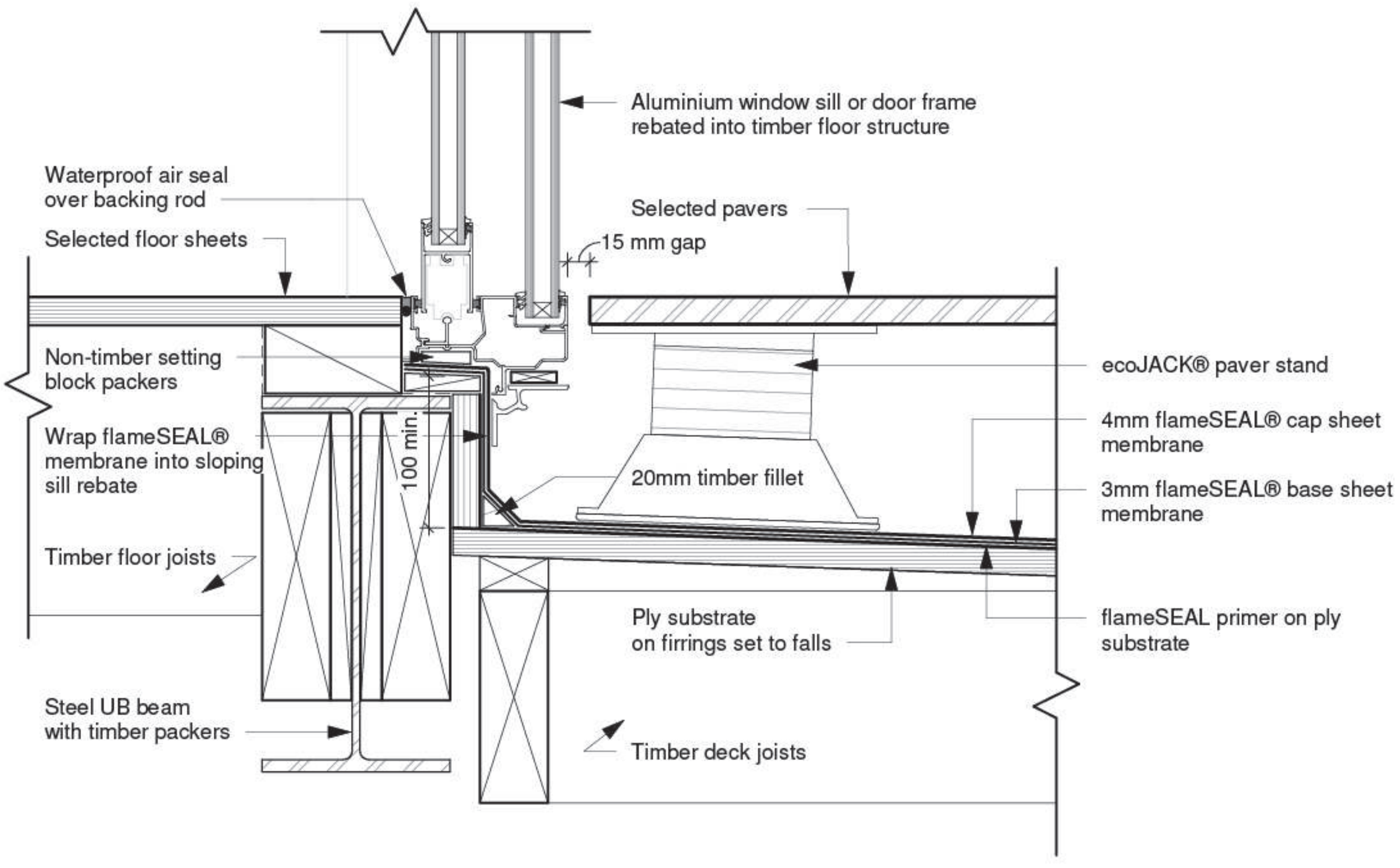
Detail Drawings



fS D33 - ecoJACK® Paver - Threshold Detail - Type 1

Revision: 10 September 2019

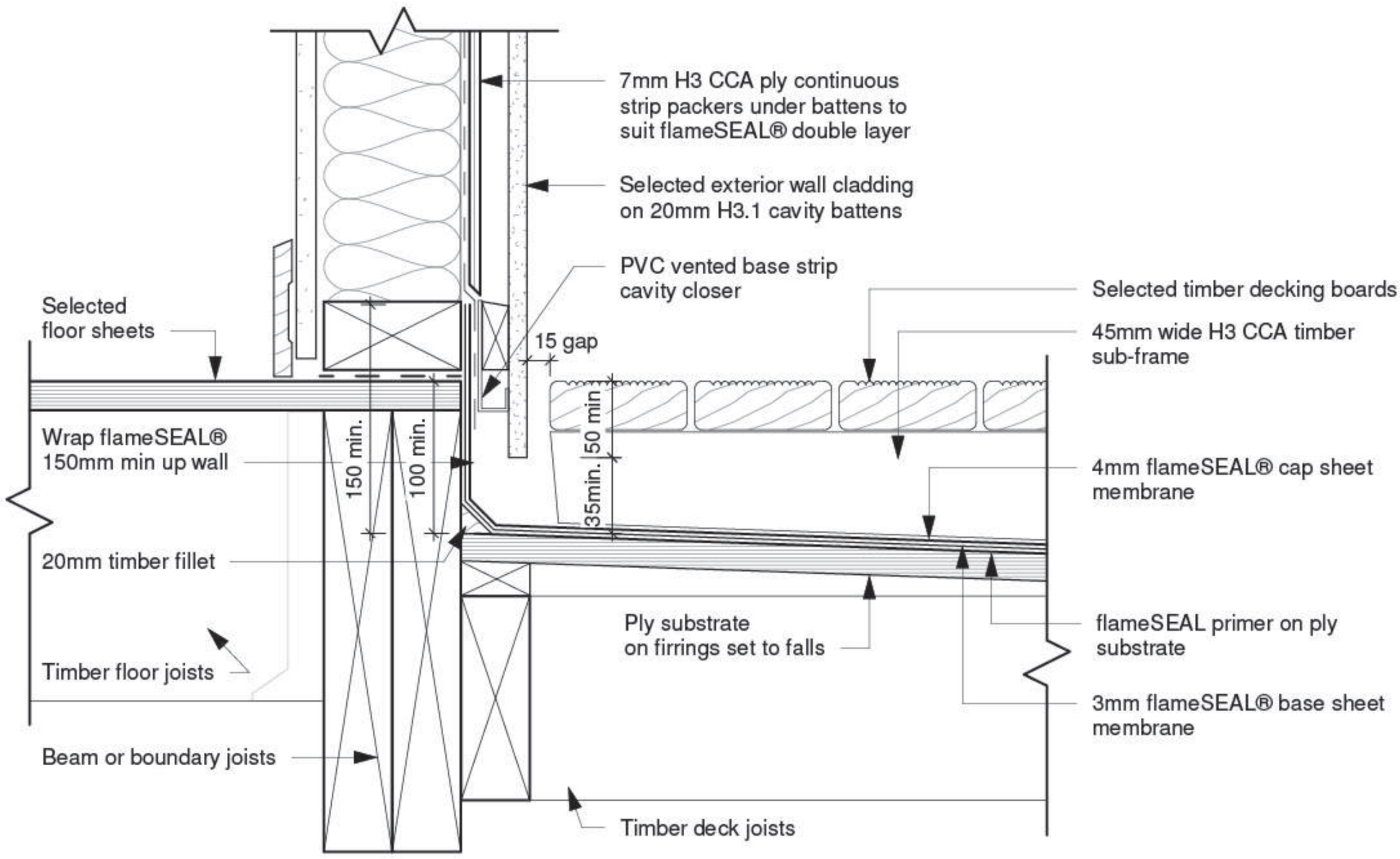
Detail Drawings



fS D34 - ecoJACK pavers - Threshold Detail - Type 2

Revision: 10 September 2019

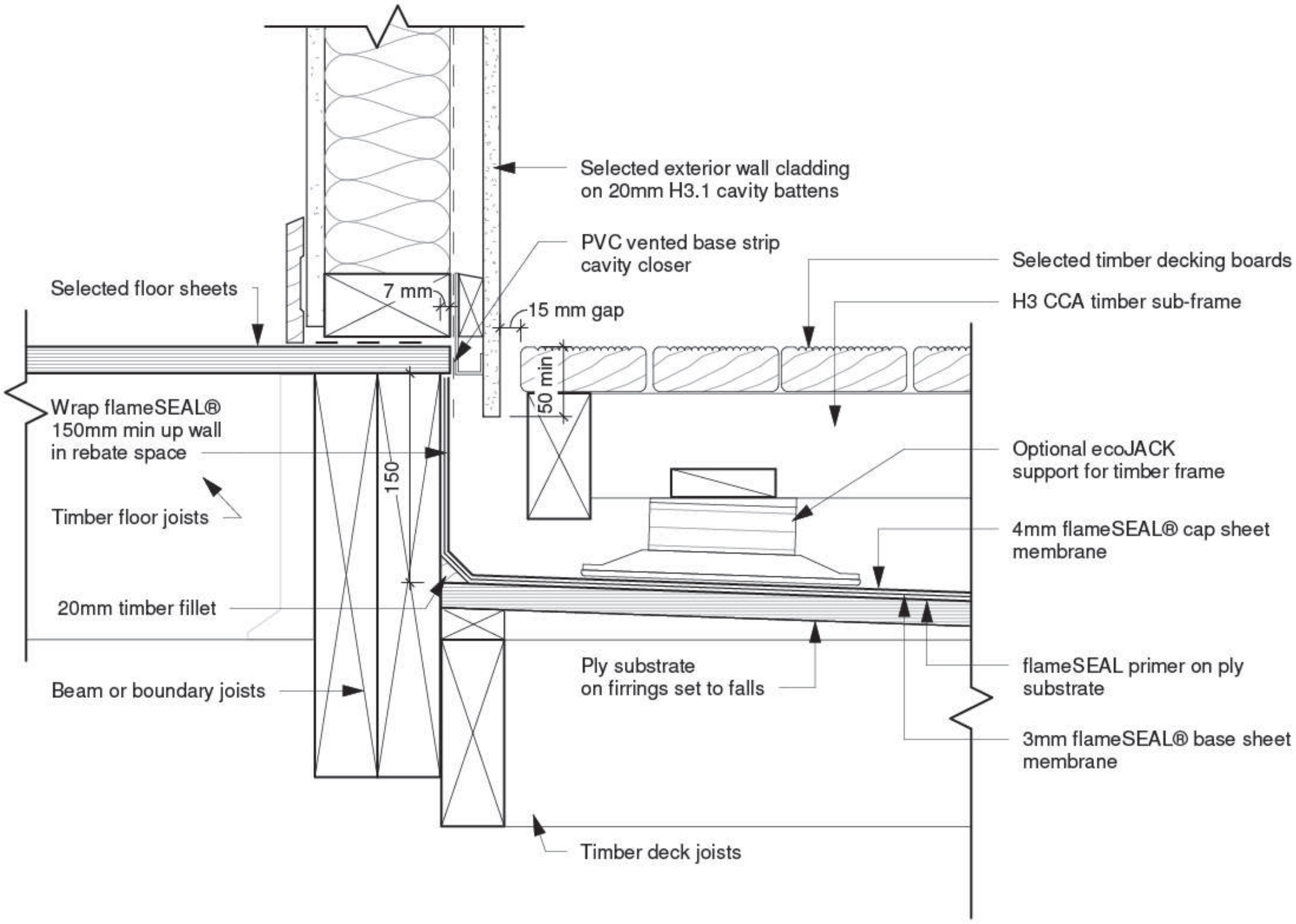
Detail Drawings



fS D35 - Timber Raft Floating Deck - Wall Detail - Type 1

Revision: 10 September 2019

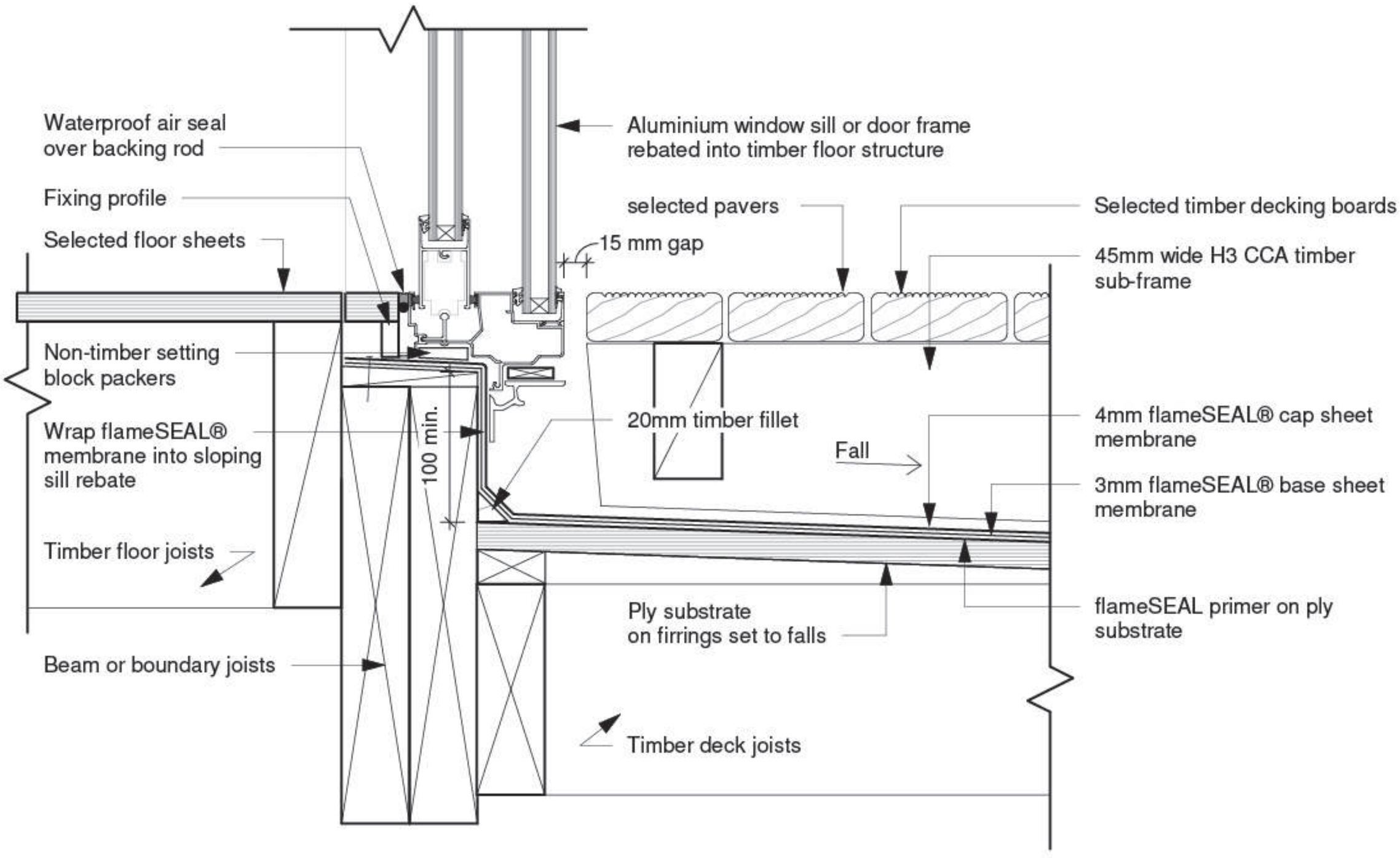
Detail Drawings



fS D36 - Timber Raft Floating Deck - Wall Detail - Type 2

Revision: 10 September 2019

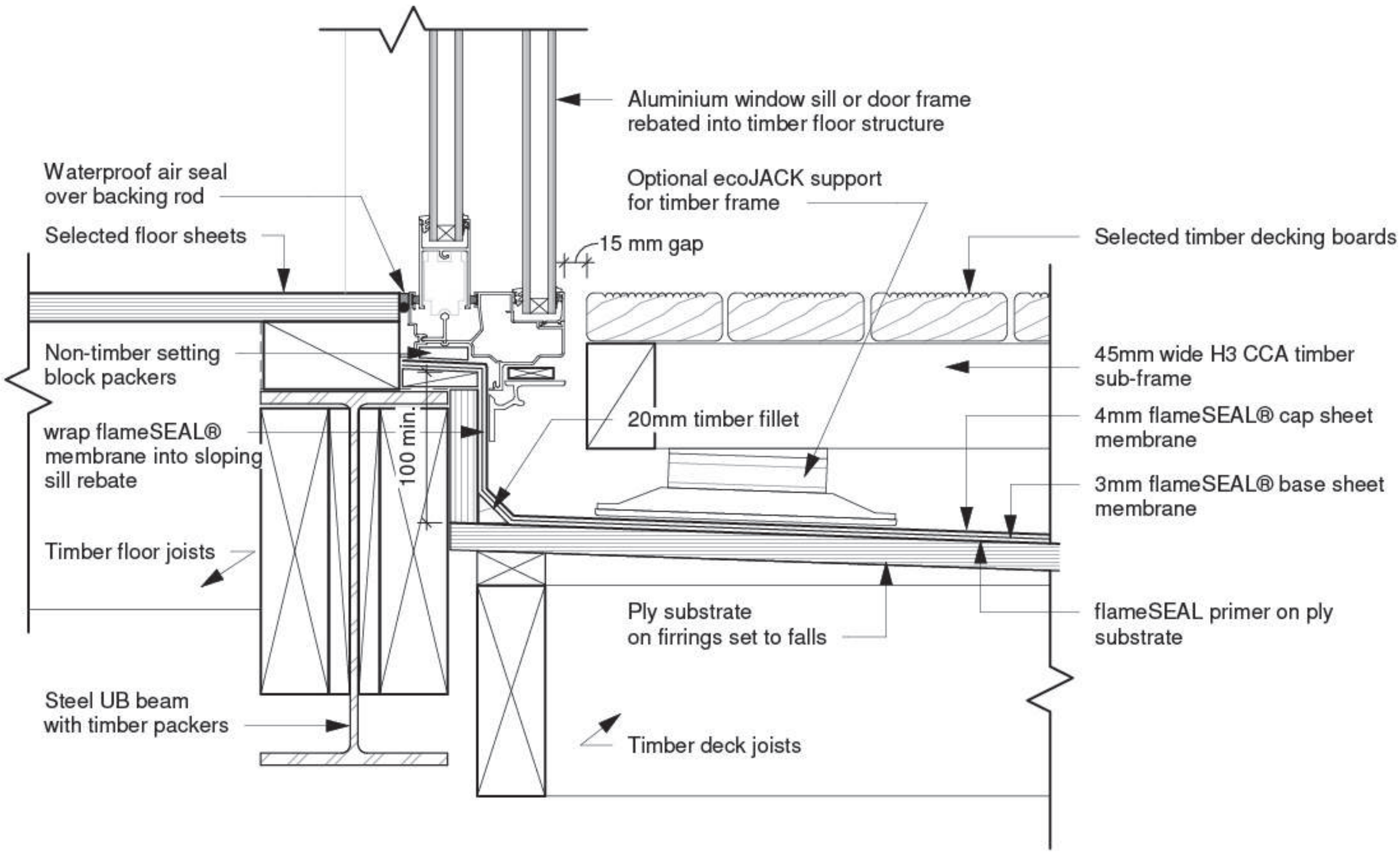
Detail Drawings



fS D37 - Timber Raft Floating Deck - Threshold Detail - Type 1

Revision: 10 September 2019

Detail Drawings

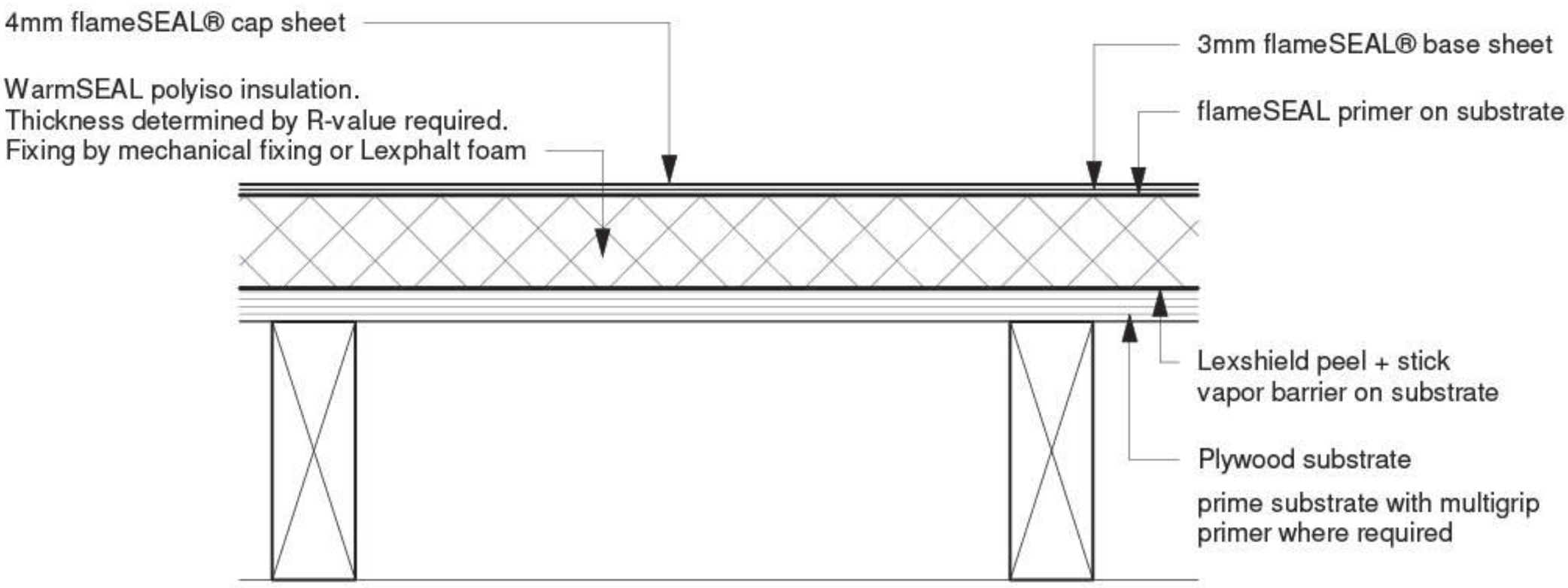


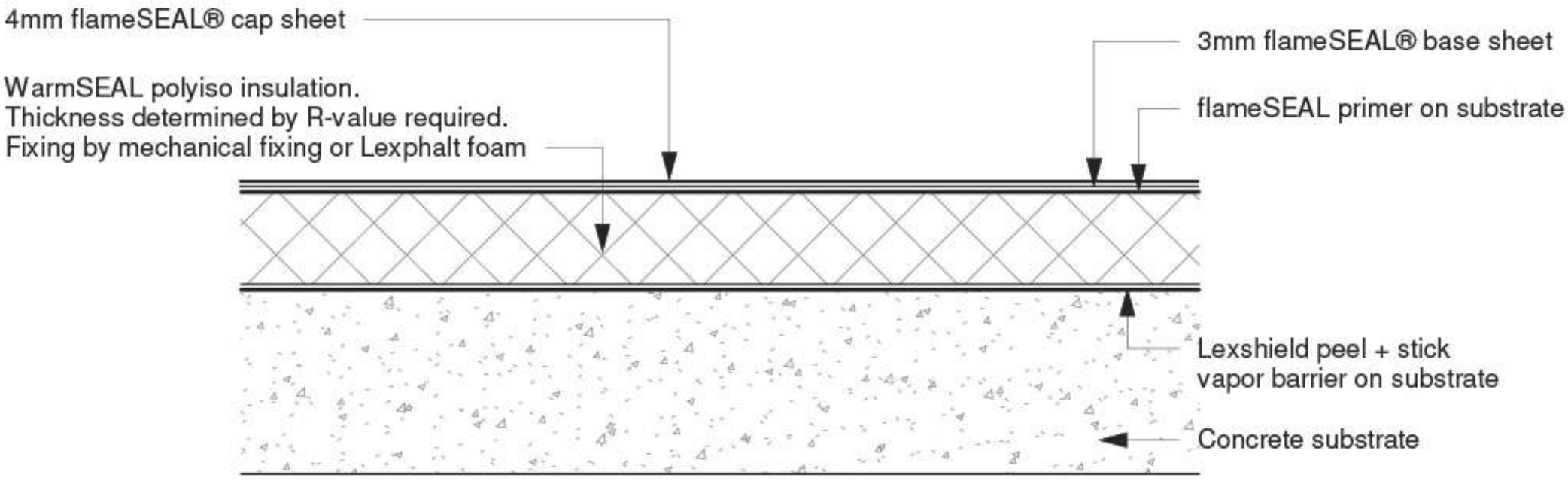
fS D38 - Timber Raft Floating Deck - Threshold Detail - Type 1

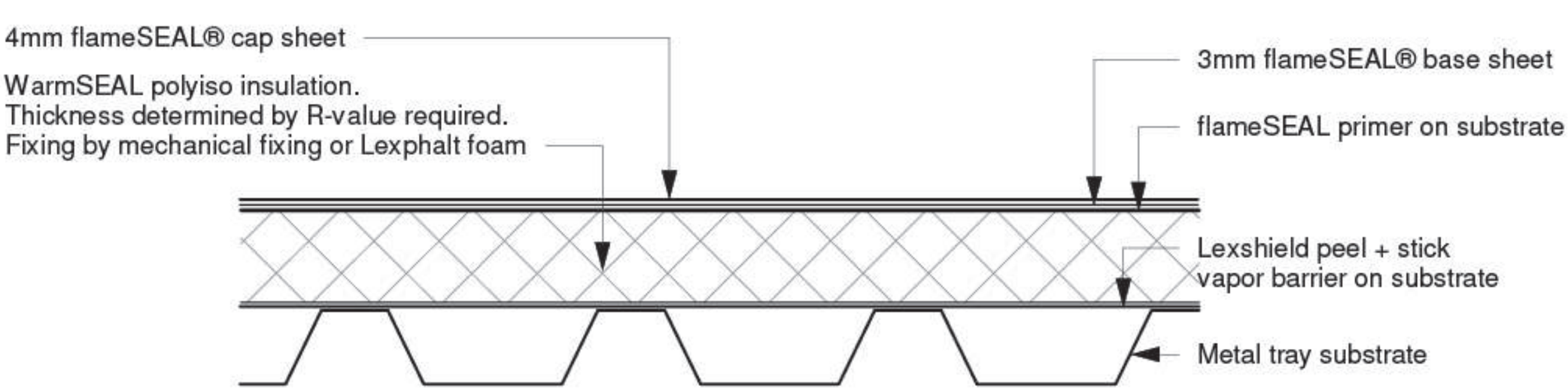
Revision: 10 September 2019

FlameSEAL WarmSEAL Drawings

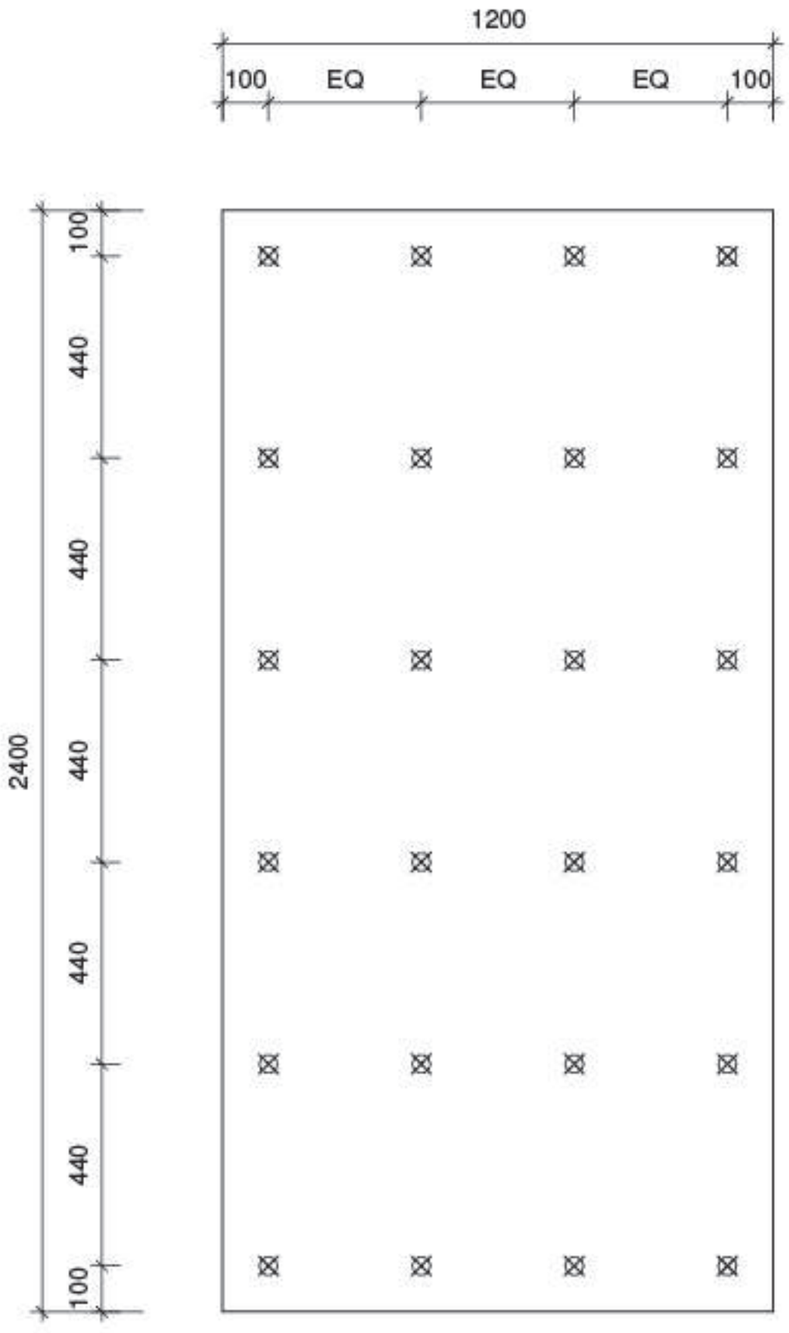
Detail Drawings



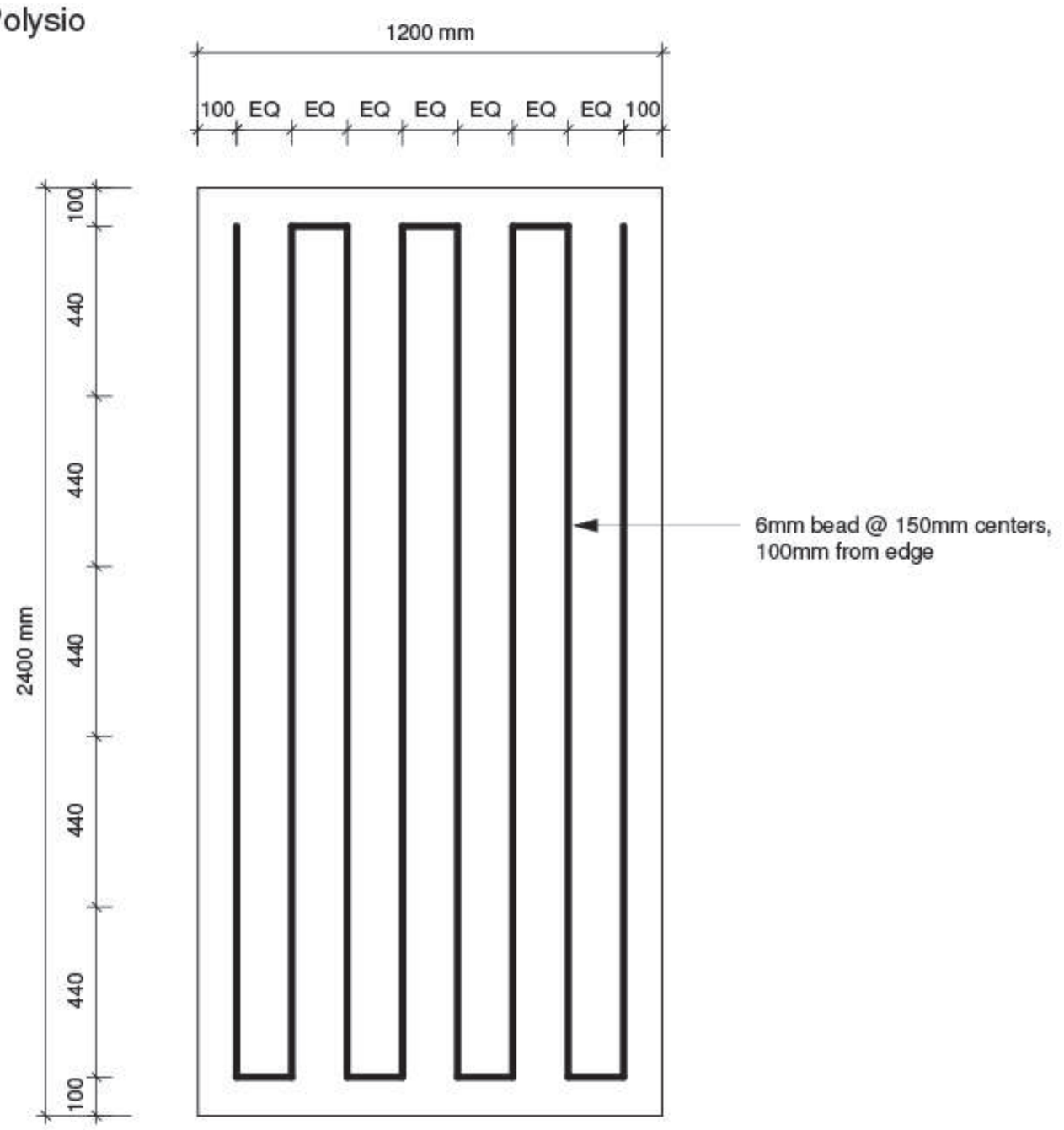




Detail Drawings

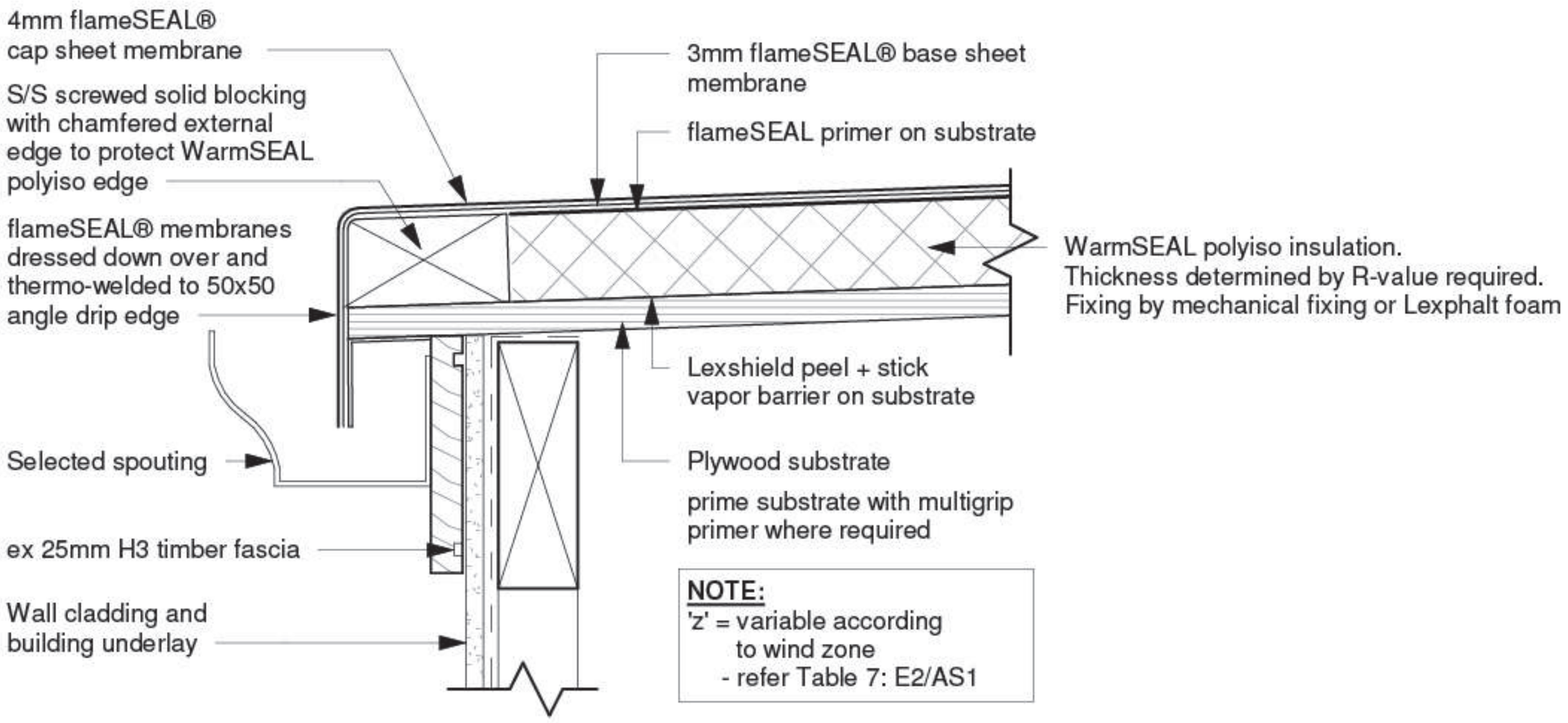


WR fS D02 Mechanically fixed WarmSEAL Polysio



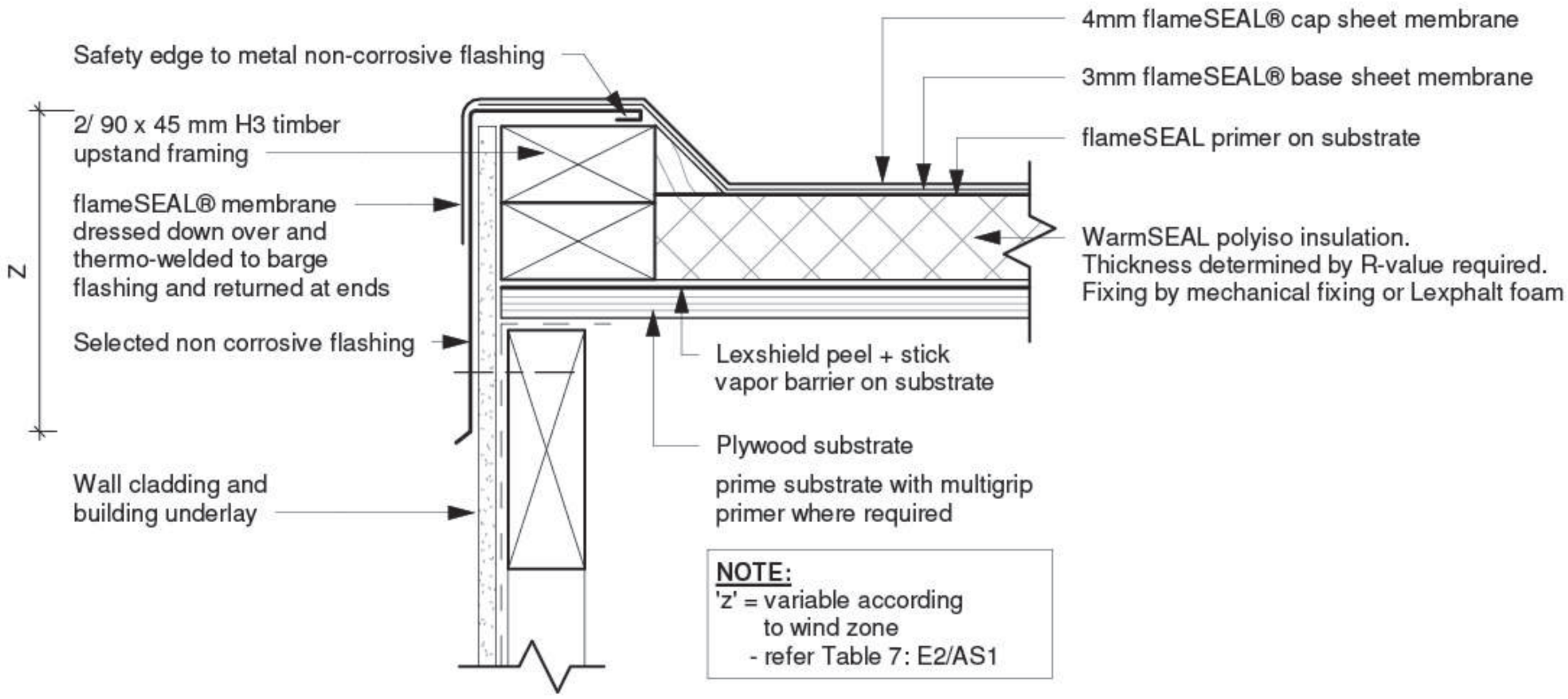
WR fS D03 Lexphalt Adhered WarmSEAL Polyiso Boards

Detail Drawings



WR fS D05 - External Gutter - Type 2

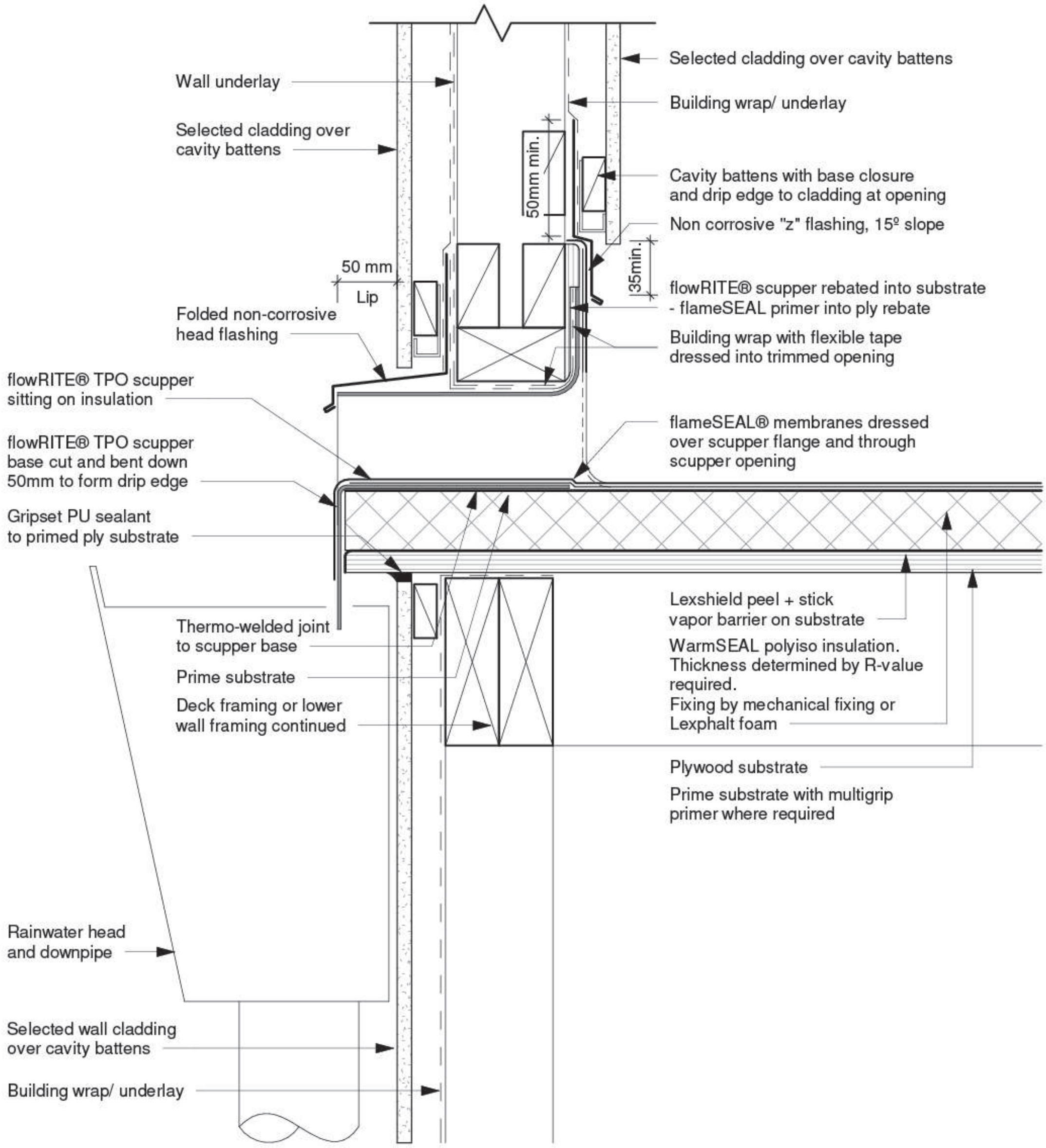
Revision: 10 September 2019



WR fS D06 - Barge Board 1

Revision: 10 September 2019

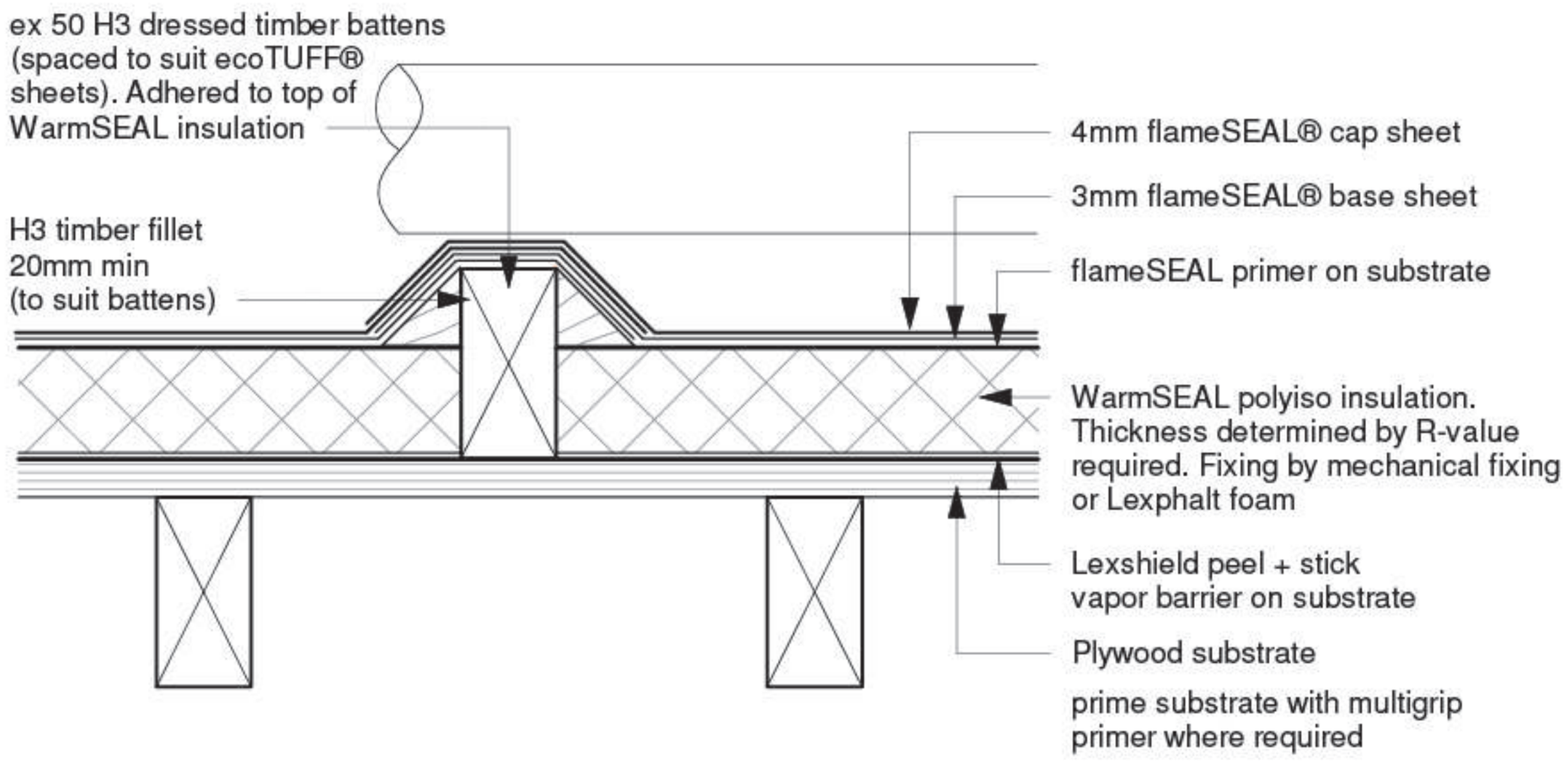
Detail Drawings



WR fS D08 - flowRITE® Outlet Scupper Section

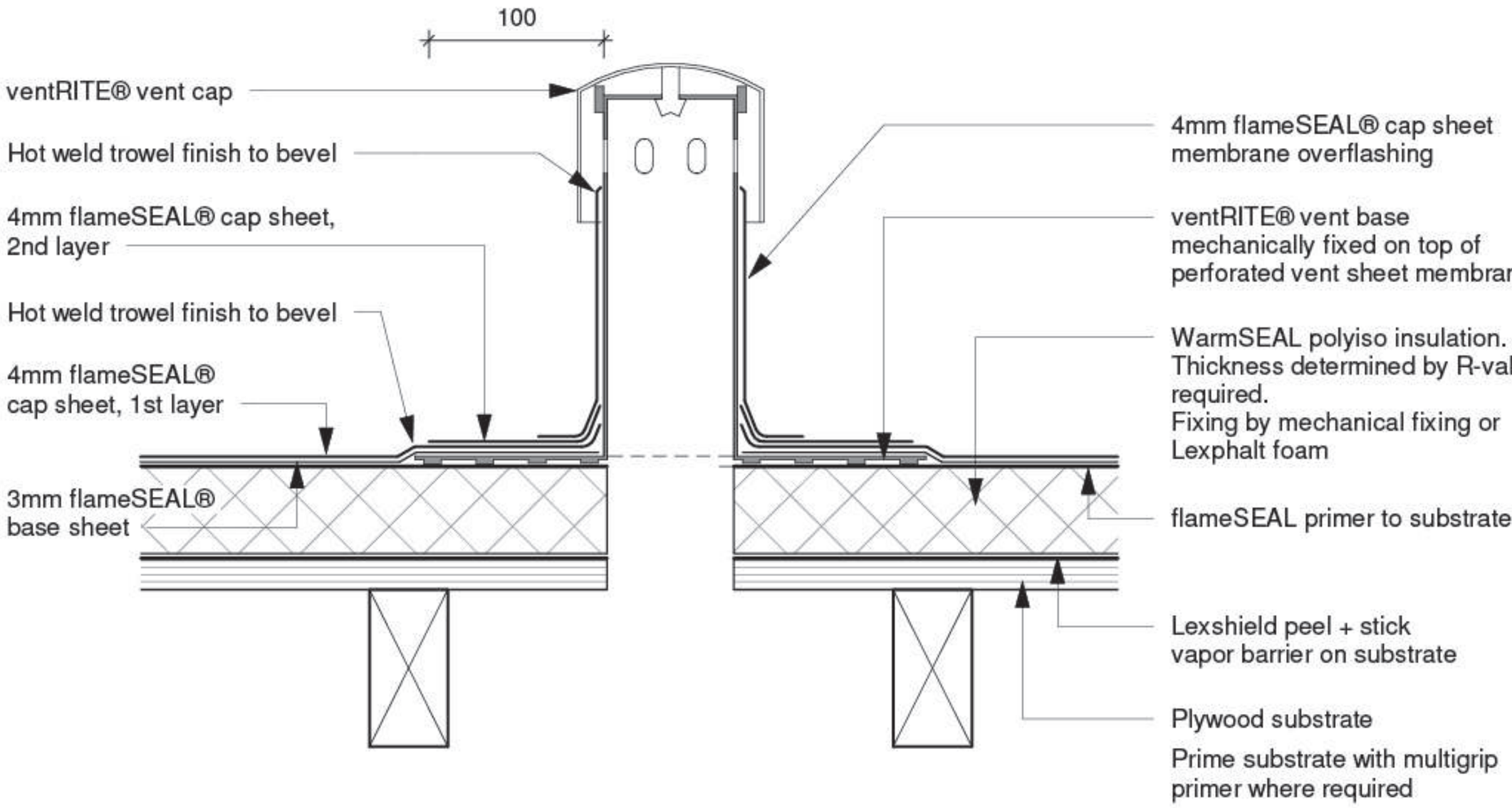
Revision: 10 September 2019

Detail Drawings



WR fS D12 - Batten Join for Services

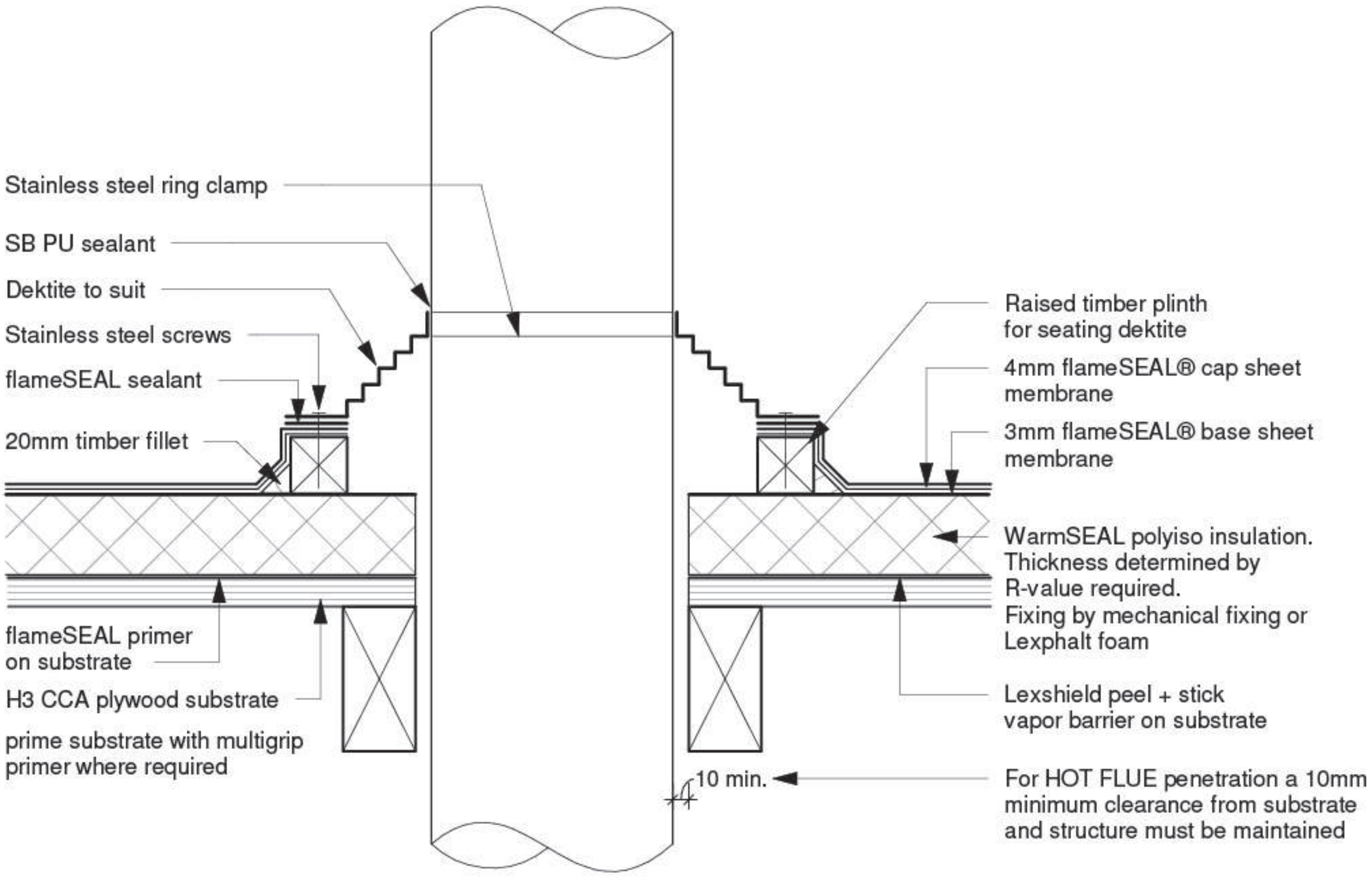
Revision: 10 September 2019



WR fS D16 - ventRITE® Roof Vent Outlet

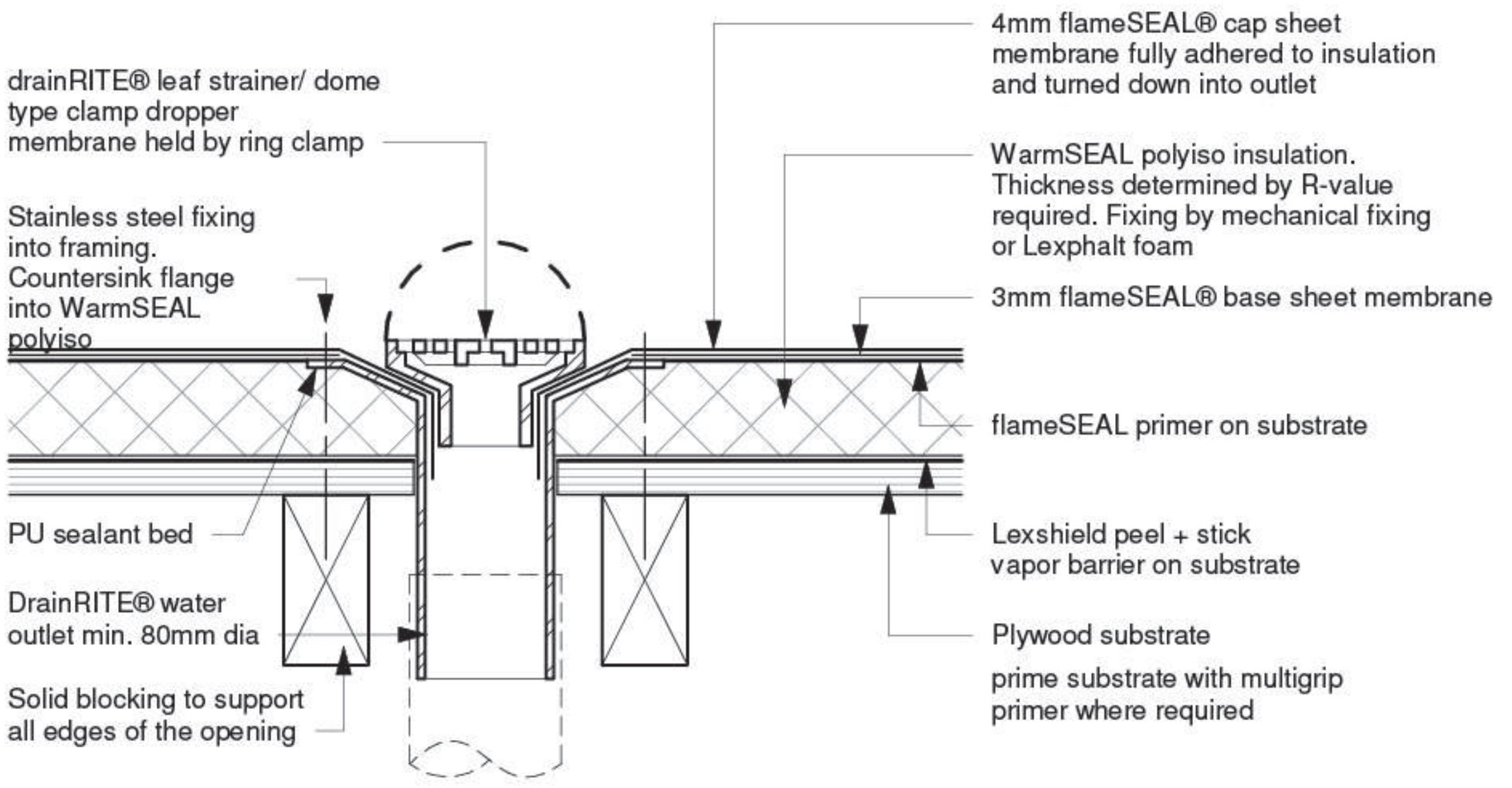
Revision: 10 September 2019

Detail Drawings



WR fS D17 - Pipe Penetration - Dektite

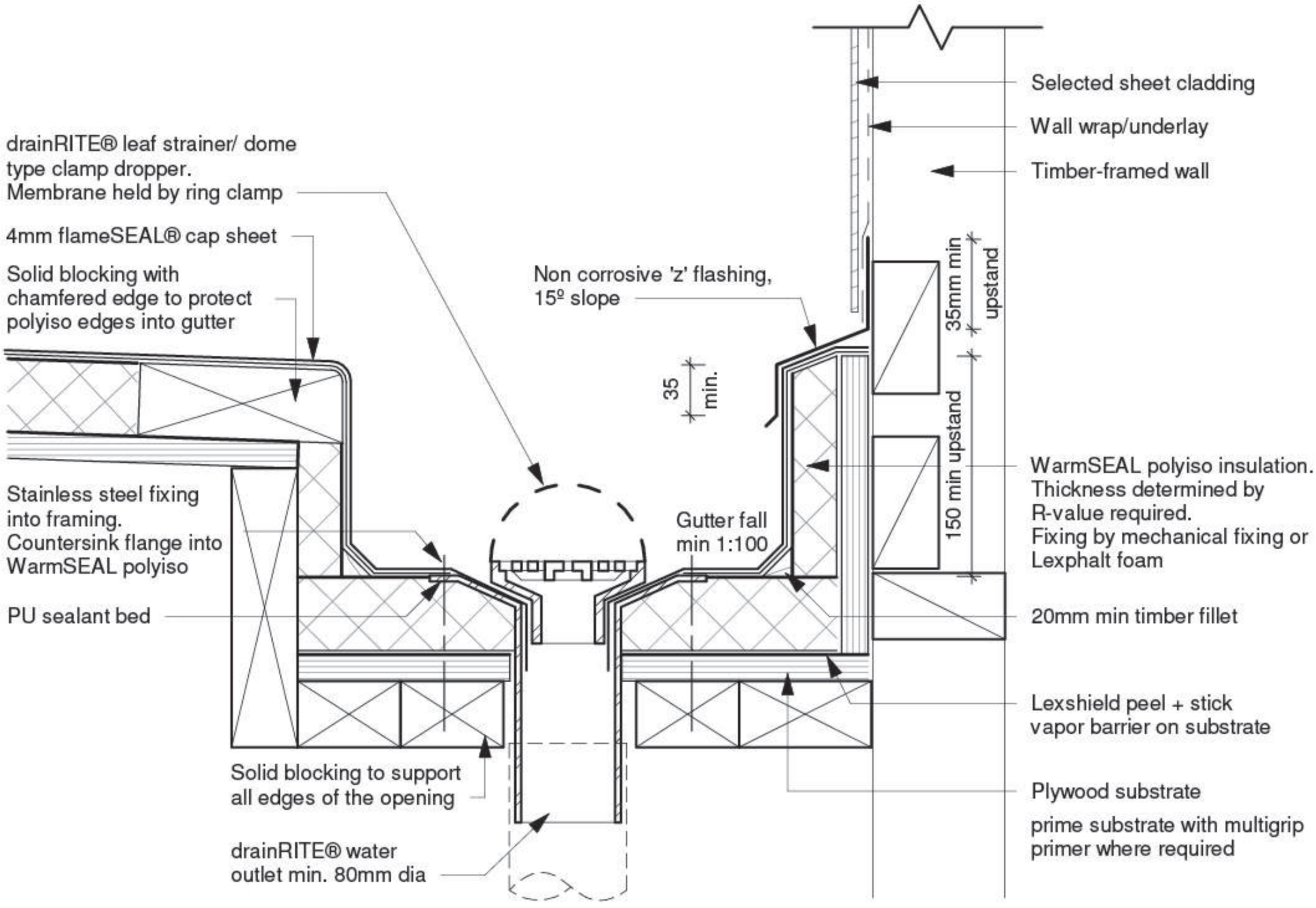
Revision: 10 September 2019



WR fS D19 - drainRITE® Water Outlet 2 - Ring Clamped Domed

Revision: 10 September 2019

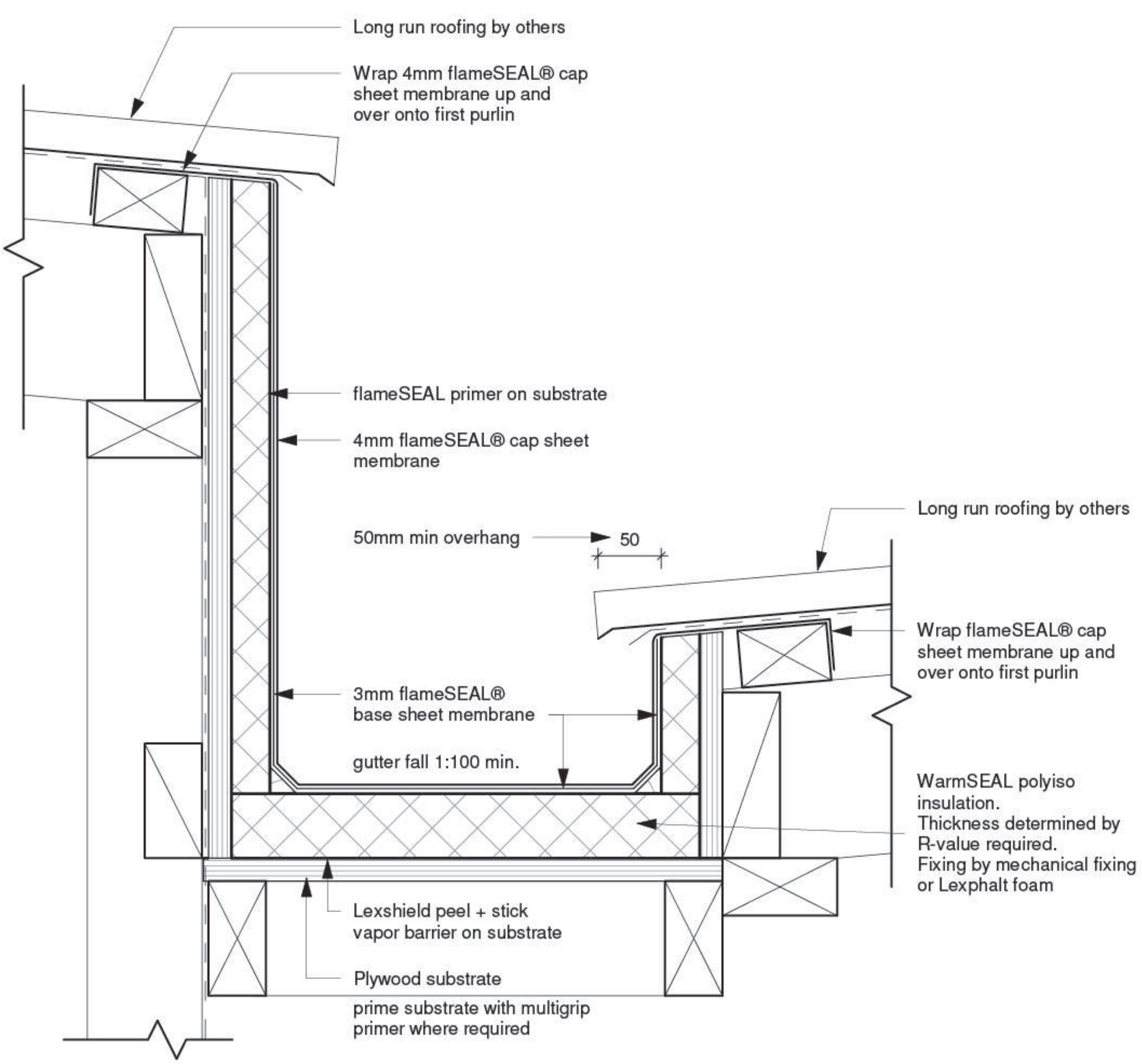
Detail Drawings



WR fS D23 - drainRITE® Water Outlet 6 (Dropper) - Ring Clamped Dome

Revision: 10 September 2019

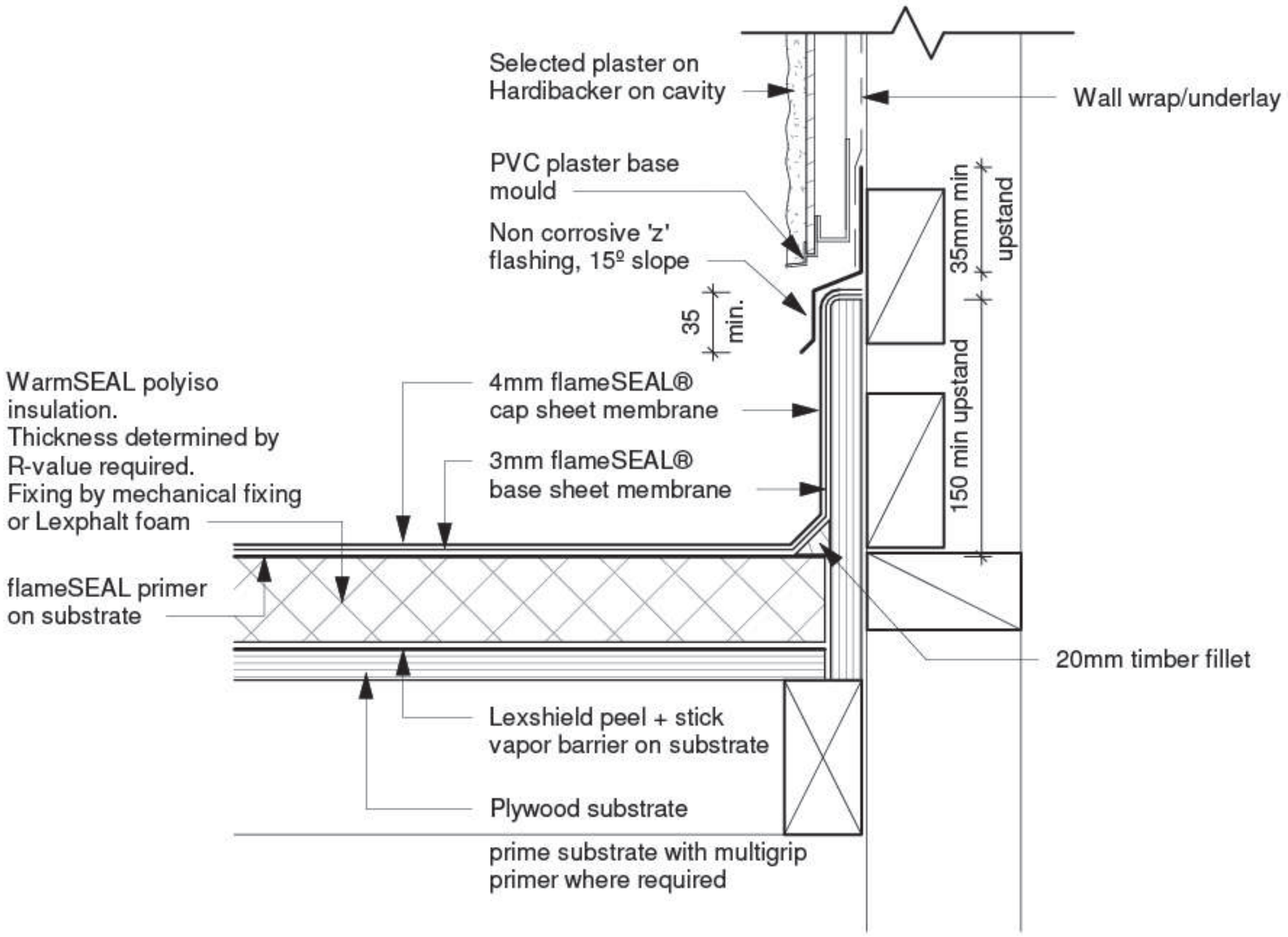
Detail Drawings



WR fS D24 - Internal Gutter

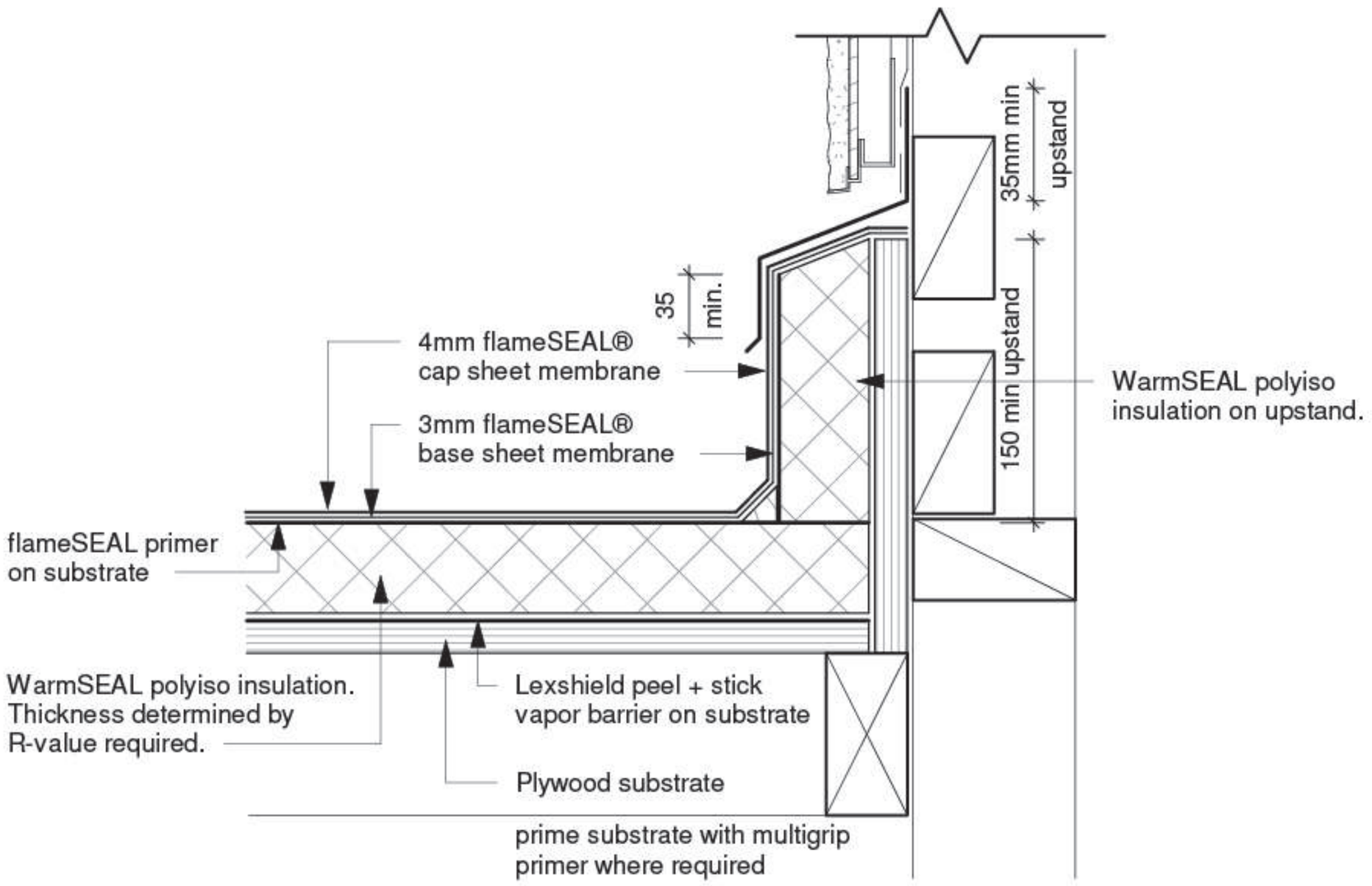
Revision: 10 September 2019

Detail Drawings



WR fS D25 - Gutter Wall 1 - Cladding over Cavity

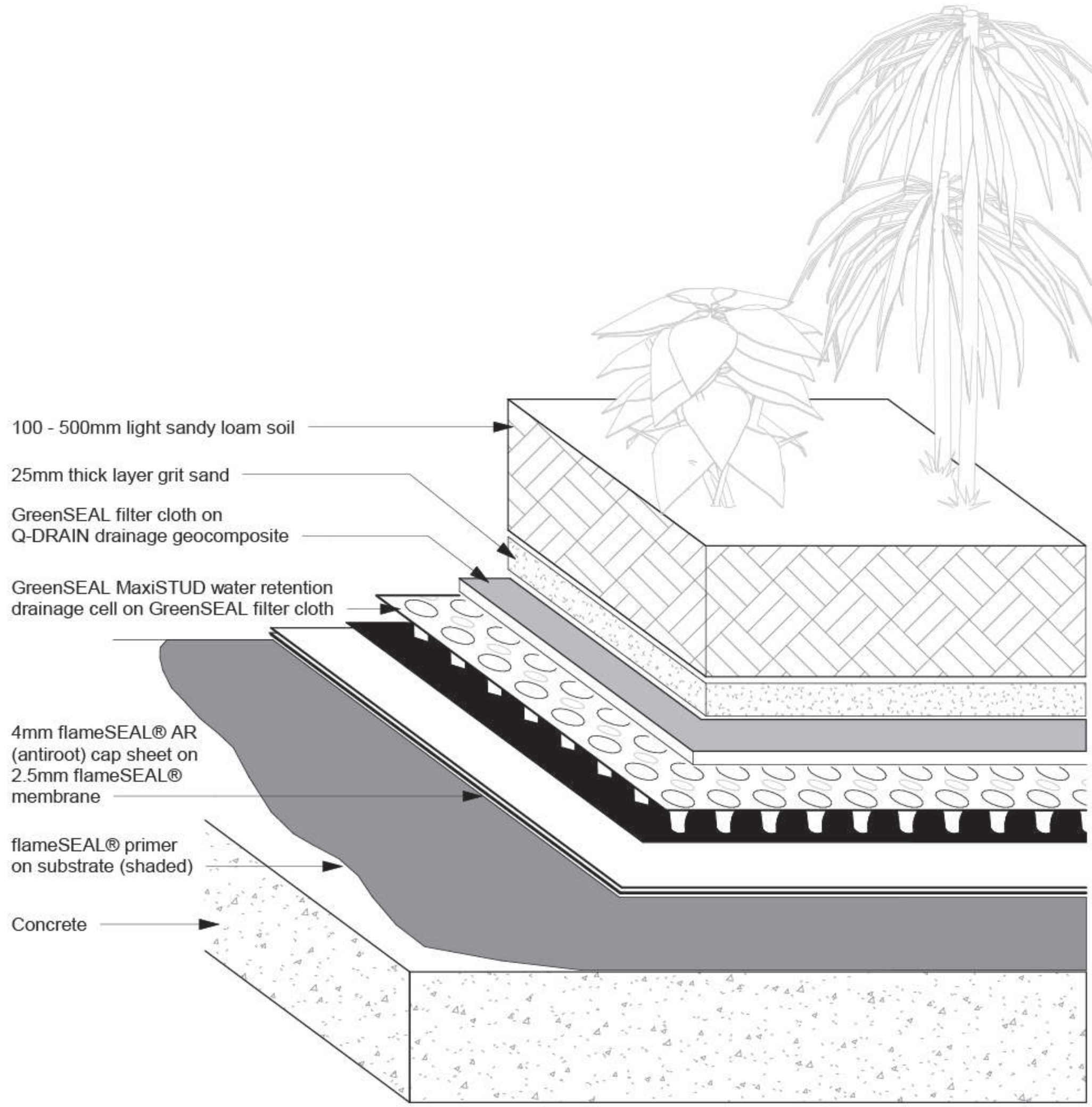
Revision: 10 September 2019



Alternative Insulation installation

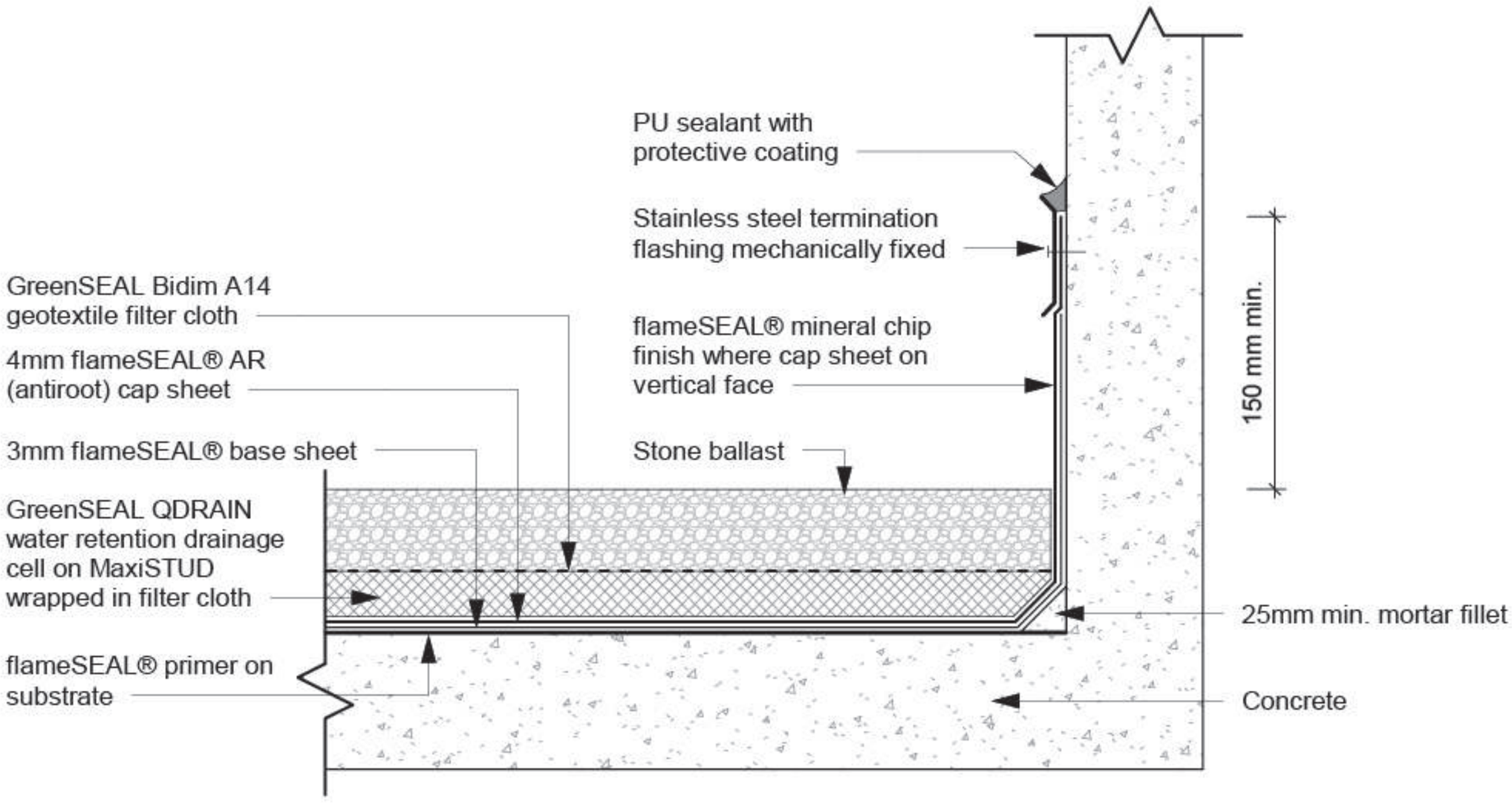
FlameSEAL GreenSEAL Drawings

Detail Drawings



GS D09 GreenSEAL (fS-AR) ™ 3D Cutaway

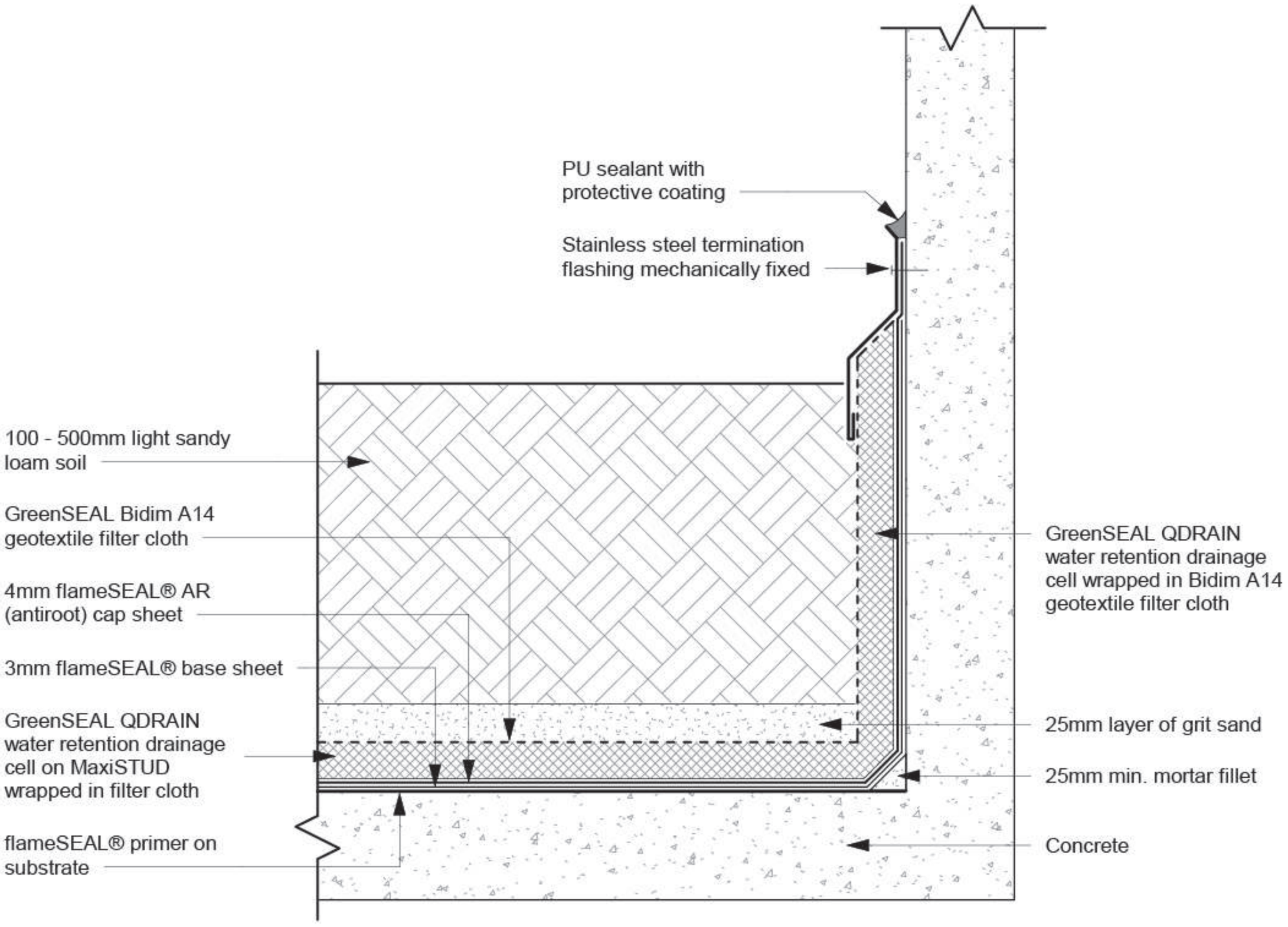
Detail Drawings



GS D01 (fS-AR) - Ballast Internal Corner Termination

Revision: 25 October 2019

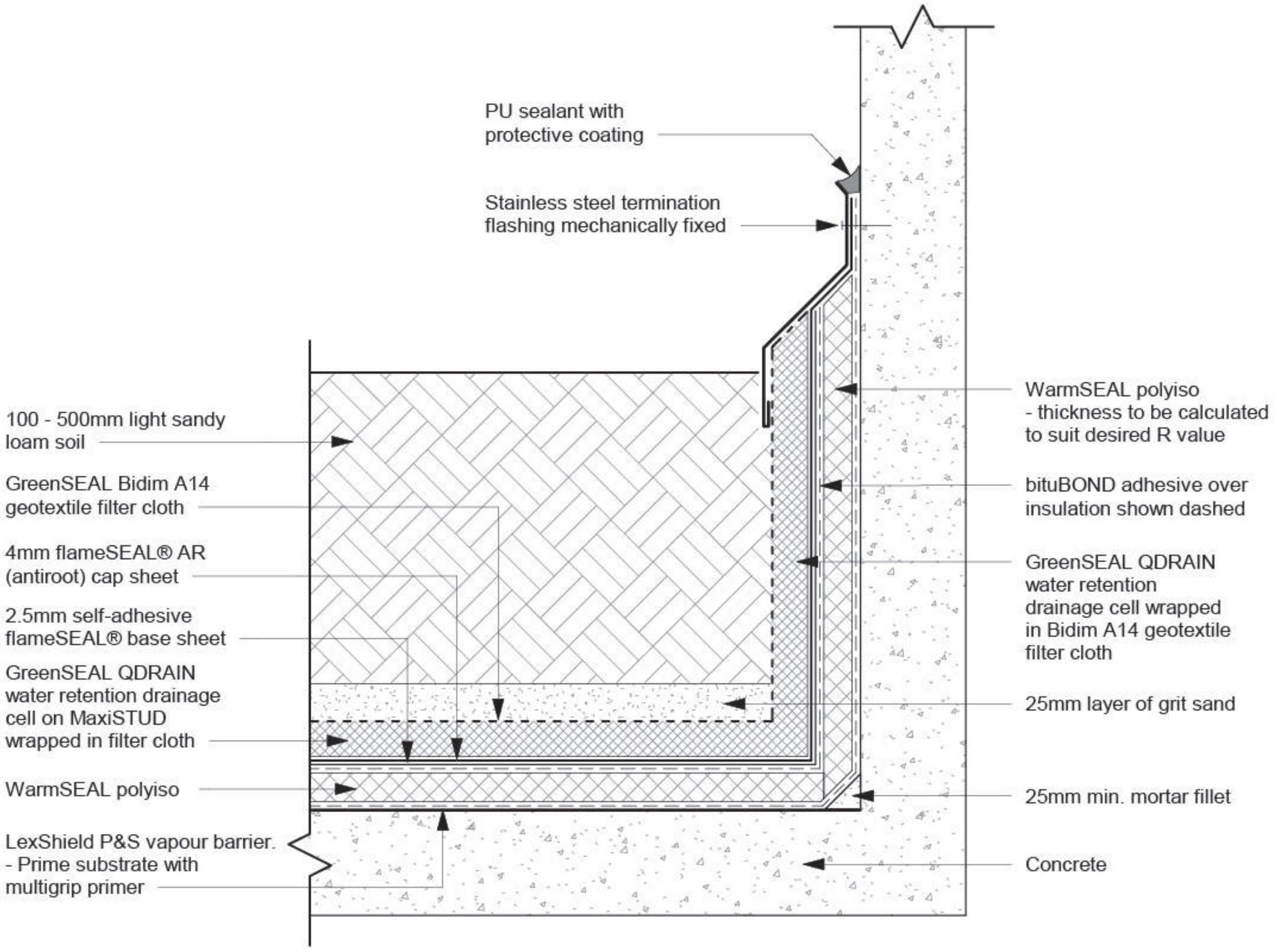
Detail Drawings



GS D02 (fS-AR) - Non-insulated Internal Corner Termination

Revision: 25 October 2019

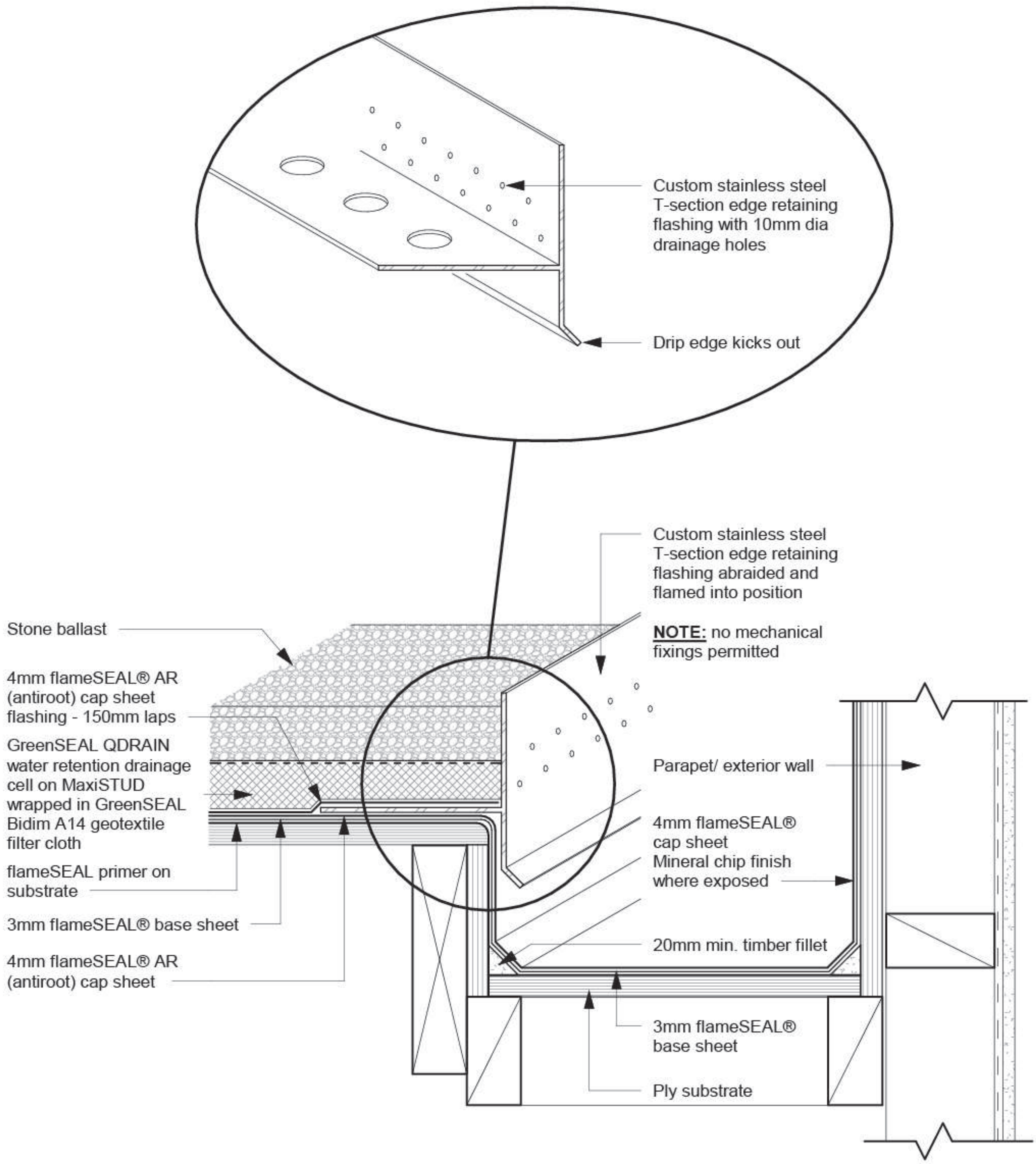
Detail Drawings



GS D03 (fS-AR) - Insulated Internal Corner Termination

Revision: 25 October 2019

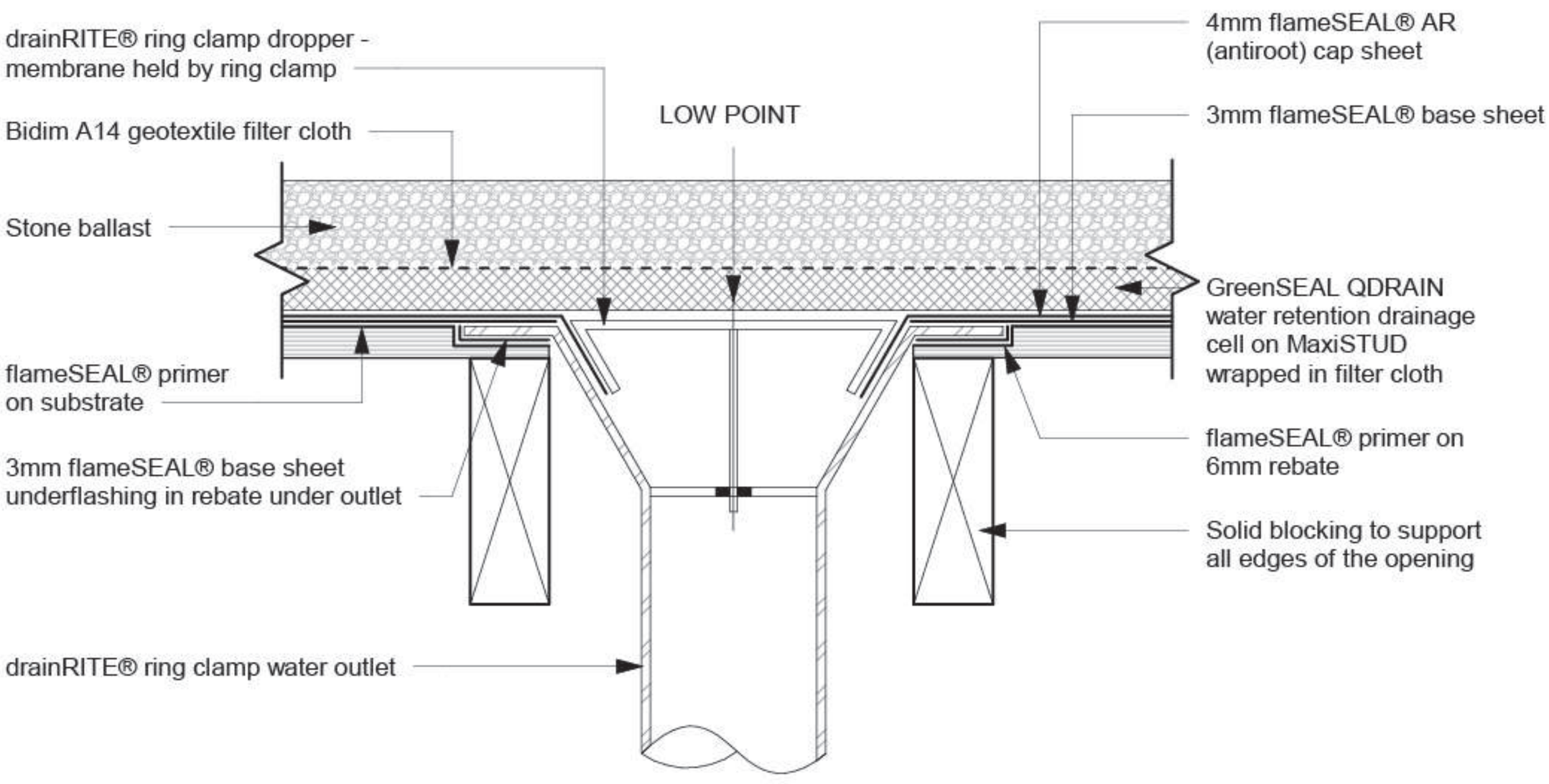
Detail Drawings



GS D04 (fS-AR) - Ballast Gutter

Revision: 25 October 2019

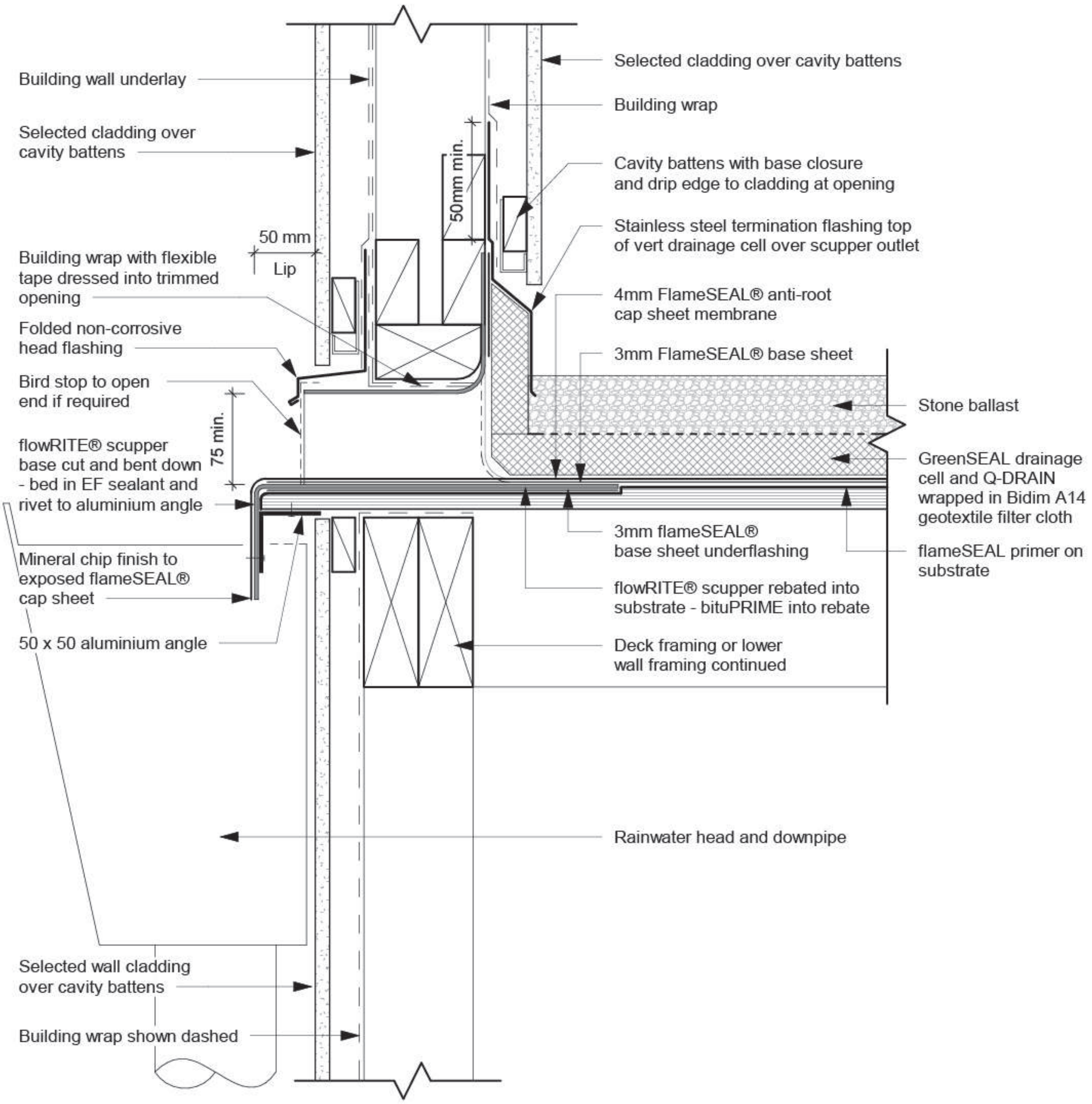
Detail Drawings



GS D05 (fS-AR) - Ballast drainRITE® Outlet

Revision: 25 October 2019

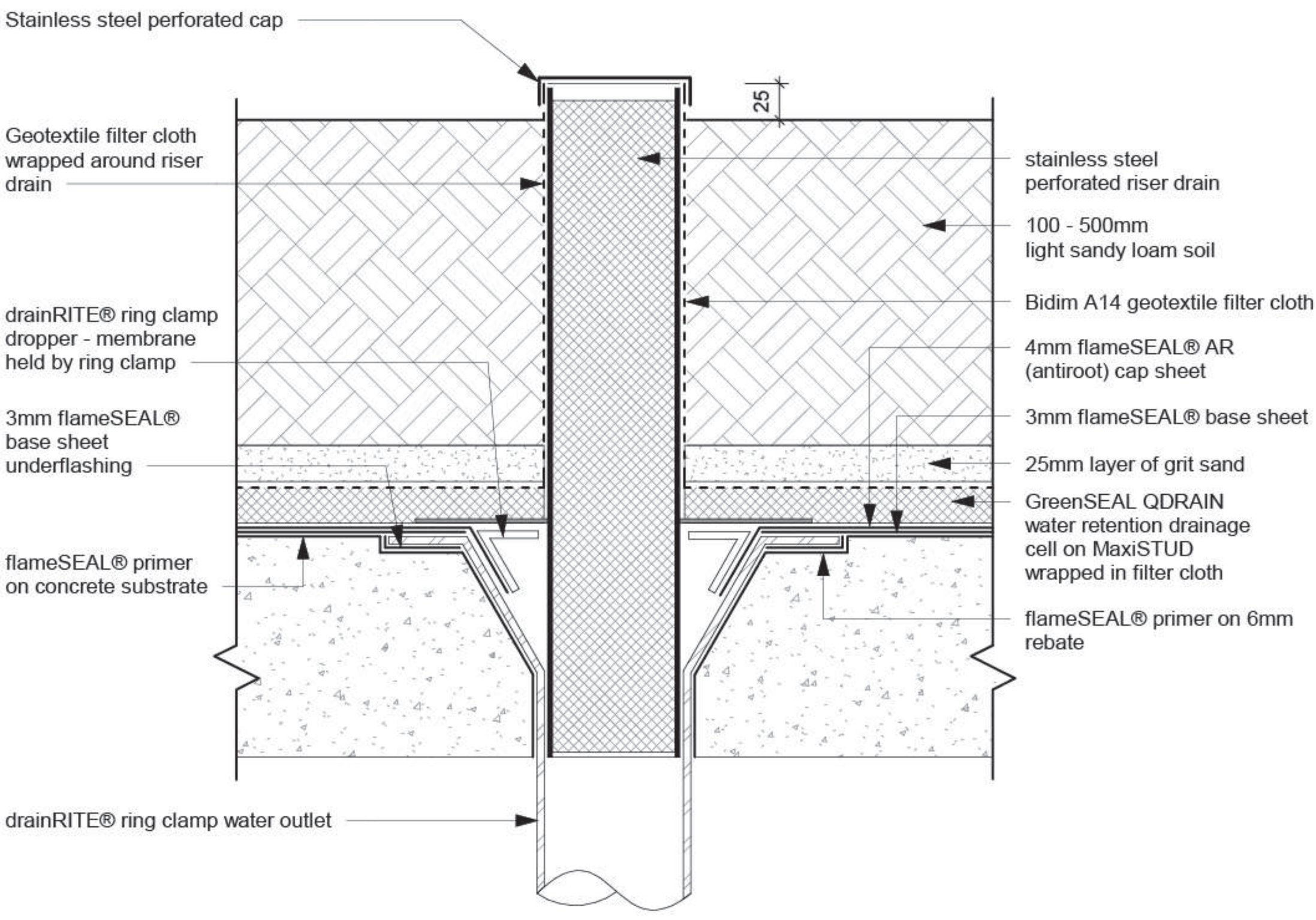
Detail Drawings



GS D06 - Ballast flowRITE® Scupper Outlet

Revision: 25 October 2019

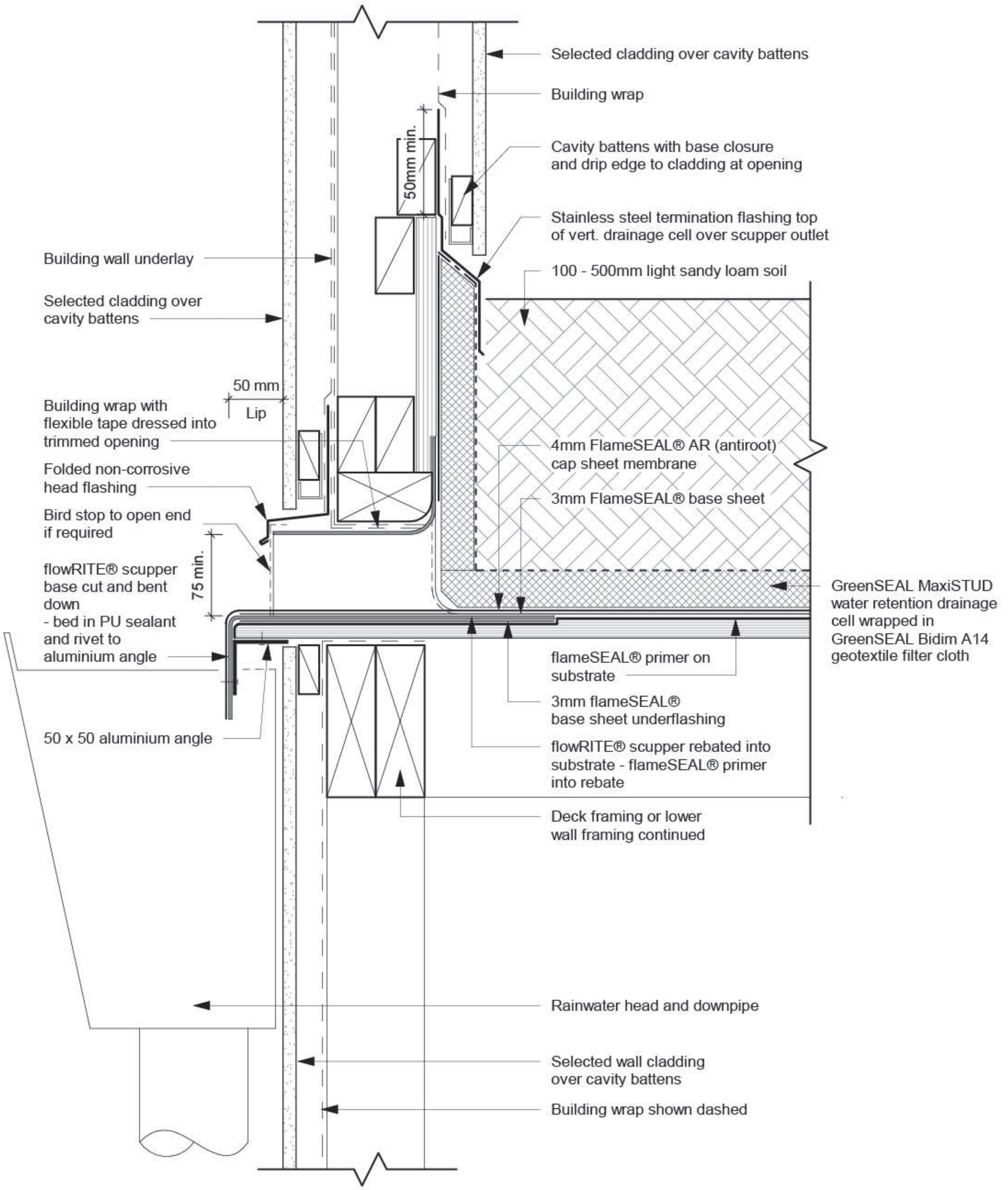
Detail Drawings



GS D07 (fS-AR) - Soil drainRITE® Outlet

Revision: 25 October 2019

Detail Drawings



GS D08 - (fS-AR) Soil flowRITE® Scupper

Revision: 25 October 2019

Tanking Applications

Installation

QUALITY CONTROL AND INSPECTIONS.

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

PRODUCT OVERVIEW

FLAMESEAL PRIMER

A water based, bituminous primer designed to penetrate concrete or ply surfaces and provide a bondable surface. Supplied in 20ltr metal pails.

FLAMESEAL TANKING MEMBRANE

FlameSEAL sand is an APP modified bitumen with a 180gm/m²spun bound composite polyester reinforcement, with a thin polyethylene film on both sides.

WATERSTOPS

A 20 x 25mm high density bentonite water stop. Supplied in boxes of 5m coils (5/box) and installed into preformed rebates within the concrete joint, or nailed/glued into position.

SEPARATION LAYER

Polyethylene foil at least 150 microns thick.

G DRAIN DRAINSEAL PROTECTION BOARD

Protection boards must be overlapped 50mm and taped closed. As recommended for such use by board manufacturer.

BACKFILLING MATERIAL

Includes sand or natural soil, free from stones larger than 30mm in size.

SEALCO recommends that BentoSEAL pre-hydrated bentonite is used in high level tanking applications such as below the water table or when waterproofing habitable spaces

SUBSTRATES

SUBSTRATE SHOULD BE:

- Clean, dry and cured. Water must be removed from the area being installed.
- Smooth on the surface so as not to allow water to track behind the membrane.
- Free of gaps, cracks and voids. All gaps between panels or blocks must be filled and flush-pointed, with no bridging points or gaps.
- Free from sharp edges, boxing lines, and nail spikes.
- Fitted with mortar fillets to all internal junctions, and external corners chamfered to 5mm radius. Mortar fillets should be a minimum of 20mm.

MANAGING THE INSTALLATION

It is important to adequately drain the area where the membrane is being installed.

To drain, dig a hole next to the installation area to position the pump. The hole should be deeper than the area to be drained. Use the pump to remove water from the installation area.

In large construction situations a full site dewatering system may be required. Co-ordination between the membrane installers, steel fixers and concrete contractor is important to minimise the likelihood of damage to the membrane. A pre-installation meeting should be held to clarify expectations and confirm installation requirements.

PRIMING

Prime the substrate with FlameSEAL primer at a rate of 0.2-0.3ltr/m², ensuring good even coverage. Allow reasonable time for the primer to dry (4-5 hours), or adhesion problems may occur.

You may have to re-prime substrates if there is a delay in installing the membrane. These delays increase the likelihood of adhesion problems due to contamination.

TORCHING DOWN MEMBRANE

Prepare and install the under flashing membrane to external and internal corners and up stands as described on page 13.

After relaxing the rolls, position the membrane to be installed and roll back up half way. Roll out this portion of the roll and as you do so, slowly move the torch across the back of the roll.

Burn off the polyethylene and create a small bead of molten bitumen that rolls along with the roll. Once this half is installed, repeat with the opposite half. Once the roll is installed, go back over and seam weld all laps.

Ensure rolls are installed straight and that the 100mm side lap is maintained, and that 150mm end laps are formed. It is critical to ensure all laps are fully formed and that the system is fully watertight. Once it is covered, it is often impossible to get back to the membrane to undertake repairs.

Installation

WATERSTOPS

All construction joints should have a BentoSEAL water stop installed. The water stop should be installed into a pre-formed rebate. Where no rebate has been formed, the water stop should be nailed into position so that it cannot dislodge.

The water stop/rebate must be located at least 50mm from the rebar to ensure that there will be at least 50mm cover of concrete over the water stop.
Lengths of water stop should be butt-joined and kneaded together to form a continuous length.

FOUNDATIONS

Ensure the under slab membrane extends 150mm beyond the building perimeter to allow jointing to wall membrane. Protect this portion until the walls have been struck and the wall-to-floor junction can be formed. Install a separation layer onto the FlameSEAL for protection prior to pouring the floor.

WALLS

Ensure there is no bridging of the wall membrane. It is important that it is fully torched to the substrate.
Bring the under-slab membrane up, torching it to the base of the walls. Install the wall membrane over this portion forming the floor-to-wall junction. Ensure a good seal. If the under slab membrane is polythene, torch the vertical membrane down across the floor-to-wall junction and bring the polythene up over the vertical torch-on membrane or terminate to a chase.

PILE CAPS

Detail Drawings: Page 48

Clean the top of the pile cap thoroughly and flush smooth with a high strength mortar. Install a drymix 20mm mortar fillet around the pile cap. Prime the area with FlameSEAL primer ensuring good even coverage. Install a FlameSEAL BS under-flashing by cutting and dressing the under-flashing around the pile cap perimeter and up over the mortar fillet onto the top of the pile cap. Terminate the under-flashing clear of the rebar. In the same way, install the FlameSEAL CS cap-sheet ensuring all laps are well bonded, and that the base-sheet and cap sheet membrane cuts are off-set. Ensure all work is fully bonded and a watertight seal is formed.

PENETRATIONS

Clean around the penetration area thoroughly and flush smooth with a high strength mortar. Install a 20mm mortar fillet around the penetration. Prime the area with FlameSEAL primer ensuring good even coverage. Install a FlameSEAL BS under-flashing by cutting and dressing the under-flashing around the penetration perimeter and up over the mortar fillet around the circumference of the penetration. Terminate the under-flashing clear of the rebar. In the same way, install the FlameSEAL CS cap-sheet ensuring all laps are well bonded, and that the base-sheet and cap sheet membrane cuts are off-set. Ensure all work is fully bonded and a watertight seal is formed.

MEMBRANE TERMINATION

Detail Drawings: Page 52

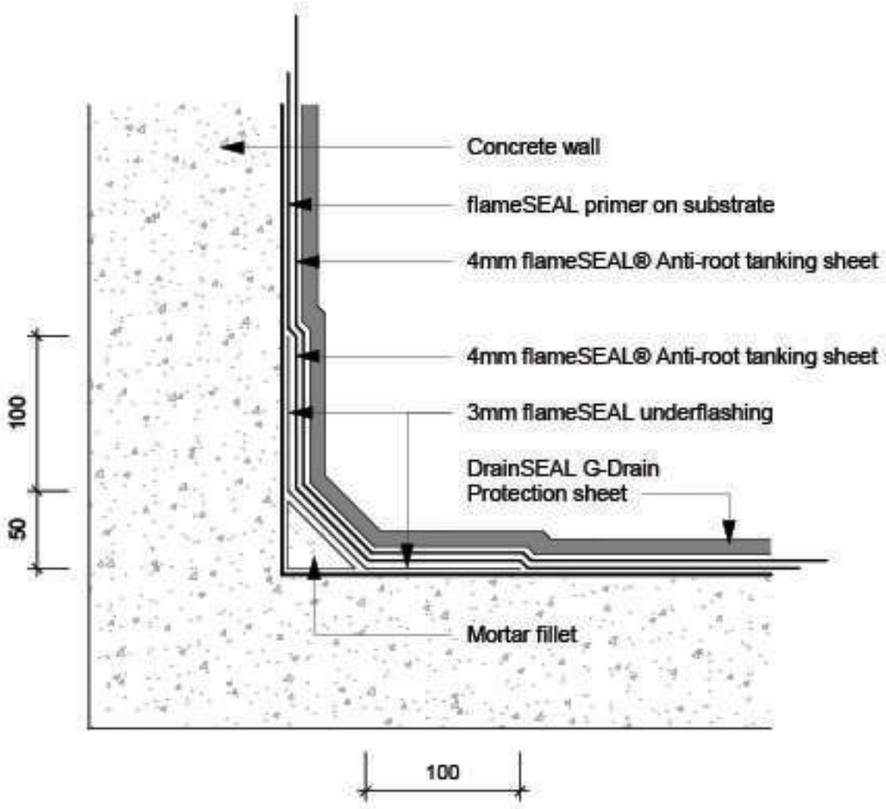
Terminate the membrane using a compression flashing and sealant, or terminate to a chase.

PROTECTION AND DRAINAGE

Install Drainseal G Drain protection boards, next to the tanking system. A certified drainage system should be installed to remove water from the building perimeter. The drainage should be able to cope with the anticipated volumes of water likely on site. Drainage should be placed 150mm from the membrane and 200mm below the floor-wall construction joint.

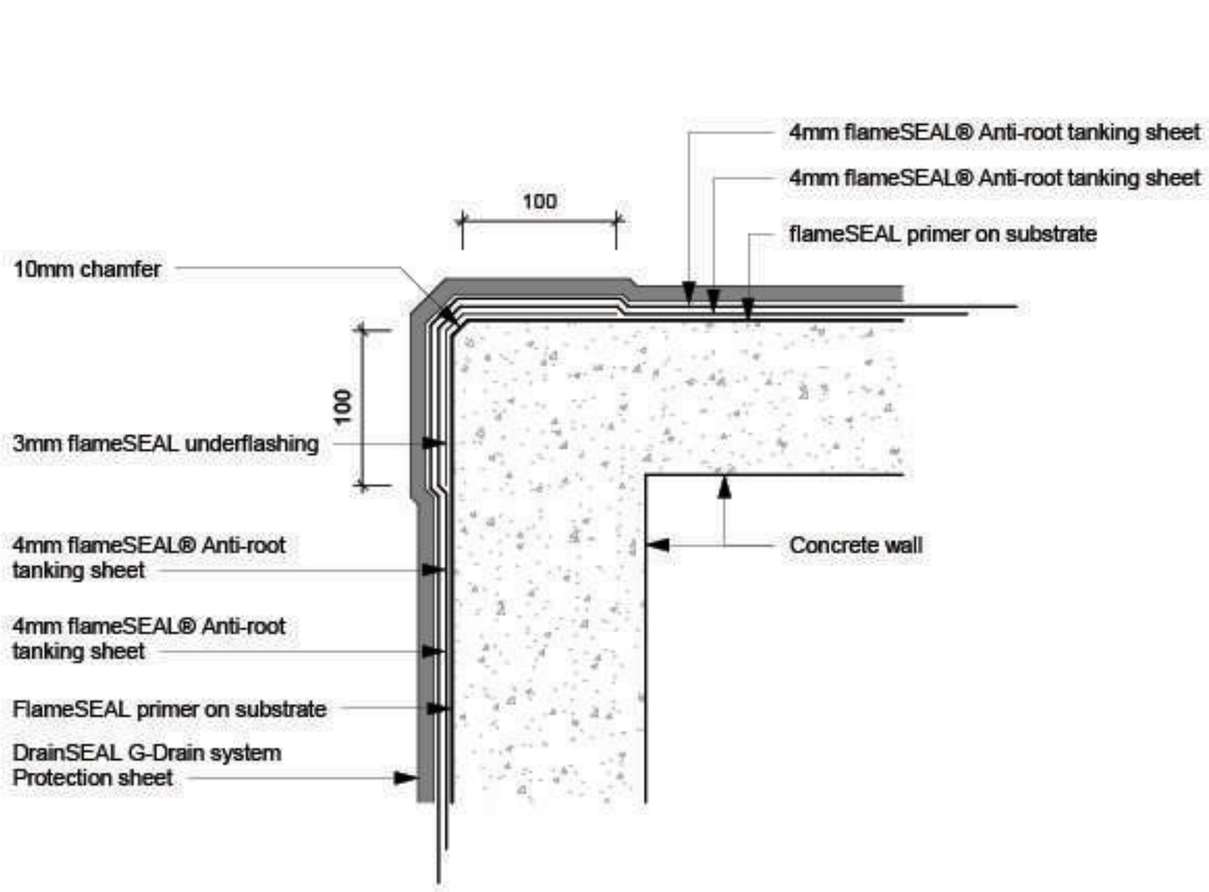
When Connecting onto another membrane system, contact Sealco for a specific detail.

Detail Drawings



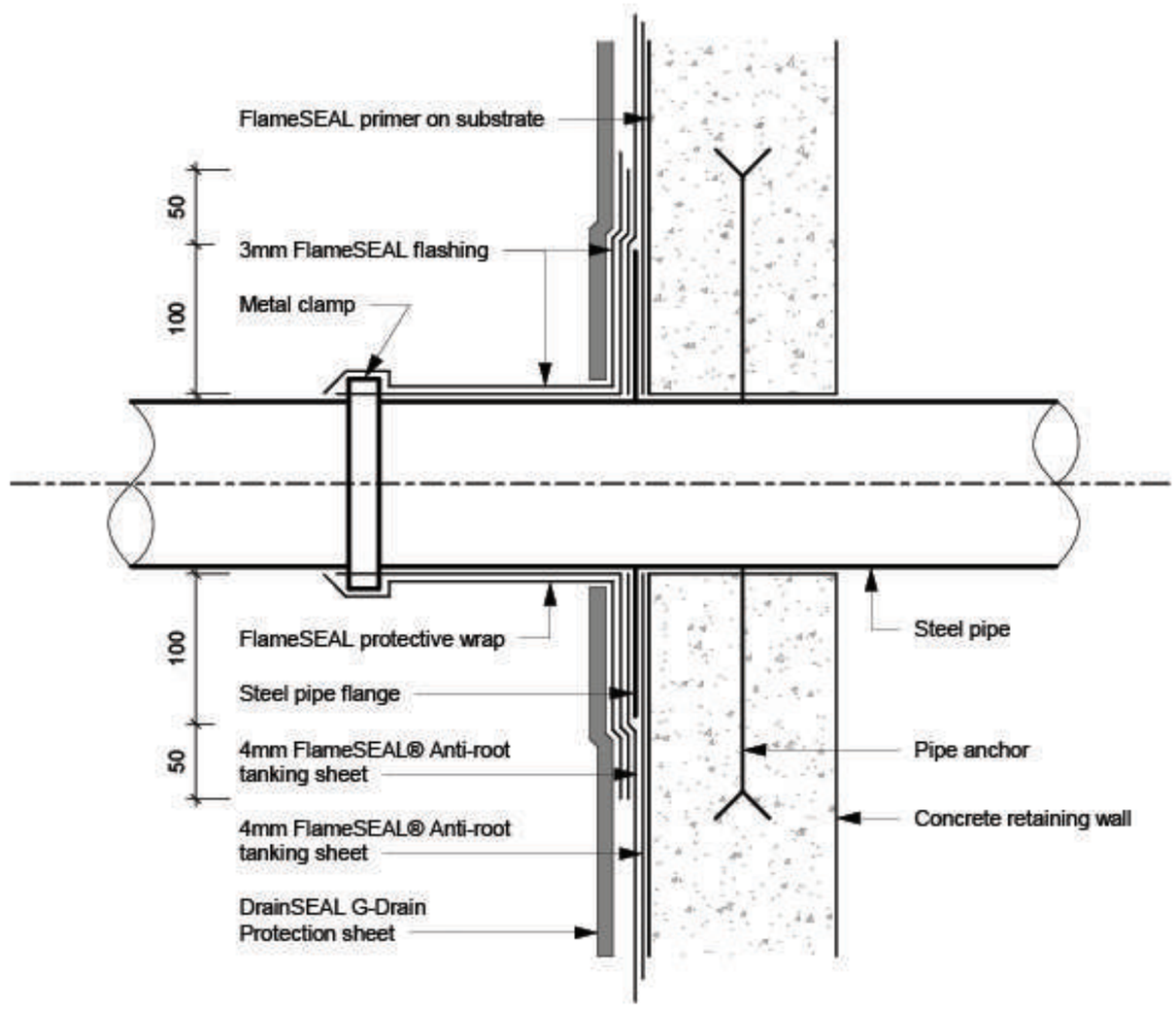
fS-T D01 - Interior Concrete Corner (Two Layer)

Revision: 15 November 2019



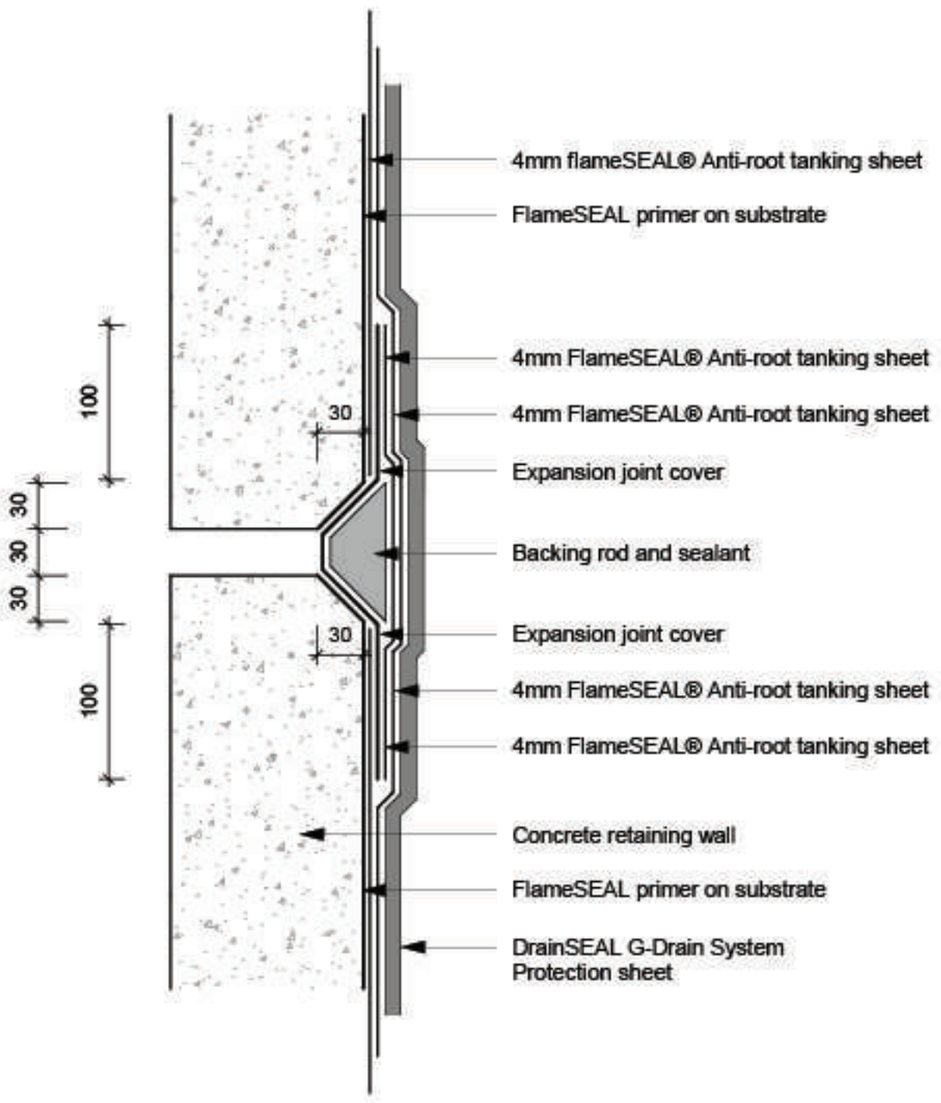
fS-T D02 - Exterior Concrete Corner (Two Layer)

Revision: 15 November 2019



fS-T D03 - Concrete/ Pipe Penetration (Two Layer)

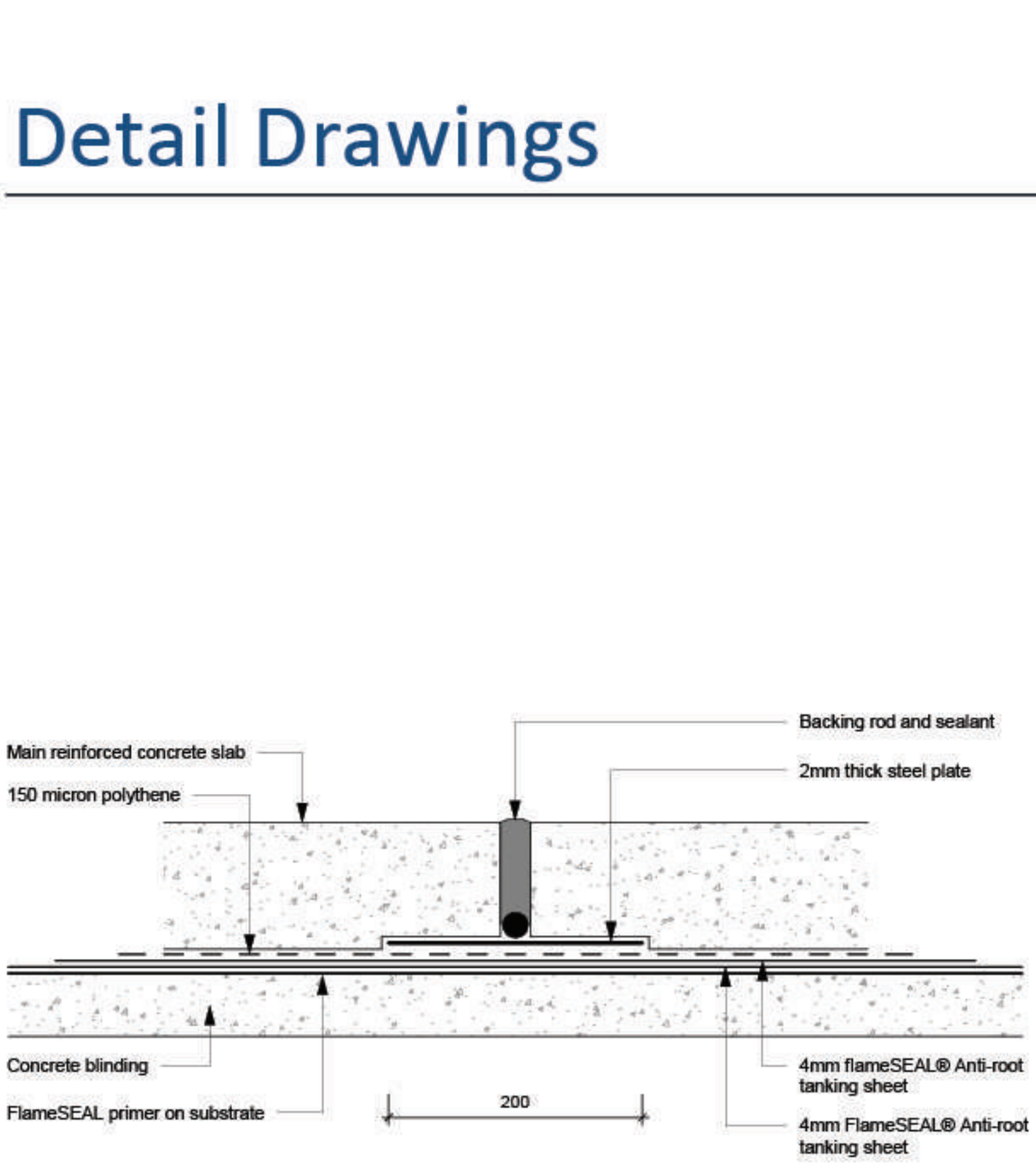
Revision: 15 November 2019



fS-T D04 - Expansion Joint (Two Layer)

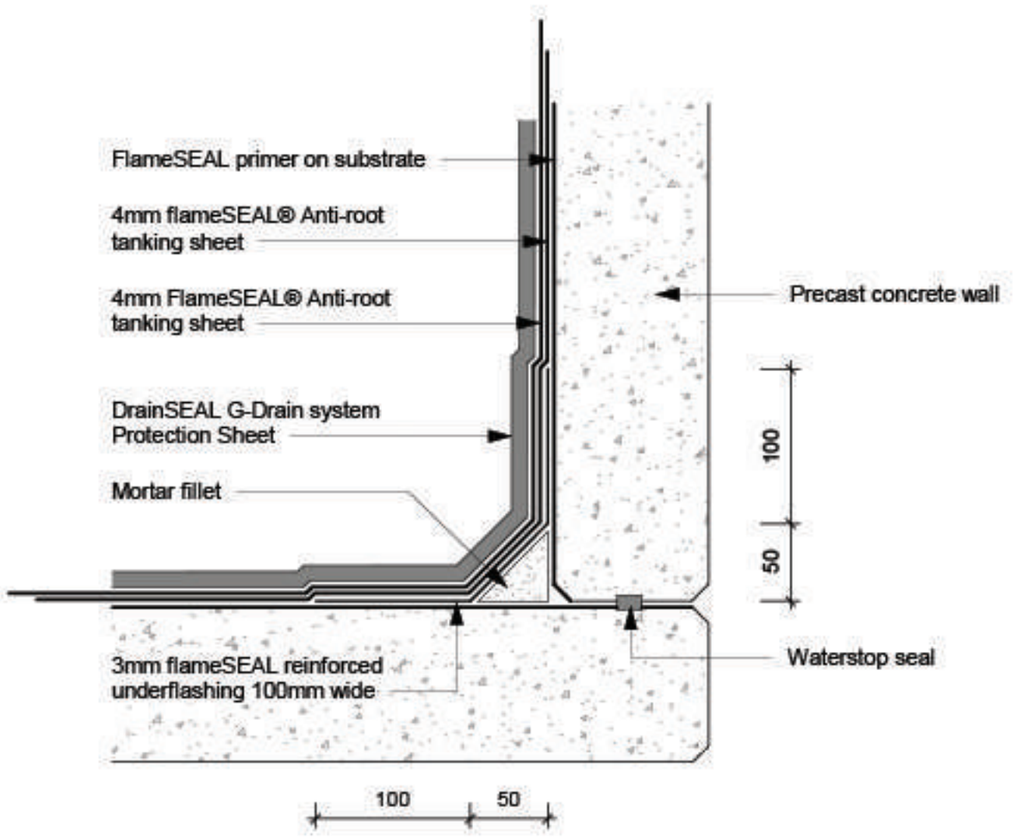
Revision: 15 November 2019

Detail Drawings



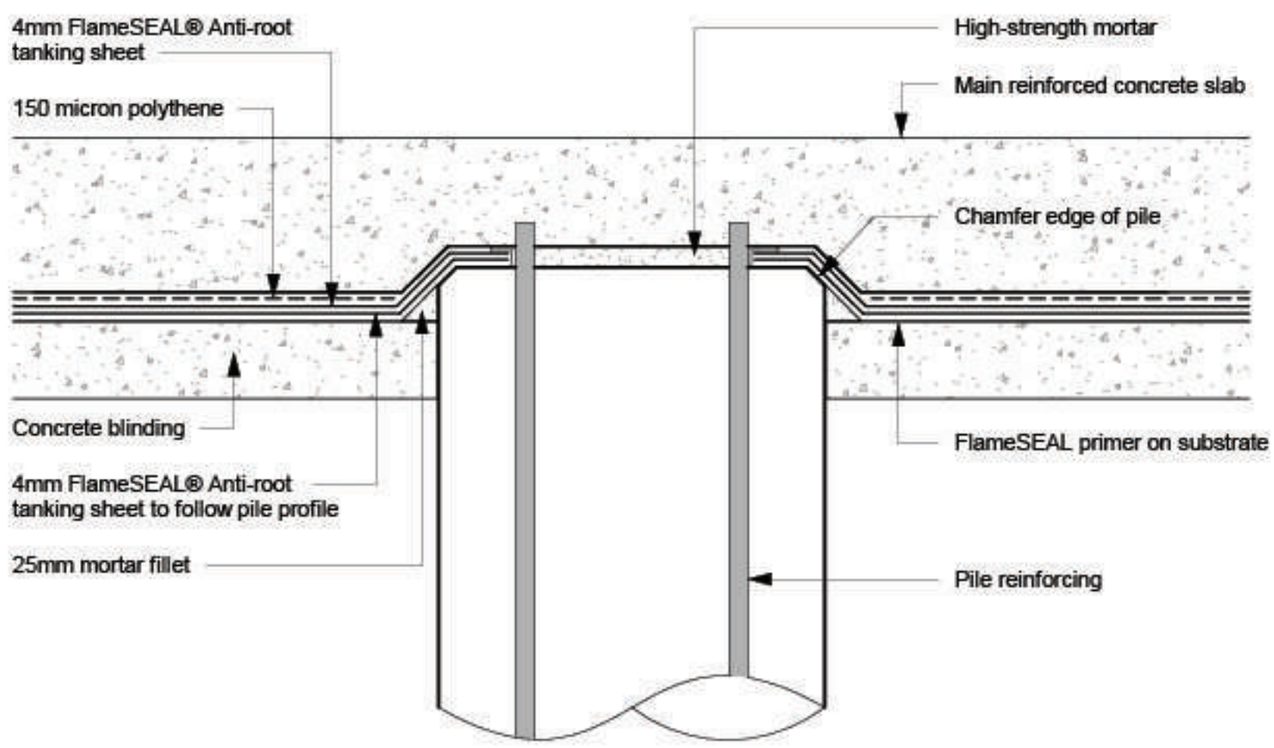
fS-T D05 - Expansion Joint 2 (Two Layer)

Revision: 15 November 2019



fS-T D06 - Construction Joint (Two Layer)

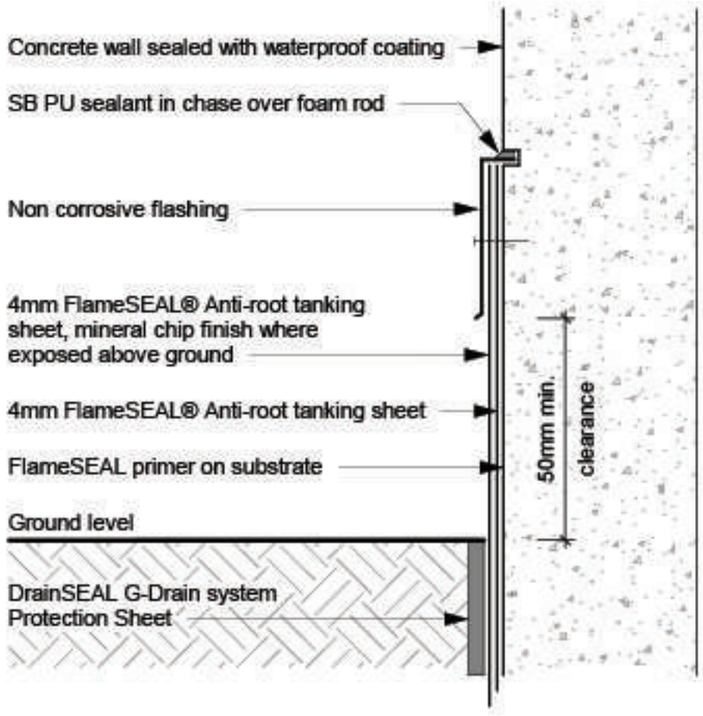
Revision: 15 November 2019



fS-T D07 - Pile Cap Detail (Two Layer)

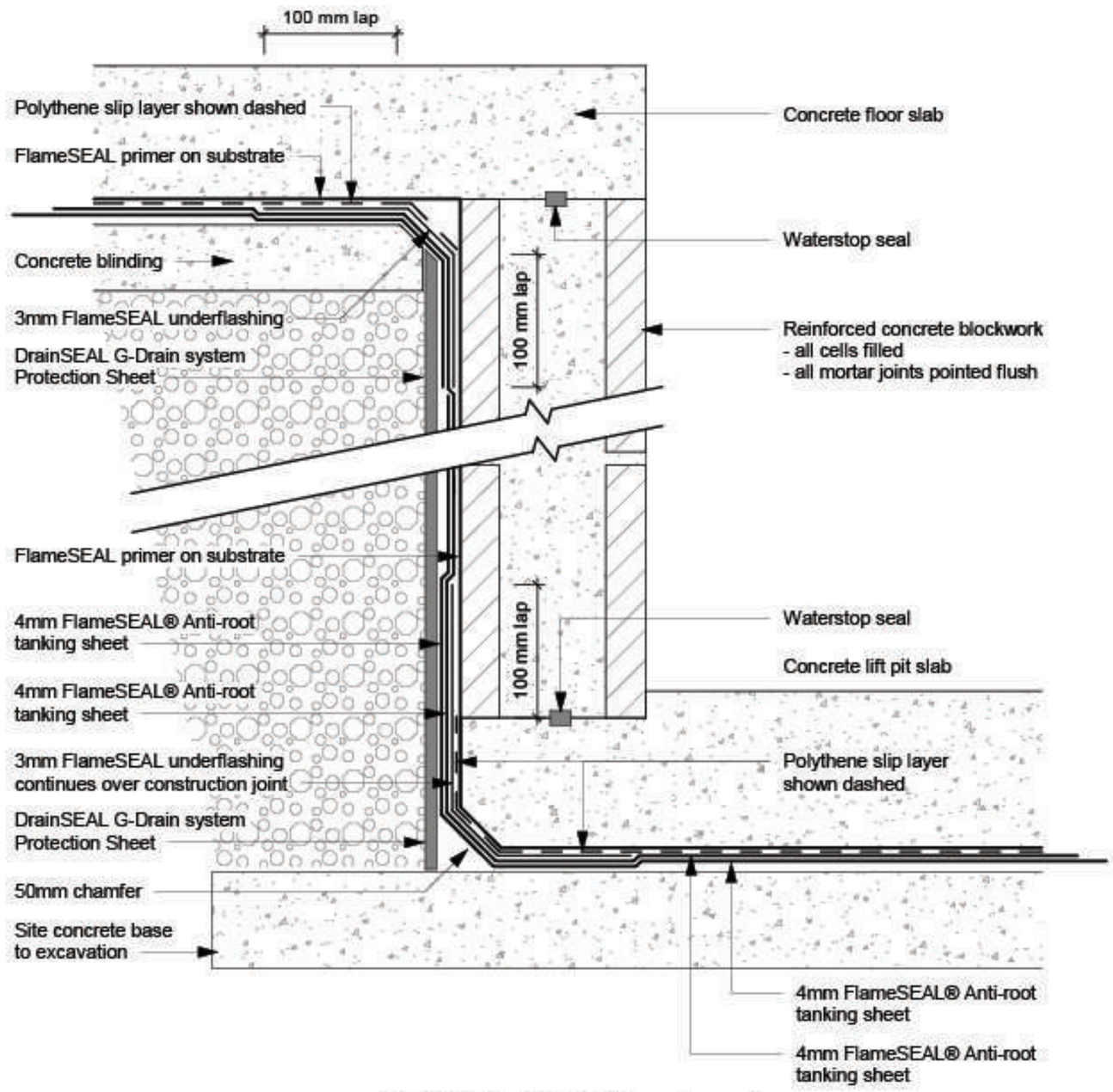
Revision: 15 November 2019

Detail Drawings



fS-T D08 - Vertical Termination 1 (Two Layer)

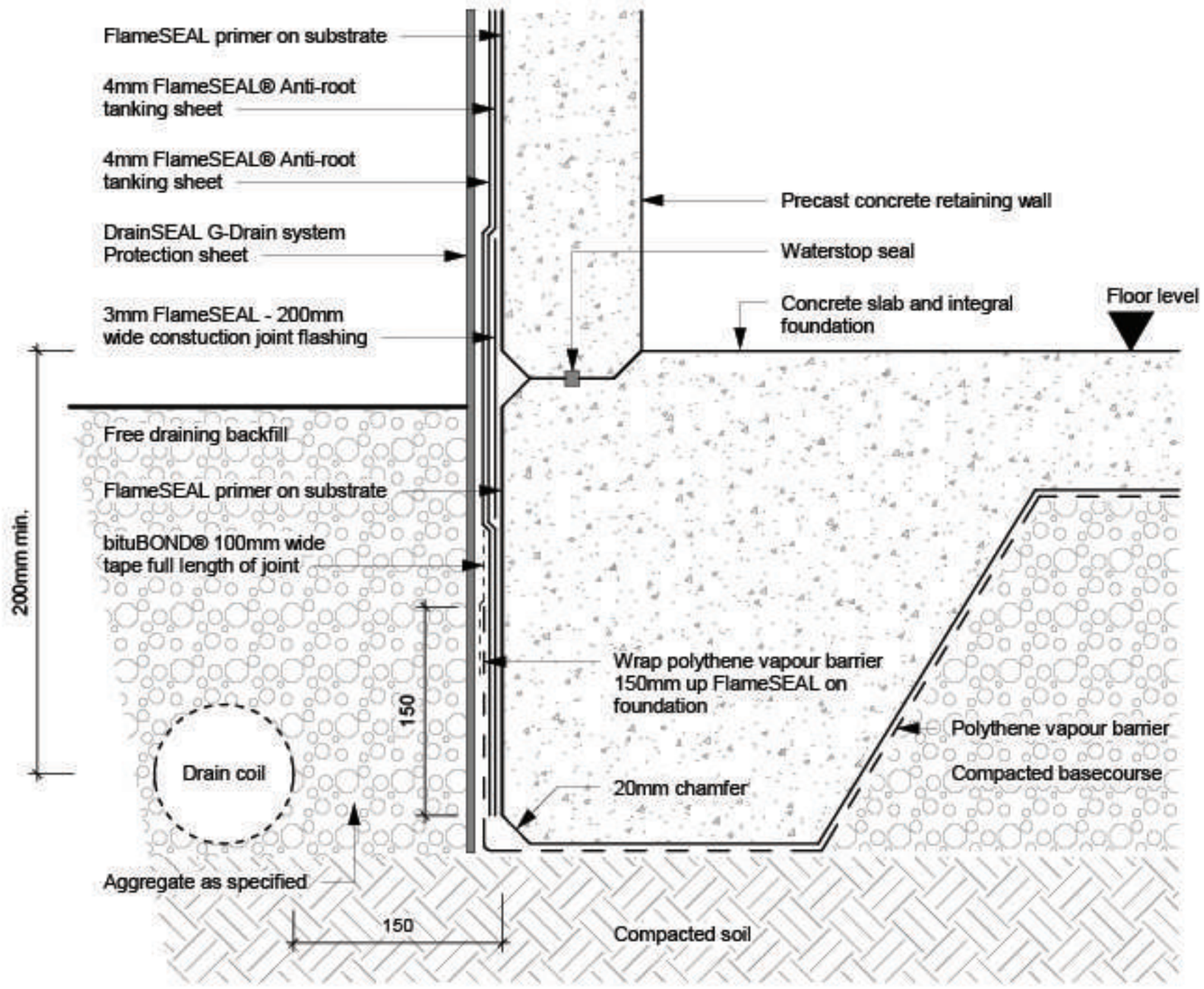
Revision: 15 November 2019



fS-T D09 - Lift Pit (Two Layer)

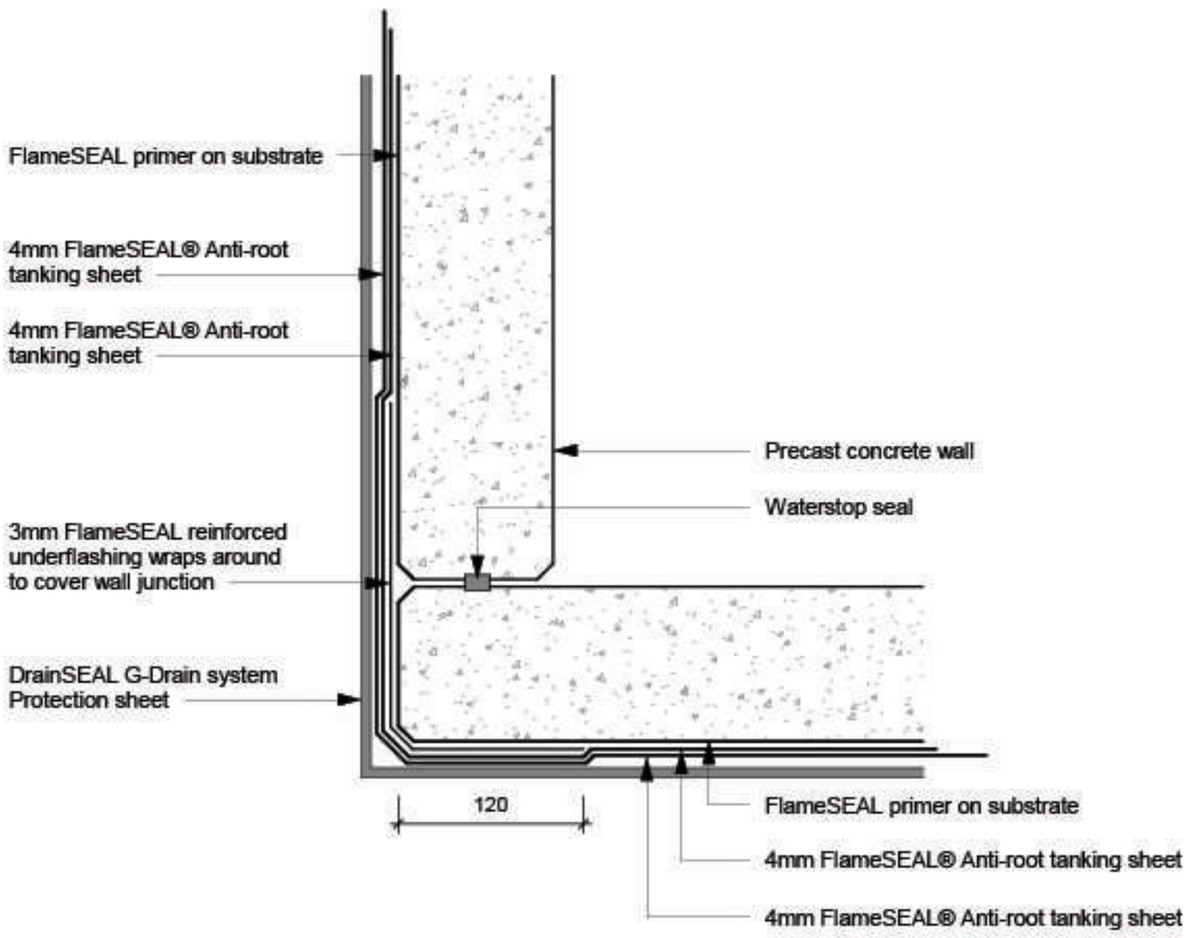
Revision: 15 November 2019

Detail Drawings



fS-T D10 - Precast Wall/ Floor Joint (Two Layer)

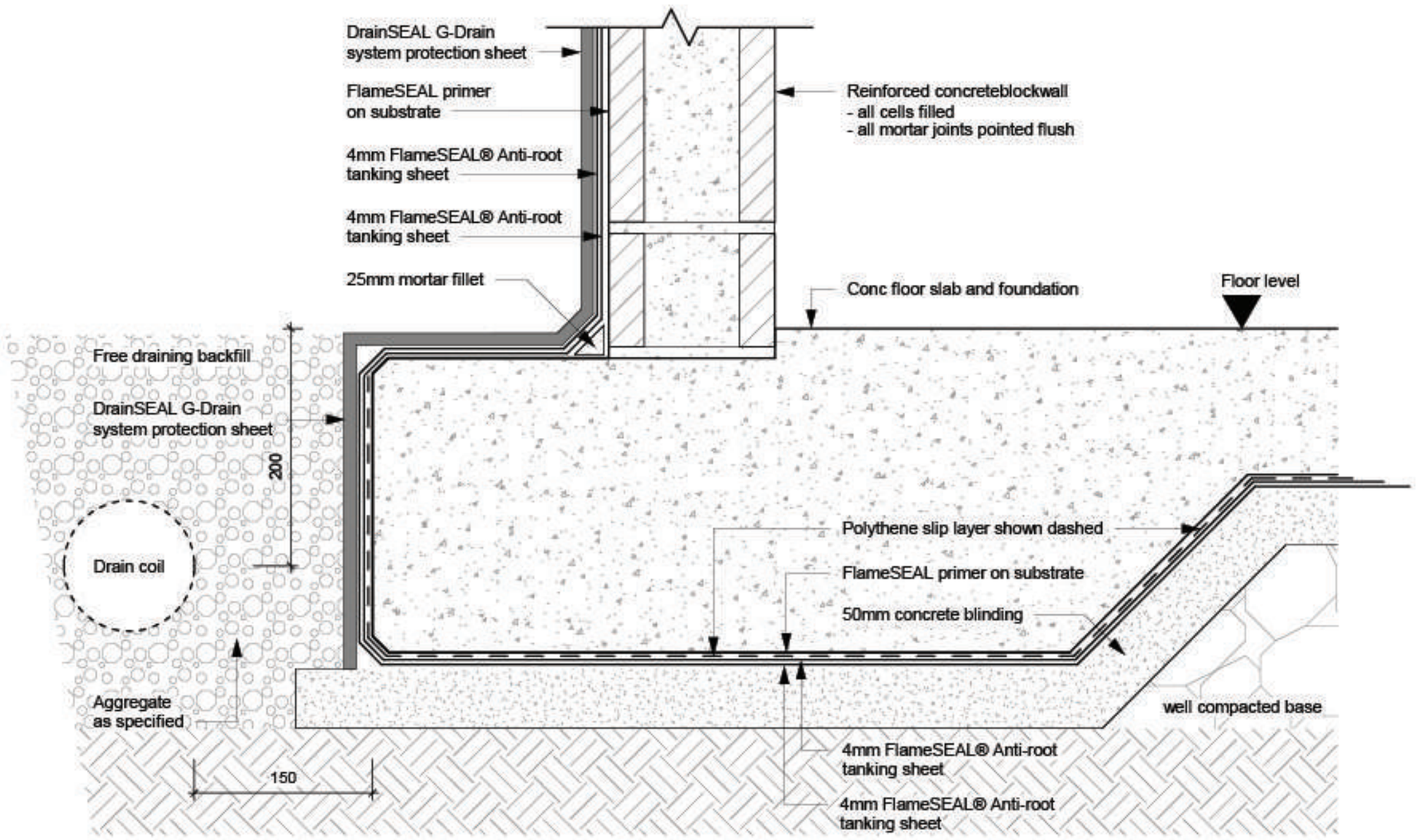
Revision: 15 November 2019



fS-T D11 - Wall Corner - Plan (Two Layer)

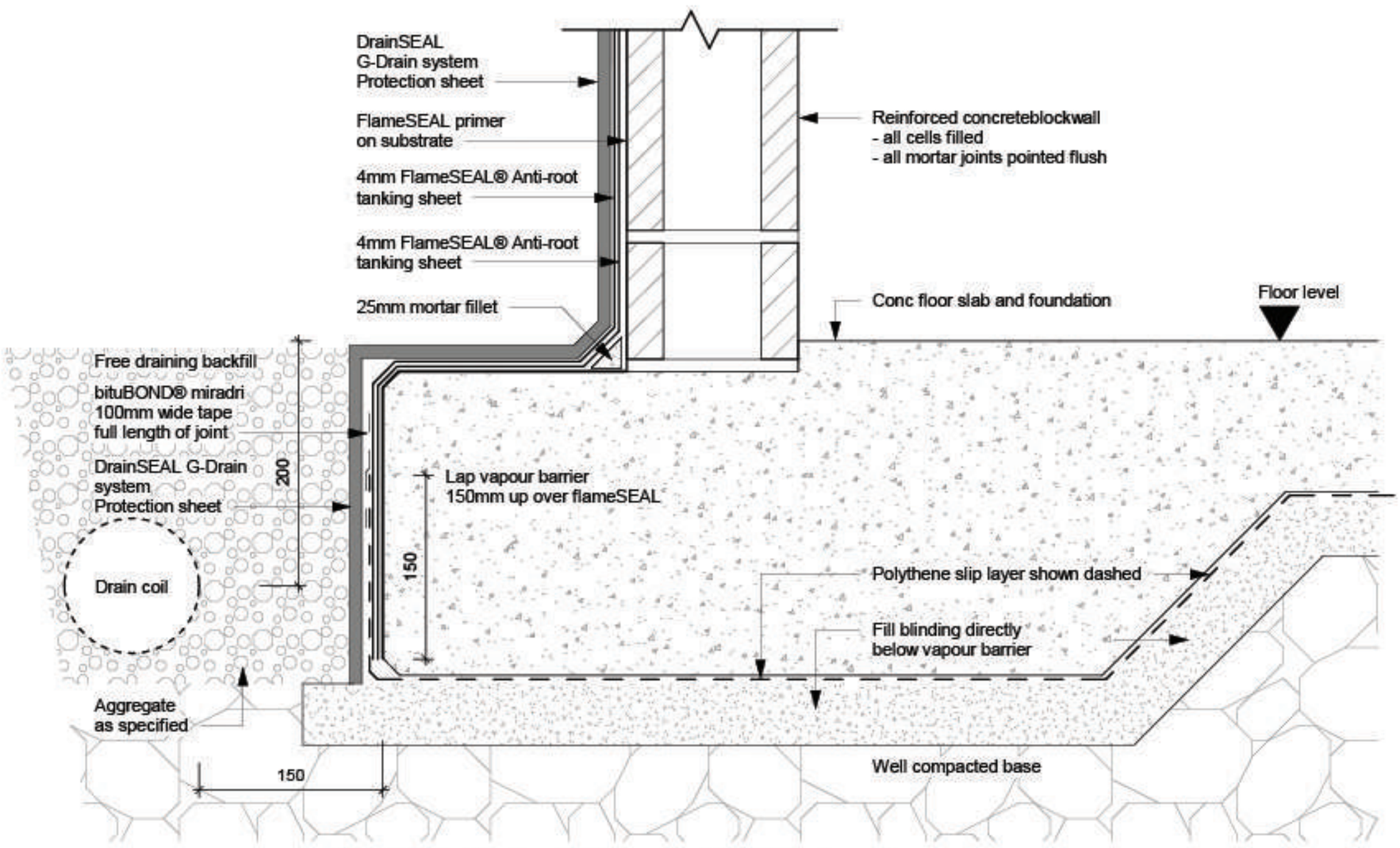
Revision: 15 November 2019

Detail Drawings



fS-T D12 - Blockwall/ Floor Joint 2-1 (Two Layer)

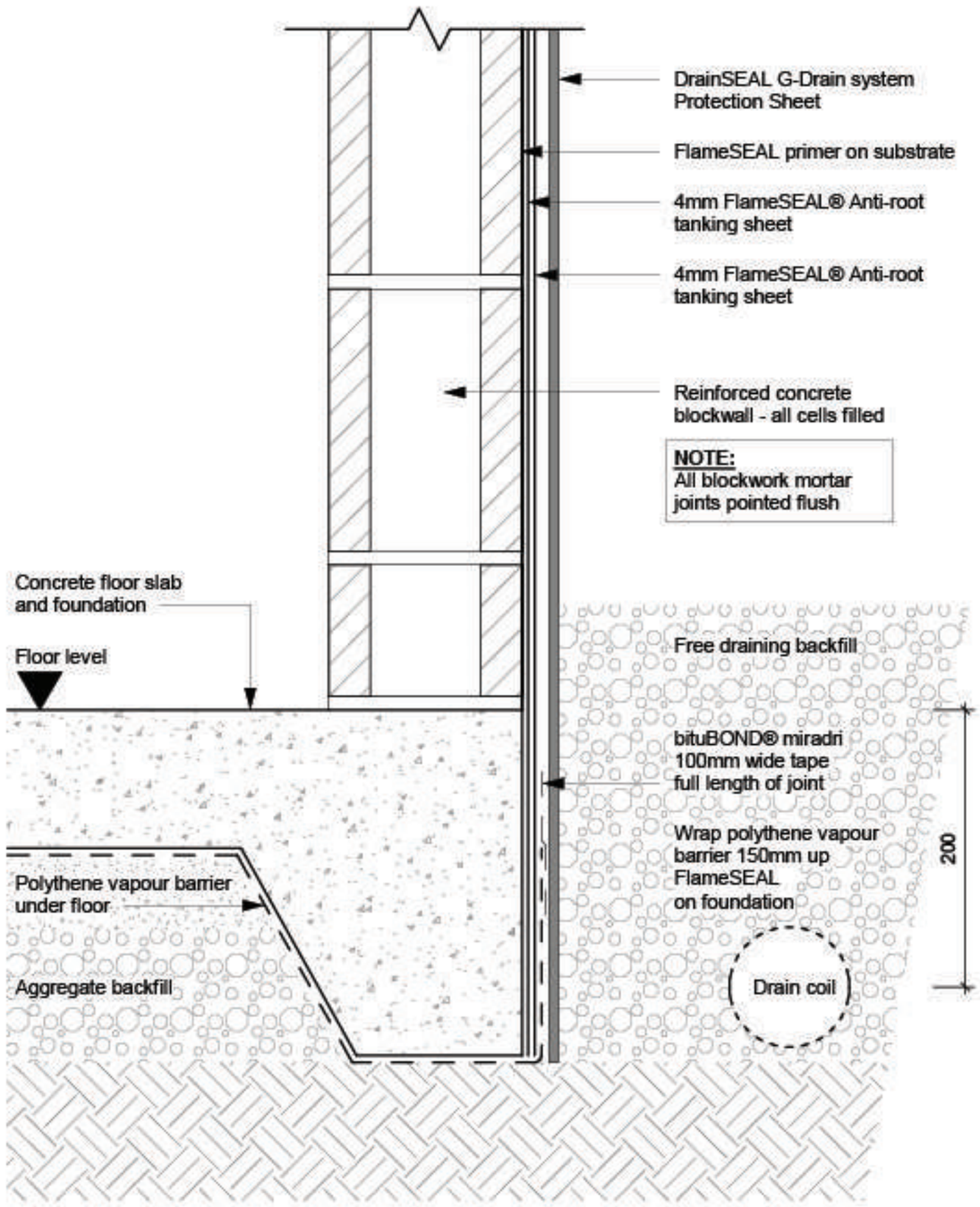
Revision: 15 November 2019



fS-T D13 - Blockwall/ Floor Joint 2-2 (Two Layer)

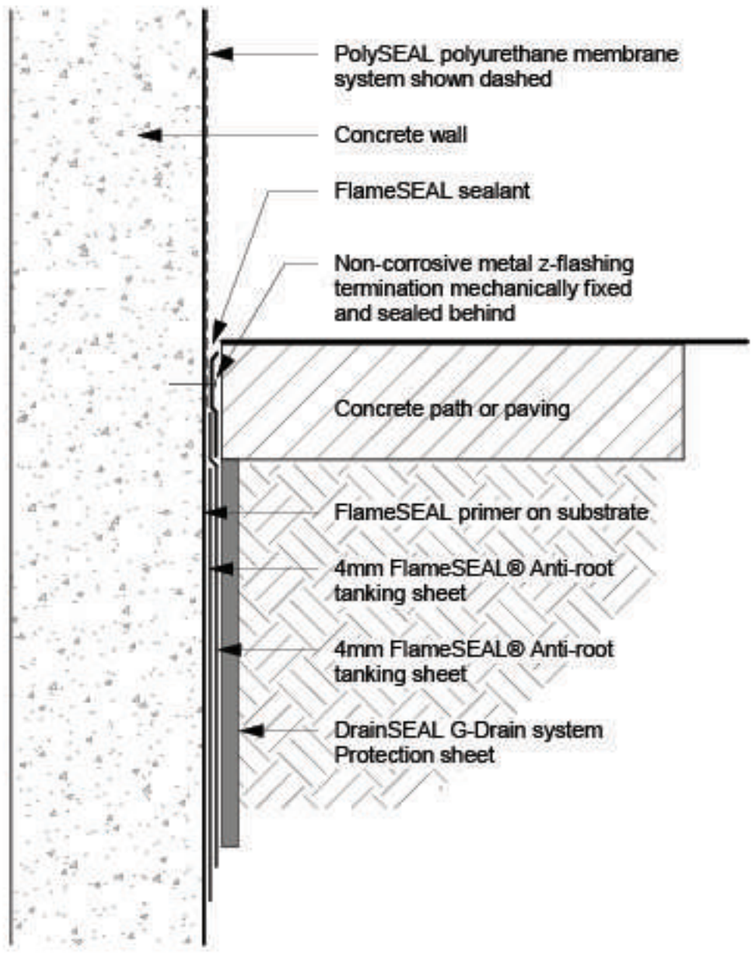
Revision: 15 November 2019

Detail Drawings



fS-T D14 - Blockwall/ Floor Joint 2-3 (Two Layer)

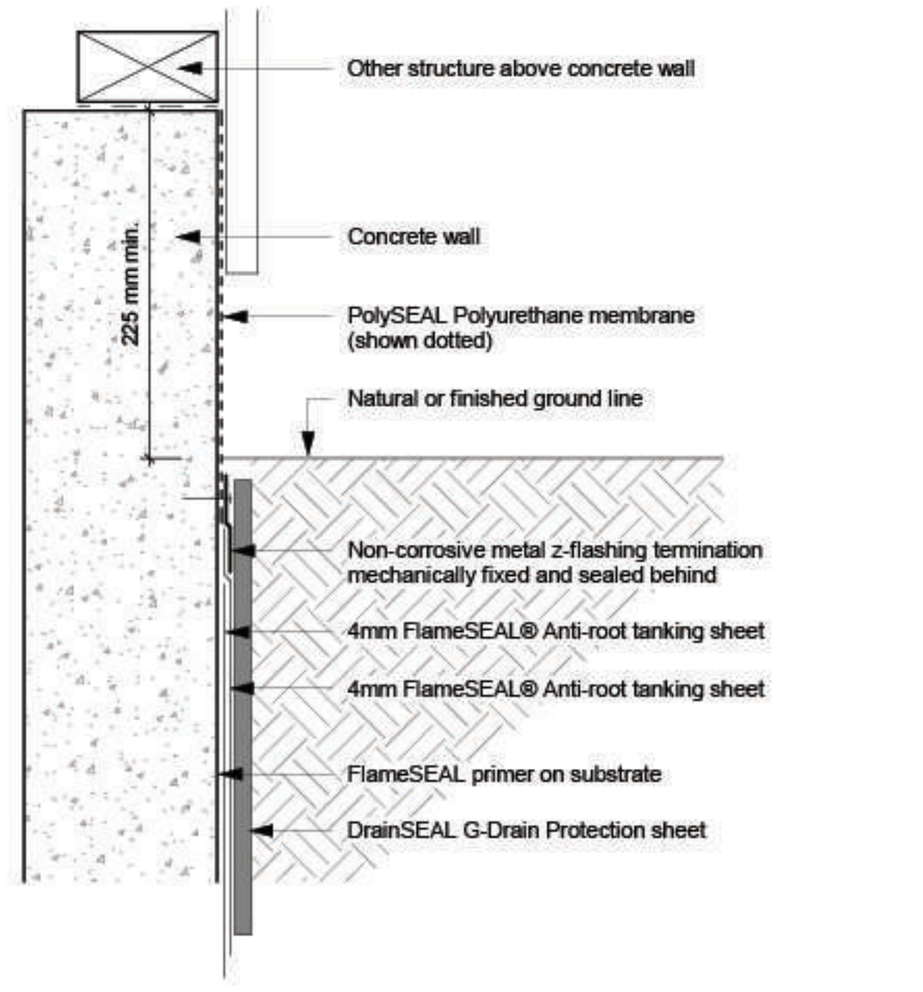
Revision: 15 November 2019



fS-T D15 - Vertical Termination 2 (Two Layer)

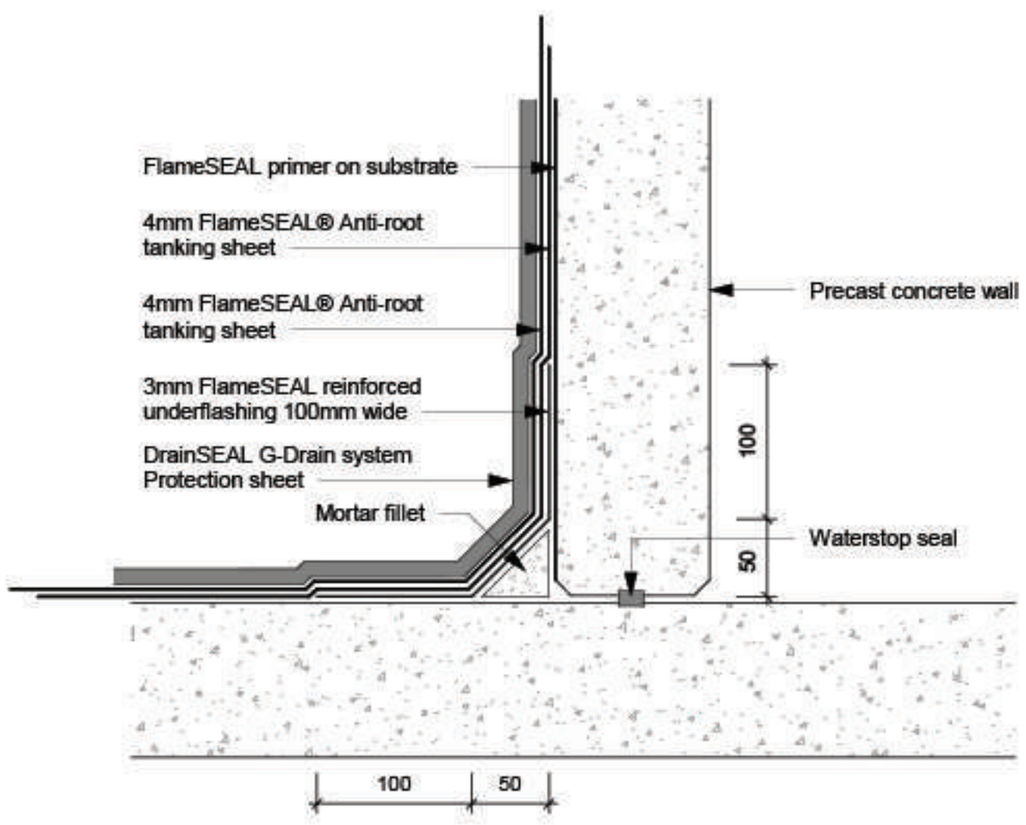
Revision: 15 November 2019

Detail Drawings



fS-T D16 - Vertical Termination 3 (Two Layer)

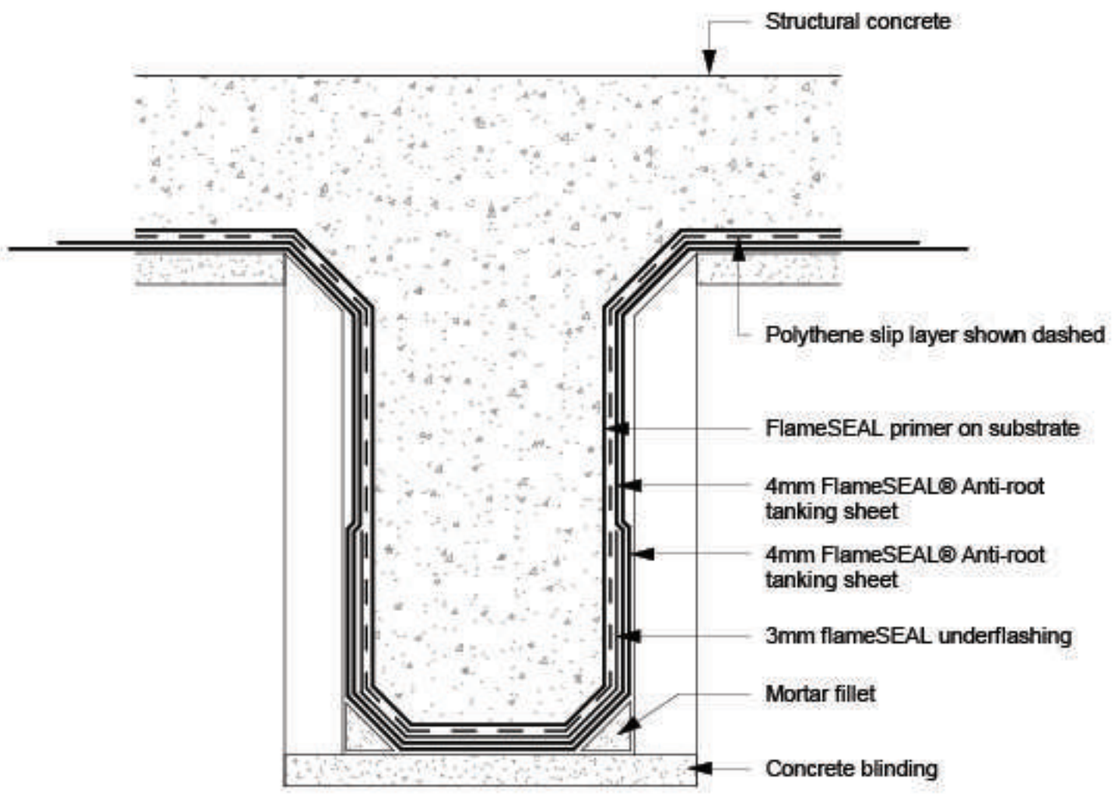
Revision: 15 November 2019



fS-T D17 - Wall T-Junction - Plan (Two Layer)

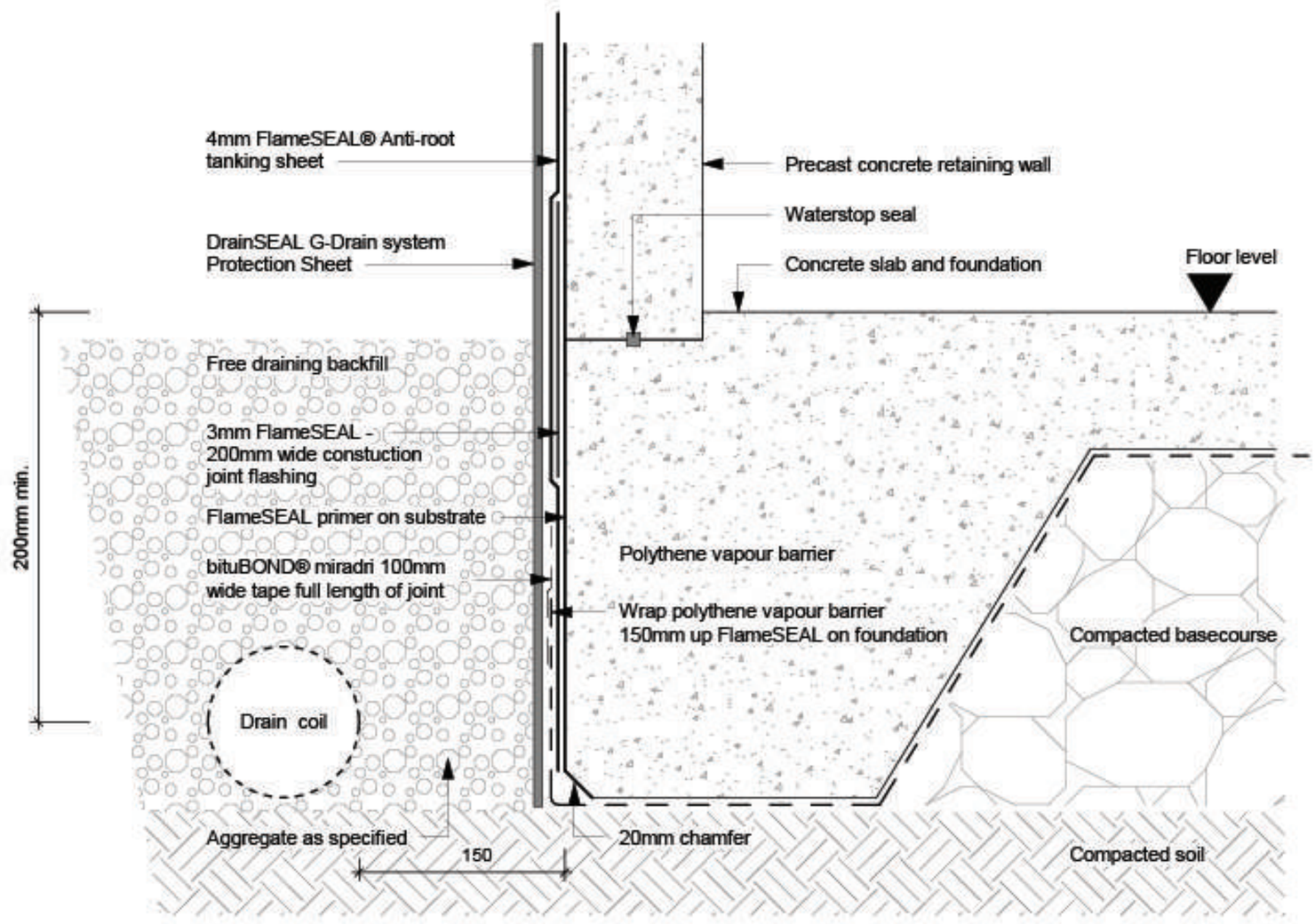
Revision: 15 November 2019

Detail Drawings



fS-T D18 - Ground Beam (Two Layer)

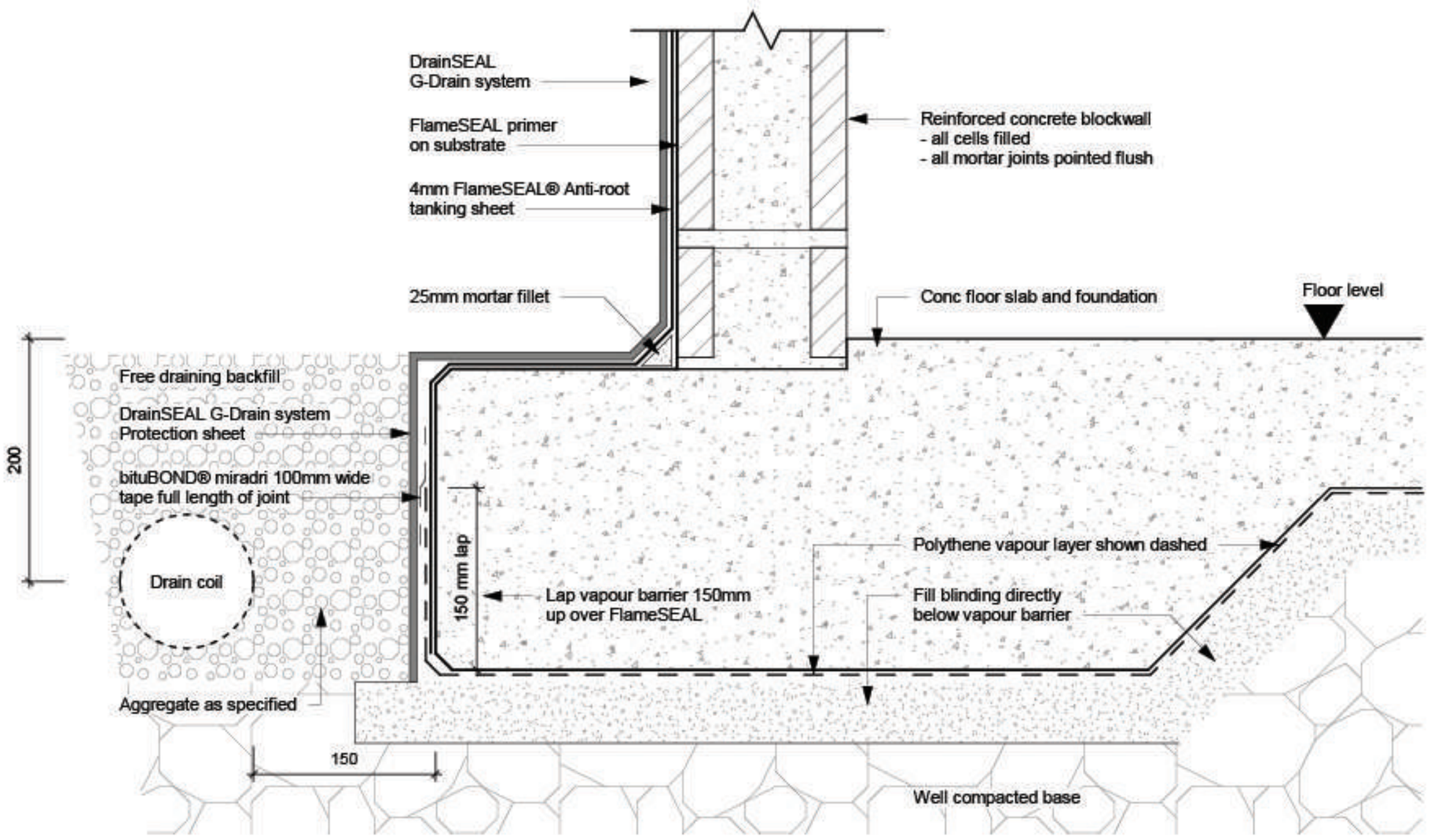
Revision: 15 November 2019



fS-T D19 - Precast Wall/ Floor Joint (Single Layer)

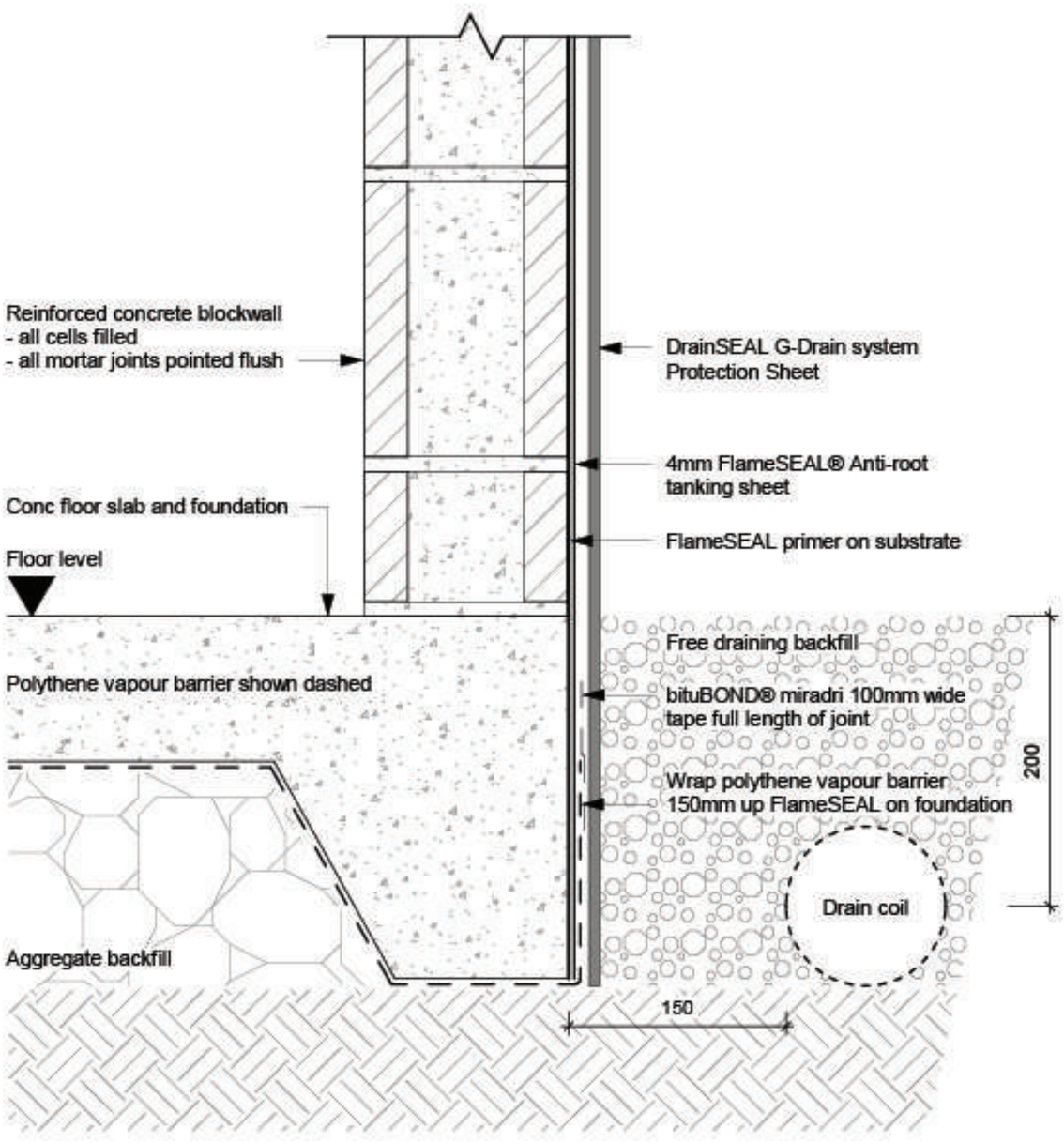
Revision: 15 November 2019

Detail Drawings



fS-T D20 - Blockwall/ Floor Joint 1-1 (Single Layer)

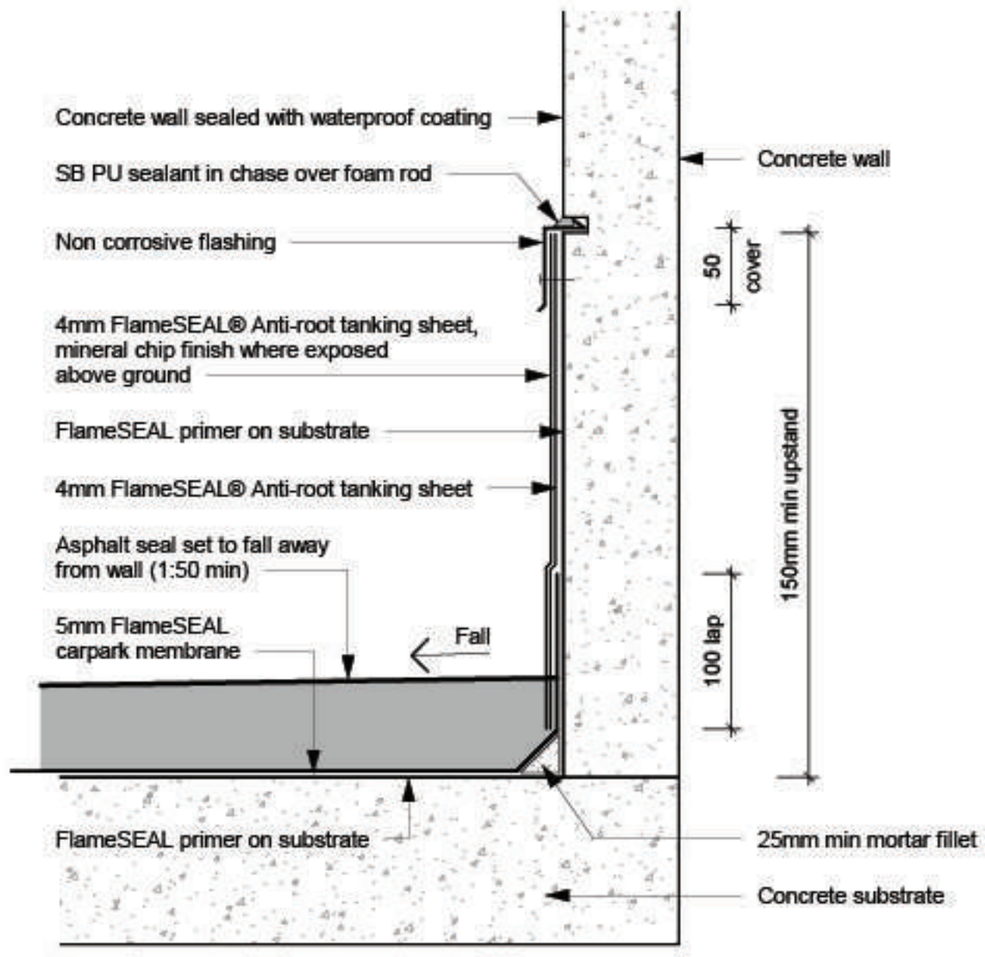
Revision: 15 November 2019



fS-T21 - Blockwall/ Floor Joint 1-2 (Single Layer)

Revision: 15 November 2019

Detail Drawings



fS-T D22 - Vertical Termination 1 Carpark (Single Layer)

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