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# Installation Manual

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Vertical Shiplap Cavity System

**Western Red Cedar**

VC-WC-IM-V5

## **\*\*IMPORTANT\*\***

This Installation Manual (IM) is specific to **WESTERN RED CEDAR (WC) and VERTICAL SHIPLAP cavity system (VC)** profile only.

**Specific drawings** in this Installation Manual can be found at the back.

There are 9 CertClad Installation Manuals in the following profiles and timber species. Profiles are Bevel Back, Rusticated or Vertical Shiplap. The timber species are Accoya, Western Red Cedar and Radiata Pine.

You can find these documents on our website [www.ititimspec.nz/downloads](http://www.ititimspec.nz/downloads). If you have any questions, please feel free to contact us. Auckland office (09)620-0260 or [technical@ititimspec.co.nz](mailto:technical@ititimspec.co.nz)

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# 1 SCOPE

## 1.1 INTENDED USE

This Vertical Shiplap Weatherboard Cavity System has been designed for use as cladding for residential and light commercial buildings. It is only suitable for buildings with a 'Risk Score' of 0 - 20 Calculated in accordance with New Zealand Building Code (NZBC) Clause E2/AS1 Table 1 and Wind Zones up to and including extra high.

## 1.2 VALIDITY

CertClad is only valid when all products in the weatherboard system are as listed in the product certificate and this manual. This is to ensure that all products meet the requirements of the CertClad system and are installed in the correct manner.

## 1.3 PERFORMANCE

When installed and maintained as specified in this manual and the work is done by a qualified tradesman using accepted trade practices, it will meet the applicable sections of the following requirements of the NZBC (New Zealand Building Code):

- B1 Structure
- B2 Durability
- E2 External Moisture
- F2 Hazardous Building Materials.

## 1.4 LIFESPAN

### 1.4.1 SERVICEABLE LIFE

Canadian Coastal Western Red Cedar weatherboards can be installed on buildings in New Zealand either coated or uncoated, in accordance with NZS 3602 (2003) Table. 2. A.

It is expected coated timber boards (oil, stain, or paint) have a serviceable life of at least 25 years, but this is subject to the coating and maintenance requirements below.

It is expected uncoated timber boards have a serviceable life of at least 15 years.

More *importantly*, some timber boards may require replacement over the lifetime of the cladding as part of normal maintenance.

### 1.4.2 COATING REQUIREMENTS

To achieve the above serviceable life for coated (Oil/Stain) Western Red Cedar timber weatherboards, ITI Timspec recommends that all faces (hidden and exposed) should be coated with a minimum of two coats of a suitable approved penetrating oil or stain and all cut ends, and any exposed timber should be coated with a further two coats.

To achieve the above serviceable life for coated (Painted) Western Red Cedar timber weatherboards, ITI Timspec recommends that all faces (hidden and exposed) must be coated with two coats of an approved primer and all exposed faces coated with a further two coats of a suitable topcoat. It is essential that the first coat of primer be acrylic based.

Refer to chapter 4.3 (Priming and Sealing, page 8) 5.2.3 (Coating, page 9) for more information.

### 1.4.3 MAINTENANCE REQUIREMENTS

When a coating is applied, periodic recoating is required to ensure the integrity of the coating is sustained. This will generally mean applying another exterior coat every 4 – 10 years dependent on the coating used and building location after washing and maintenance, in accordance with the coating manufacturer's specification.

Please refer to the On-Going Maintenance section 12 (page 19) for more information about the required maintenance.

## 2 HEALTH AND SAFETY

### 2.1 CUTTING OF TIMBER

Cutting of timber is to be done in a well-ventilated area and a suitable dust mask, eye protection, and ear protection must be worn.

### 2.2 COATING AND PRIMING

Coating and priming are to be done in a well-ventilated area, refer to the coating/primer supplier for all matters relating to health and safety. All relevant sections of AS/NZS 2311:2009 (Guide to the painting of buildings) and all the coating manufacturer's requirements must be adhered to.

Contact Information is [technical@ititimspec.co.nz](mailto:technical@ititimspec.co.nz); (09) 620-0260 or [www.ititimspec.nz](http://www.ititimspec.nz)



# 3 SITE PREPARATION

## 3.1 STRUCTURE AND FRAMING

### 3.1.1 NEW ZEALAND STANDARD 3604

Generally, the timber framing must comply with NZS 3604 (2011) (Timber-framed buildings), however, where specific engineering design is required, the framing shall be at least of equivalent stiffness as the framing provisions of NZS 3604 (2011).

### 3.1.2 LAYOUT

Studs must be spaced at a maximum of 600mm between centres. Dwargs (nogging) must be spaced at a minimum of 400mm and maximum of 480mm between centres. Studs and Dwargs must form a flush plane for cavity battens and weatherboards to be fixed to.

Additional framing may be required at soffits, corners, and penetrations such as window and door openings to support the installation of battens.

### 3.1.3 MOISTURE CONTENT

The moisture content of the Framing must not exceed 20% at the time of fixing as problems may occur with the excess movement.

## 3.2 BUILDING UNDERLAY

### 3.2.1 MATERIAL

Building underlay and Rigid wall underlays must comply with properties stipulated in NZBC Clause E2/AS1 Table 23 (Properties of roof underlays and building underlays) or equivalent proof of compliance to NZBC.

### 3.2.2 INSTALLATION

Building underlay to be installed in accordance with underlay manufacturer's specification, and in accordance with conditions set out in NZBC Clause E2/AS1. 9.1.7.2.

## 4 PRE-INSTALLATION

### 4.1 ON-SITE STORAGE AND HANDLING

Care must be taken to ensure that timber and accessories are kept clean and dry and are not damaged whilst in storage awaiting application.

Extra care is to be taken while handling weatherboards to ensure that they are not damaged.

Timber is to be stacked on flat level bearers/dunnage that is a maximum of 900mm apart and at least 100mm off the ground. Timber should either be stored inside an enclosed building or covered with an additional waterproof layer and protected from the elements when stored outside.

**IMPORTANT** Moisture content in the range of 14 - 16% by volume is optimal for Western Red Cedar weatherboards when installing. Do not install if the moisture content is above 18%.

### 4.2 DOCKING OUT DEFECTS

Before coating or installing boards, check for any defects that may require docking out.

**IMPORTANT** All docked ends, any exposed or bare timber of stained or painted weatherboards will require end sealing with two coats of primer or stain.

### 4.3 PRIMING AND SEALING

Apply the first coat of stain or primer to all sides and edges of the weatherboard prior to installation. Ensure Western Red Cedar is at the correct moisture content prior to priming (refer 4.3). Remember that all docked ends will require priming as noted above.

We recommend the use of a Primer with a fungicidal and/or mouldicide in it, these biocides are usually also found in coatings used to prevent unsightly (but non-detrimental) surface moulding.

Follow the coating manufacturer's directions and ensure further coats are applied as required. All relevant sections of standard AS/NZS 2311:2009 (Guide to the painting of buildings) must be adhered to.

**NOTE** Western Red Cedar weatherboards can be ordered to arrive on site pre-primed or pre-coated. This ensures the timber is at the correct moisture content.

## 5 MATERIALS - CAVITY SYSTEM COMPONENTS

### 5.1 CAVITY SYSTEM COMPONENTS

**IMPORTANT** All cavity system components must be supplied by or approved by ITI Timspec. This is to ensure that all items are up to a suitable standard and to ensure the compatibility and suitability of all items. Any alternative or competitor supplied product will invalidate the CertClad warranty.

### 5.2 TIMBER SPECIES: WESTERN RED CEDAR

#### 5.2.1 MATERIAL

North American grown (Canadian), Coastal Western Red Cedar (*Thuja plicata*).

#### 5.2.2 DURABILITY

It is expected that Western Red Cedar Cladding, when coated with oil, stain or paint will have a serviceable life of at least 25 years.

It is expected uncoated timber boards will have a serviceable life of at least 15 years.

The above serviceable life assumes regular maintenance. Please refer to the On-Going Maintenance section 12 (page 19) for more information.

Please note, some timber boards may require replacement over the lifetime of the cladding as part of normal maintenance.

**IMPORTANT** Careful board selection will help improve the lifespan of your cladding. Quarter sawn or vertical grain boards should be selected for use in higher exposure areas, such as north facing walls and lower parts of the wall (where boards are less protected by eaves).

#### 5.2.3 COATING

Canadian grown Western Red Cedar can be installed uncoated, (in accordance with NZS 3602, (2003) Table 2.A.1), however a coating will dramatically improve the appearance, performance, and durability of the cladding. ITI Timspec recommends at least one coat of a suitable penetrating oil/stain to all faces (hidden and exposed) of the weatherboard.

If choosing an Oil/Stain, it is recommended a coating system comprising two base coats of a suitable penetrating oil or Stain be applied followed by a minimum one more coat once installed.

If choosing a Paint, it is recommended a coating system comprising one base coat of a suitable acrylic primer be applied, followed by another coat of either acrylic or oil-based primer and then two topcoats of a suitable and compatible paint.

Dark colours attract more heat which will exacerbate any timber movement and/or resin bleed. Therefore, only coatings which have an LRV (light reflectance value) of 45% or higher can be used. Any coating that has an LRV less than 45% will void the warranty).

## 5.3 WESTERN RED CEDAR VERTICAL SHIPLAP WEATHERBOARDS

Western Red Cedar can be machined into a variety of profiles, including the range of Vertical Shiplap weatherboards as listed on our website [www.ititimspec.nz](http://www.ititimspec.nz)

## 5.4 FLASHINGS

### 5.4.1 MATERIAL

Flashings can be either: Aluminium, Stainless Steel (304, 316), uPVC or factory-, coil - or powder coated steel.

All flashings to comply with NZBC Clause E2/AS1. 4.0 and Table. 7.

See also ITI Timspec construction details for specific flashing sizes and covers.

**IMPORTANT** Weatherboard fixings are not to penetrate flashings as this may provide a path for water to track through.

## 5.5 NAILS

### 5.5.1 MATERIAL

For Western Red Cedar, nails are limited to Stainless Steel (316) or Silicon Bronze.

## 5.6 CAVITY BATTENS

### 5.6.1 MATERIAL

Minimum H3.1 treated Radiata Pine or Polypropylene (Cavibat).

### 5.6.2 DIMENSIONS

Battens are 45 x 18 mm.

Cavibat battens have been appraised by BRANZ as a non-structural batten for wall cladding systems. Refer E2/AS1 – Section 9.1.8.4.

Refer to BRANZ Appraisal No. 524 [2007] for information about Cavibat, including its limitations and specifications.

## 6 MATERIALS - ACCOMPANYING ELEMENTS

### 6.1 ACCOMPANYING ELEMENTS

All items that precede the installation of the weatherboard system (building underlay, roofing underlay, flashing tape, etc.) and all consumables and items successive to the weatherboard system (PEF backing rods, flexible sealants, etc.) will not be supplied by ITI Timspec as these are outside the scope of this specification. These items still require careful evaluation to determine their suitability and still play a critical role as part of the cladding system.

**IMPORTANT** It is the builder's responsibility to ensure that all these accompanying items meet the requirements and properties stated and more *importantly* are compatible with adjacent materials and are fit for the intended purpose and comply with the relevant clauses of the NZBC.

### 6.2 TIMBER FRAMING

Timber framing must meet the requirements of NZS 3604 (2011) (Timber-framed buildings), or where an alternative framing product is used (such as steel framing) strength and stiffness must be equal or greater than the performance requirements as set out in NZS 3604 (2011).

### 6.3 BUILDING UNDERLAY

The building underlay used must also meet all the requirements stated in NZBC Clause E2/AS1 Table 23 (Properties of roof underlays and Wall Underlays). ITI Timspec recommends Pro Clima Solitex Extasana.

A Rigid Wall Underlay is required for EH wind zones).

### 6.4 FLASHING TAPE

The flashing tape used must meet all the requirements stated in NZBC Clause E2/AS1 section 4.3.11 with a valid BRANZ Appraisal or other certification and suitable to be used with the wall underlay selected.

The flashing tape must be compatible with all materials that it is in contact with, specifically the building underlay. ITI Timspec recommends Tescon Extoseal by Pro Clima.

### 6.5 SEALANTS AND ADHESIVES

#### 6.5.1 MODIFIED SILICONE OR CO-POLYMER CONSTRUCTION SEALANT

All construction Sealants are to be a modified silicone. ITI Timspec recommends Sikaflex AT Facade.

#### 6.5.2 SELF-EXPANDING POLYURETHANE FOAM

All Self-expanding foams must be rapidly expanding polyurethane foams that bonds with all materials that they will come into contact with. The foams must not shrink and must cure to an airtight, moisture resistant seal.

### 6.6 PEF ROD

PEF backing rod must be closed cell polyethylene foam specifically designed for use as a backing rod.

It should have a diameter 25% larger than the gap width and should be pushed into the gap with a blunt tool, to ensure an even and continuous seal.

## 6.7 METER BOX

Meter box penetrations have a higher risk of water ingress, and as such all possible steps should be taken to minimise this risk. A good quality meter box manufactured by a leading NZ supplier will certainly help this.

Meter boxes are to be manufactured from aluminium, hot-dipped galvanised steel, glass-reinforced plastic or other suitable rigid, UV resistant, non-combustible material. They also must be coated on the inside and outside surfaces with a material giving a hard, durable finish providing a service life of not less than 20 years.

The door must have a troughed lip around the front perimeter and if a drain is present, it should be made in a way to minimise water entry.

## 6.8 INTERNAL LINING

Internal Linings must be of a suitable size and material to provide bracing where needed and to act as an adequate barrier to air flow.

# 7 INSTALLING CAVITY BATTENS

## 7.1 CAVITY CONSTRUCTION

### 7.1.1 COMPLIANCE

Cavities must comply with NZBC Clause E2/AS1 paragraphs 9.1.8 to 9.1.9.4. However, for this Vertical Shiplap system, where the cavity construction is outside the scope of the NZBC Clause E2/AS1, this system is considered an alternative solution.

### 7.1.2 PRECAUTIONS

As solvents in LOSP treatments can affect bitumen-based building papers, it is necessary to fillet stack LOSP treated timber for 7 days after treatment to ensure that solvent has evaporated before contact with any bitumen-based.

### 7.1.3 FIXING (NON-STRUCTURAL) CAVITY BATTENS

Cavity battens are to be fixed to the framing. Horizontal castellated or Cavibat battens are fixed over a supporting nog.

**NOTE** Fixing is only temporary for cavity battens as the weatherboard fasteners are used to permanently fix the batten.

### 7.1.4 TOP OF WALL DETAIL

No ventilation shall be provided at the top of the cavity. Use a horizontal D4S profile (not a Castellated or Cavibat batten) at the top of the wall to close off the top of the cavity. This prevents damp air circulating from the cavity space into interior spaces such as roof framing or eaves and is extremely *important* where the cavity finishes beneath an area that is open to a roof space (such as a wall finishing under a soffit).

### 7.1.5 BOTTOM OF WALL DETAIL

Use a 'Cavity Base Closure Flashing' at the bottom of the wall to allow drainage and ventilation but prevent the entry of vermin. This also applies where cavities end over a window, door, or another opening. Ensure building underlay laps over rear upstand of the cavity base closure or use flashing tape to seal the top of the cavity base closure to the building underlay. An angle packer (or part board) may be required to support bottom of lower weatherboard.

# 8 FIXING DETAILS FOR WEATHERBOARD

## 8.1 INSTALLATION

### 8.1.1 FIXING METHOD - VERTICAL SHIPLAP

Ensure correct nails are selected in accordance with the nail selection chart 8.1.2. below.

Nail placement is to be maximum 10mm in from the side of the rebate (35mm from the edge of weatherboard). Use a single fixing per board at each fixing point (each nog or dwang). Maximum nog centres to bed 480mm and minimum nog centres to be 400mm. The nail must not penetrate the underlapping (lower) board. Where the weatherboard profile has a centre groove close to the lap, the nail may be only 5mm in from the side lap (30mm in from edge of weatherboard). Nail shank must be annular grooved.

Pre-drill all nail holes using a bit that is 0.3 – 0.5mm smaller than the nail shank to prevent splitting and ensure a snug fit.

Nail on an upward angle to prevent water running down the nail through the cavity.

Ensure nail shank has a minimum framing penetration of 35mm for painted weatherboards, or 30mm for stained or bare weatherboards.

Hand-drive all nails. Gun-driven nails should not be used as they may damage the surface of the timber or cause splitting or crushing damage in the battens.

Flat head, pentagon head or crown head nails to finish flush onto, but not into, the face of the weatherboard.

Jolt head nails must be punched just below the surface, spot primed and filled using a two-part high quality non-shrinking filler, and sanded smooth, prior to painting.

Ensure weatherboards are set out to achieve correct 25mm overlap at join, and a 1-2mm expansion gap between boards at rear of profiles.

One board on any given wall elevation may need to be cut down to fit wall width. Do not extend or reduce the 25mm lap requirement or 'creep' the boards to fit.

### 8.1.2 NAIL SELECTION CHART

Reference to NZBC clause E2AS1 Table 24

Fixing lengths need to increase where installed over a rigid wall underlay to ensure minimum penetration of fixing into stud.

Weatherboards	Nail Size	Material	Nail Head	Nail Shank	Minimum Framing Penetration
<b>Painted</b>	80 x 4.0 mm	Stainless Steel (316) or Silicon Bronze	Jolt head	annular grooved	to achieve minimum 35mm framing penetration
<b>Stained/ Bare</b>	75 x 3.20 mm	Stainless Steel (316) or Silicon Bronze	Rose head or Pentagon head	annular grooved	to achieve minimum 30mm framing penetration



# 9 INTER-STOREY CAVITY JUNCTION

## 9.1 DEFINITION

Cavities may be continuous up to two storeys or 7m in height (whichever is the lesser). Walls over this height require an inter-storey junction to drain the cavity.

# 10 WITHIN-BOARD JOINS (SCARF JOIN)

Use a within-board or scarf join to join two shorter weatherboards together, to cover full wall height.

## 10.1 LIMITATIONS

A within-board join should not be placed where it is directly adjacent to another join, a junction, a corner or a penetration i.e., staggers join across the wall.

## 10.2 METHOD

Weatherboards may be joined by scarfing two boards together over a supporting batten. Cut boards with a minimum 30-degree and maximum 45-degree angle. Use an appropriate adhesive to bond the boards together and nail through the overlapping board only as close as practicable to the join but do not nail through the angled join as boards may split. Care should be taken to select and use two boards that are similar in grain and appearance, and that have equal moisture contents; otherwise, one board may shrink or expand at a differing rate putting stress on the join.

# 11 SITE CLEAN-UP

## 11.1 AT COMPLETION

Upon completion, the installer is to leave the site in a clean and tidy manner, including:

1. Replacing or repairing any damaged or marked items; and
2. Removing all rubbish, debris, and unused items from the building site.

Any treated and/or coated timber off-cuts (e.g., cavity battens) or rubbish are to be disposed of in accordance with local council requirements.

# 12 ON-GOING MAINTENANCE

It is the building owner's responsibility to ensure that the cladding system receives regular maintenance so that it continues to perform at its required level.

## 12.1 MAINTENANCE INTERVAL

Maintenance should be called up as at least annually, and more often in aggressive environments - coastal, industrial, and geothermal as appropriate.

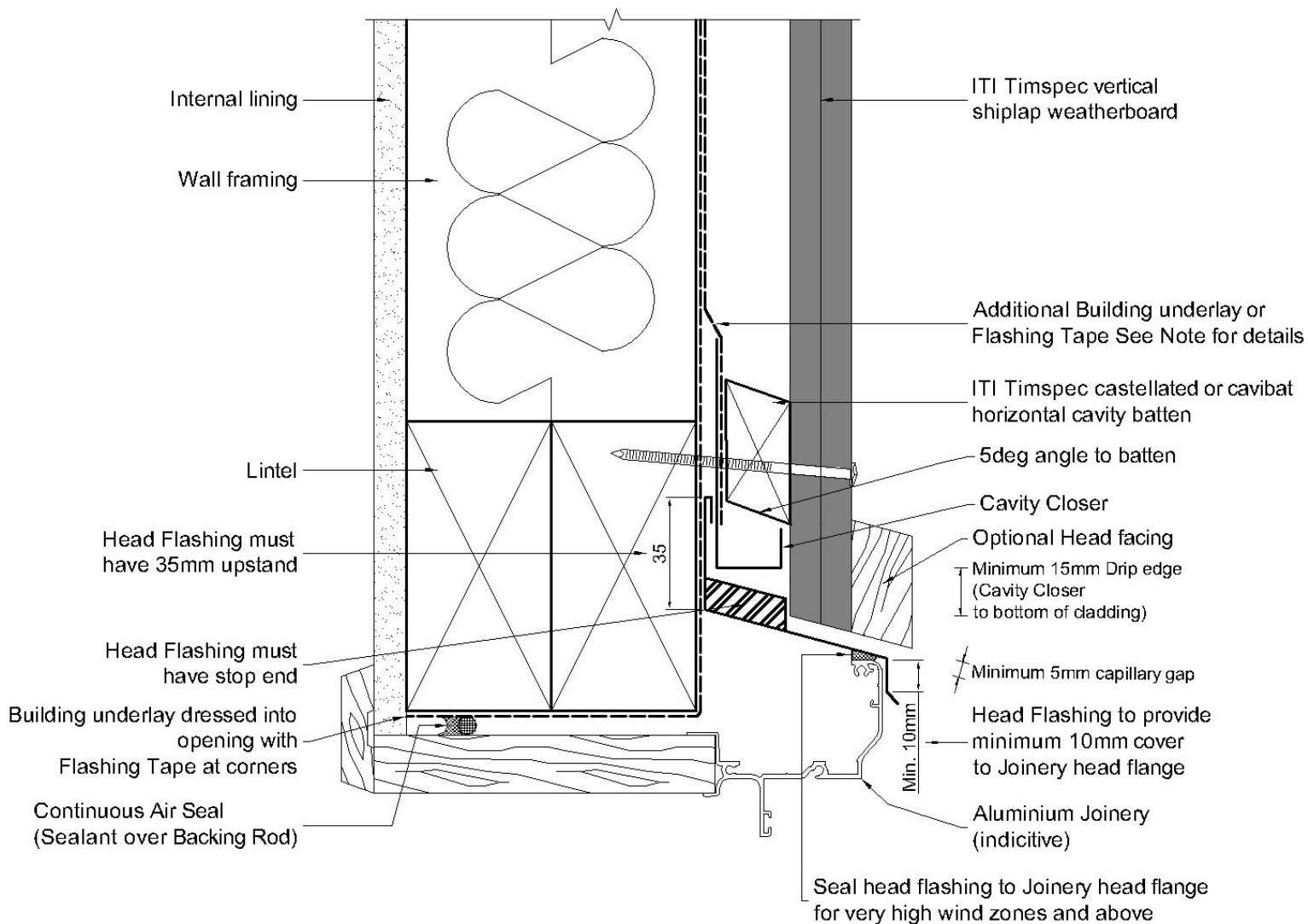
## 12.2 MAINTENANCE REQUIREMENTS

Regular maintenance is to include the following 5 steps:

1. Wash all exterior surfaces with low-pressure water to remove dust, dirt and other contaminants.
  - a. Extra attention should be given to areas that are not exposed to rain such as sheltered areas below eaves.
  - b. Do not direct high-pressure water at any part of the cladding system as this may damage the timber surface. Take care especially around sensitive junctions such as joinery surrounds and other flashings where you must avoid forcing water past anti-capillary gaps and flashings into the wall cavity.
2. Use a soft bristle nylon brush or broom with water and an appropriate cleaning agent (refer to paint manufacturer for correct cleaning agent specific to their paint system) to remove stubborn or persistent dirt and surface contaminants. Rinse thoroughly with water after the cleaning operation to remove any excess cleaning chemicals. **DO NOT** use aggressive cleaning chemicals.
3. Inspect all surfaces and junctions for signs of damage, wear-and-tear, or coating breakdown. Where coating surface has broken or eroded remedial action is required in accordance with the coating manufacture.
4. Repairing or replacing any damaged or deteriorated items in order to preserve the weather tightness of the building:
  - a. Small, isolated areas of dry rot (highly unlikely) in timber can be cut out and filled then primed and coated.
  - b. For larger areas of deterioration: remove and replace either the damaged section or the entire board for any deteriorated timber boards (includes scribes, cover boards and weatherboards). Prime and coat the replacements as required.
  - c. Other items (soakers, flashings, and capping's) may need to be replaced in their entirety.
5. Where a coating is applied, periodic recoating is required to ensure the integrity of the coating is sustained. This will generally mean applying another exterior coat every 4 to 10 years (dependent on the coating used and building location) after washing and maintenance.

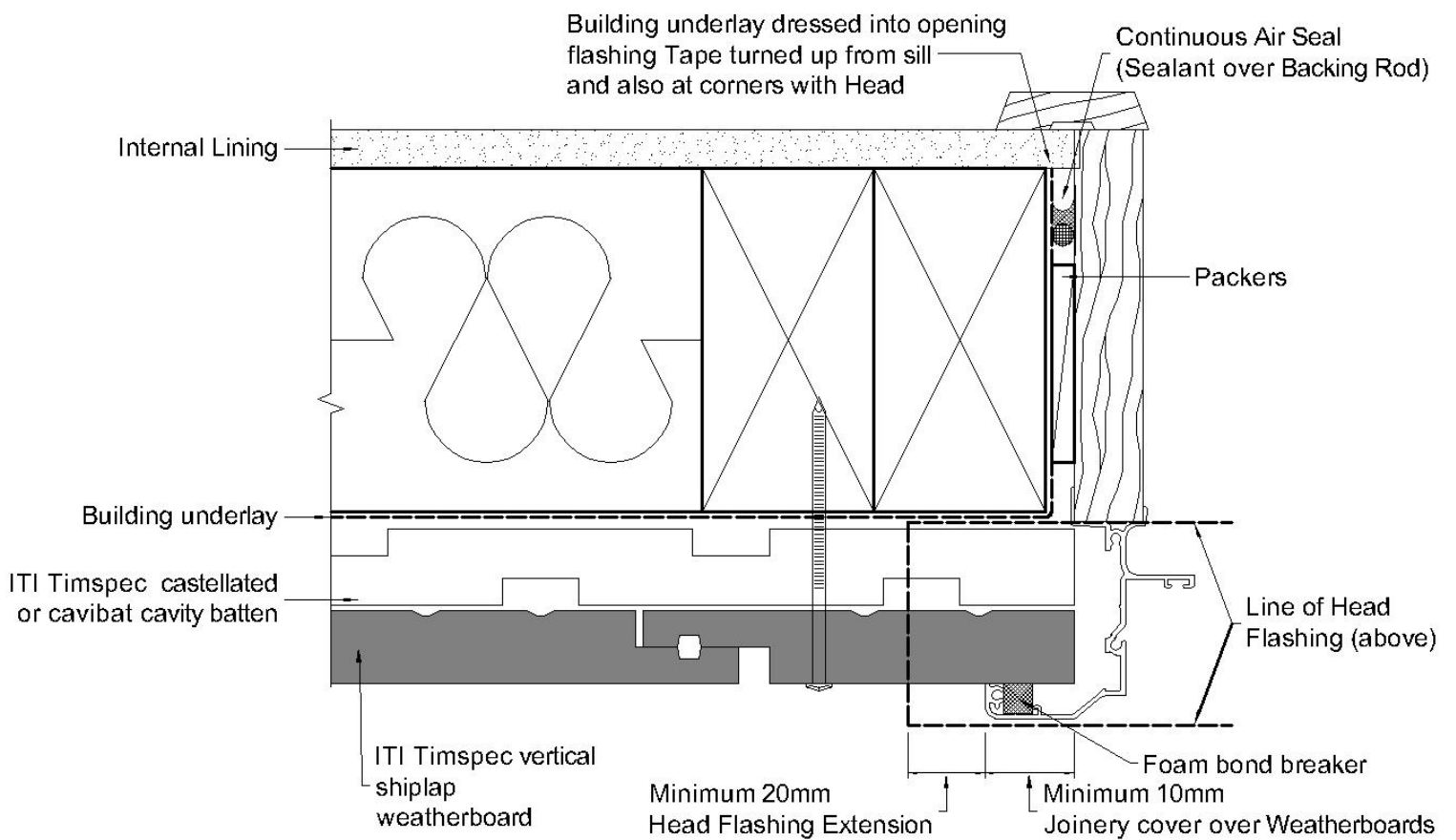
# 13 CONSTRUCTION DETAILS

**FIGURE 13.1 VC 201 WINDOW HEAD – ALUMINIUM JOINERY**

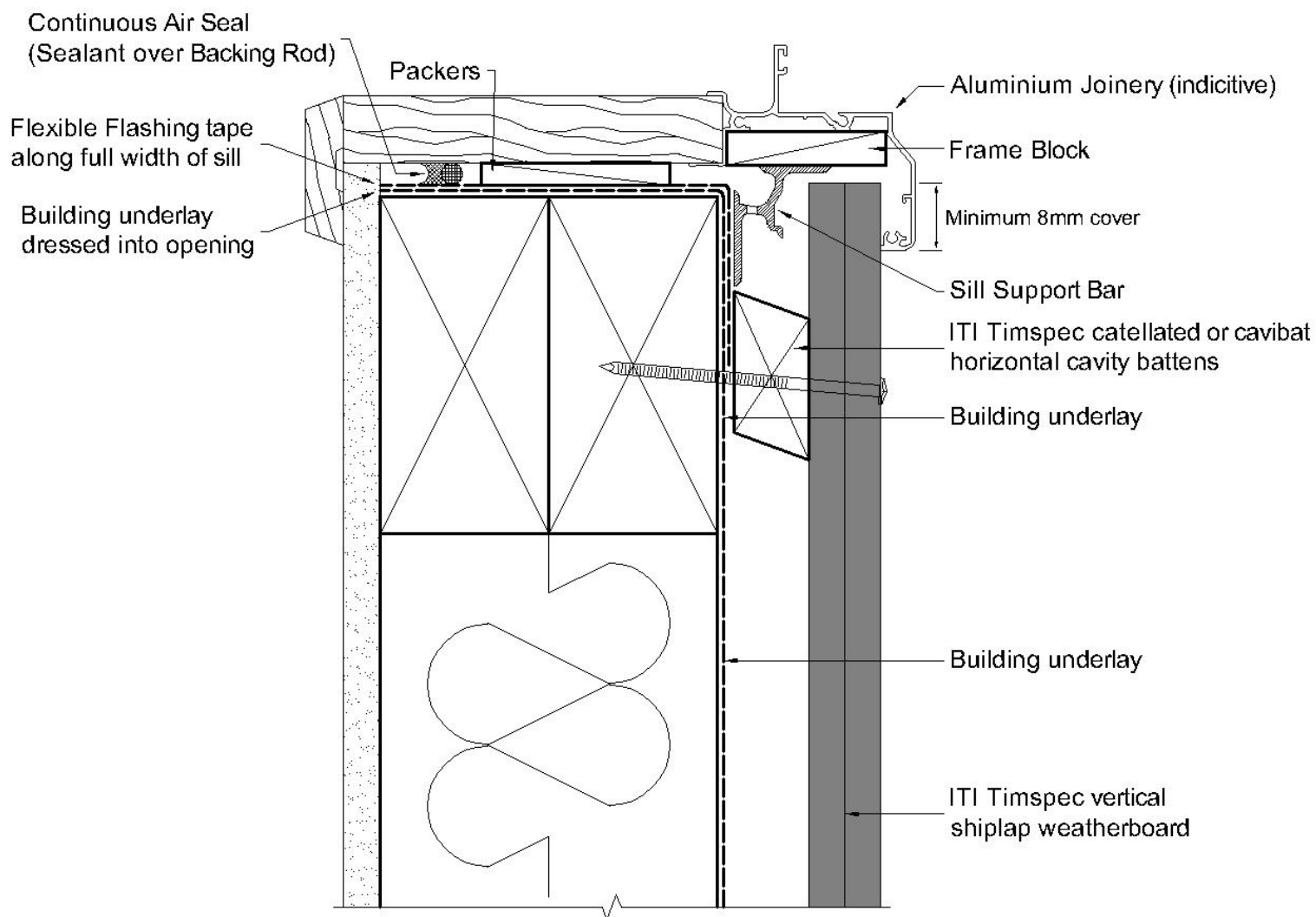


Note: Additional Building underlay to extend up wall to nearest lap above and extend down as far as possible into Cavity Closer.  
 Alternatively Flashing Tape to extend up wall a minimum of 50mm above Cavity Closer and extend down as far as possible into Cavity Closer.

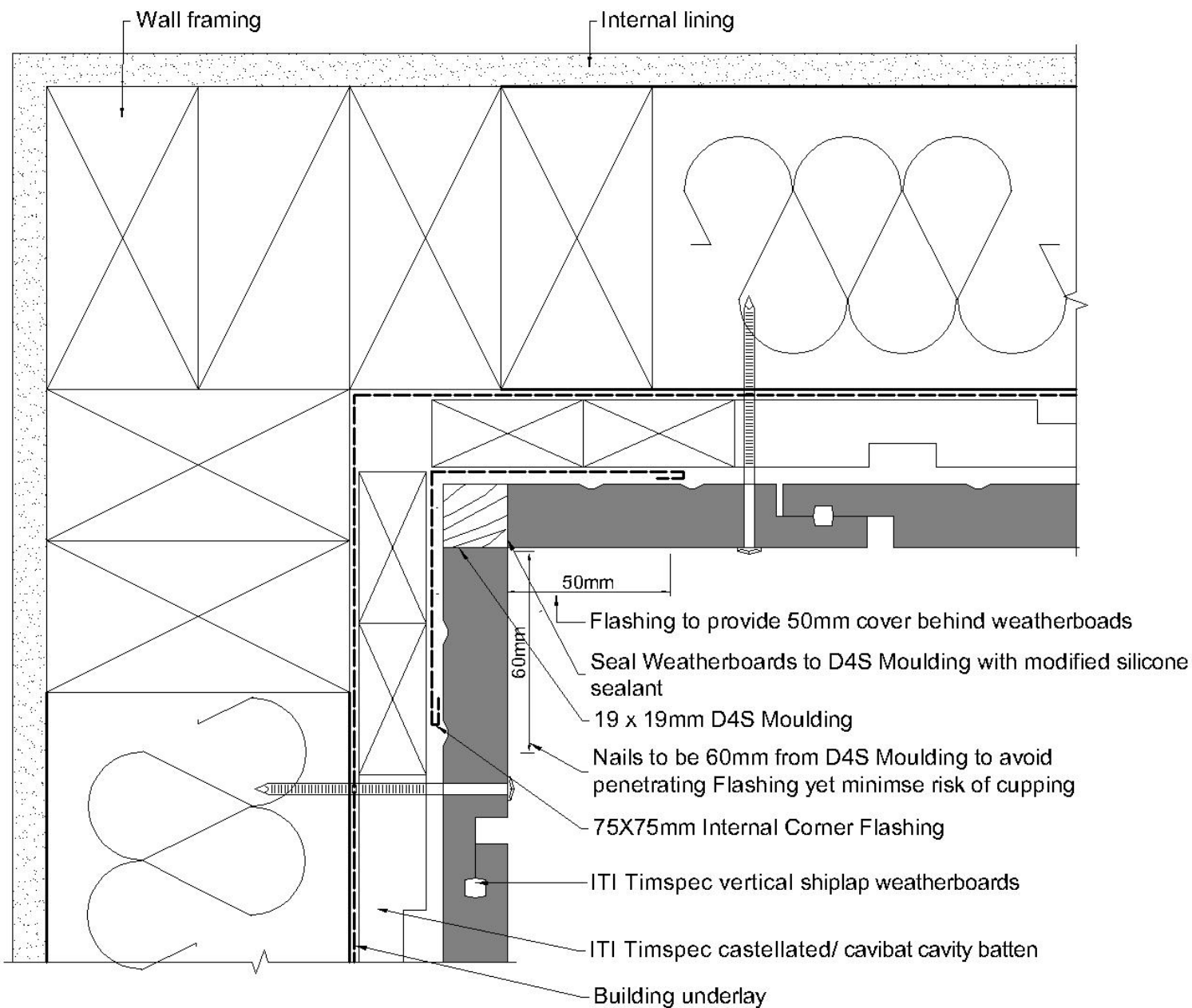
**FIGURE 13. 2 VC 202 WINDOW JAMB – ALUMINIUM JOINERY**



**FIGURE 13. 3 VC 203 WINDOW SILL – ALUMINIUM JOINERY**

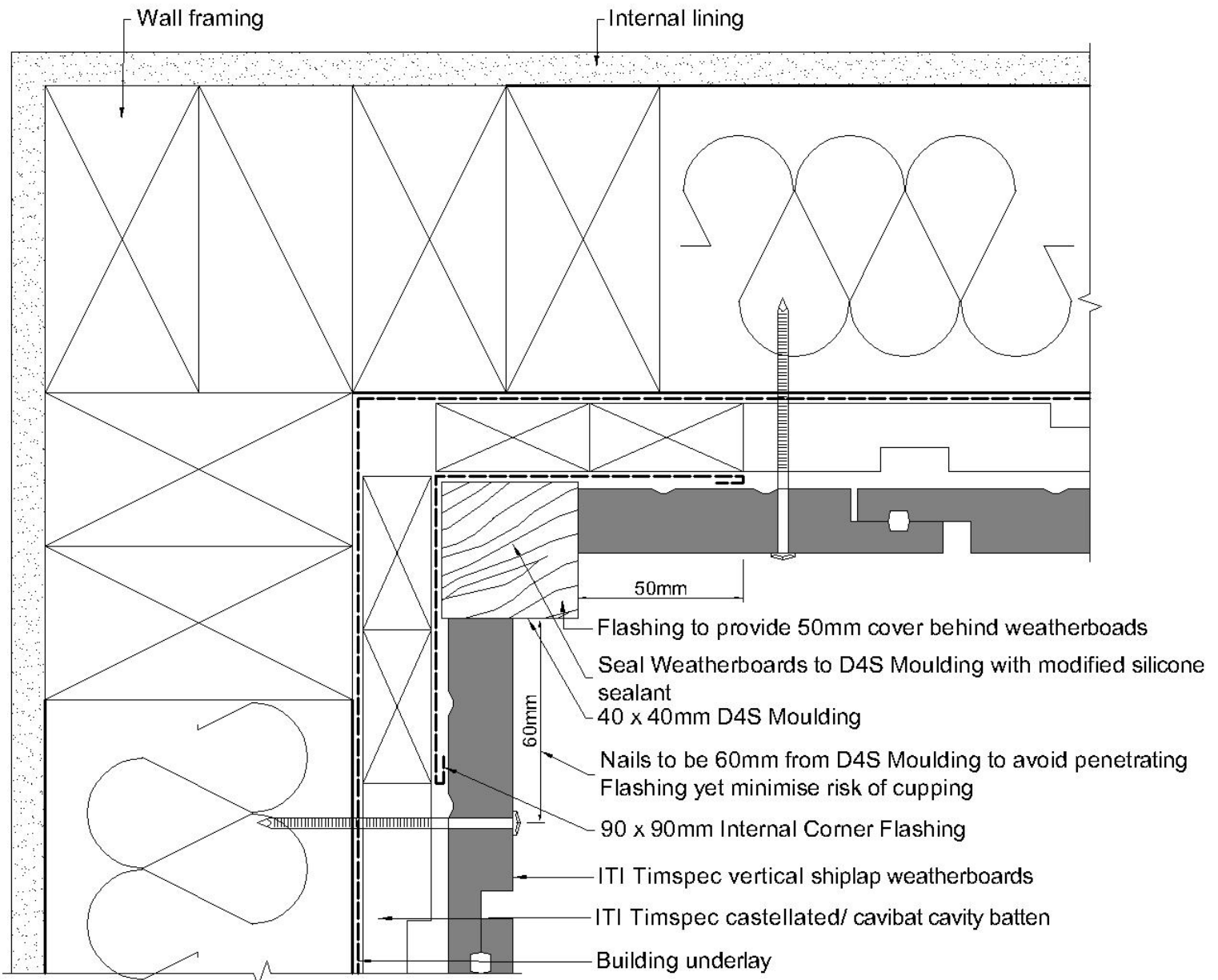


**FIGURE 13. 4 VC 300 INTERNAL CORNER – 19X19MM CORNER MOULDING**

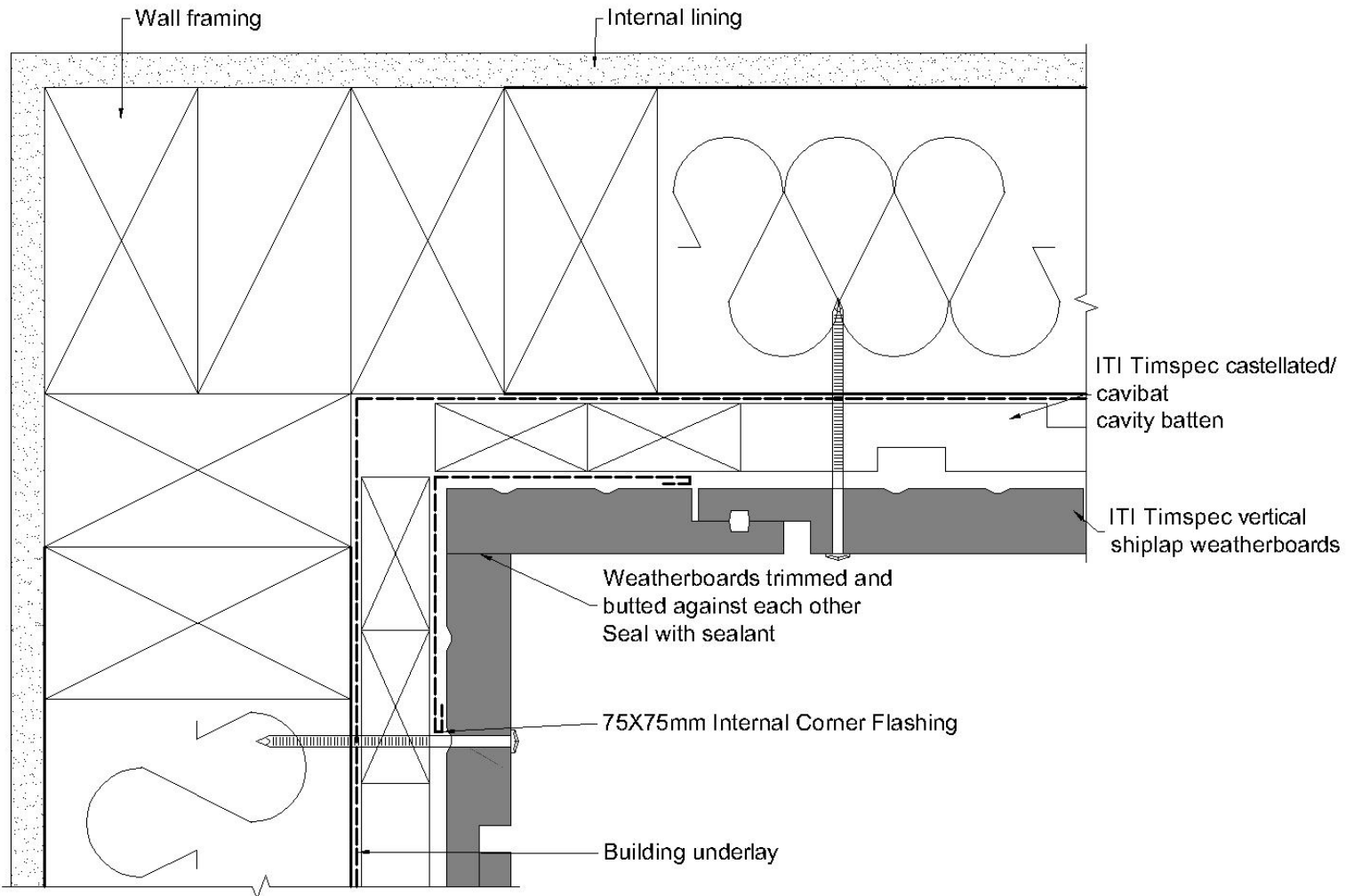




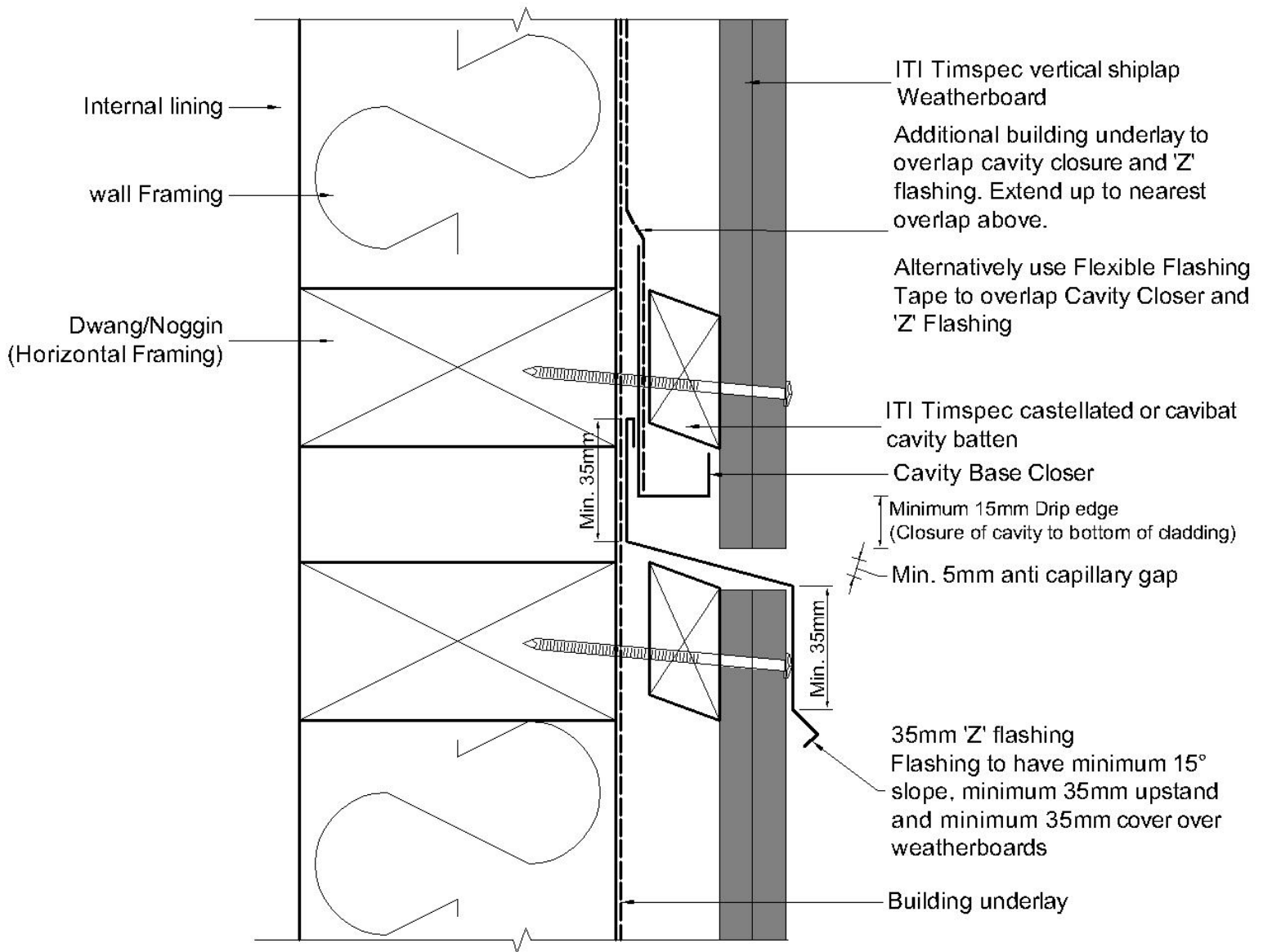
**FIGURE 13. 5 VC 301 INTERNAL CORNER – 40X40MM CORNER MOULDING**



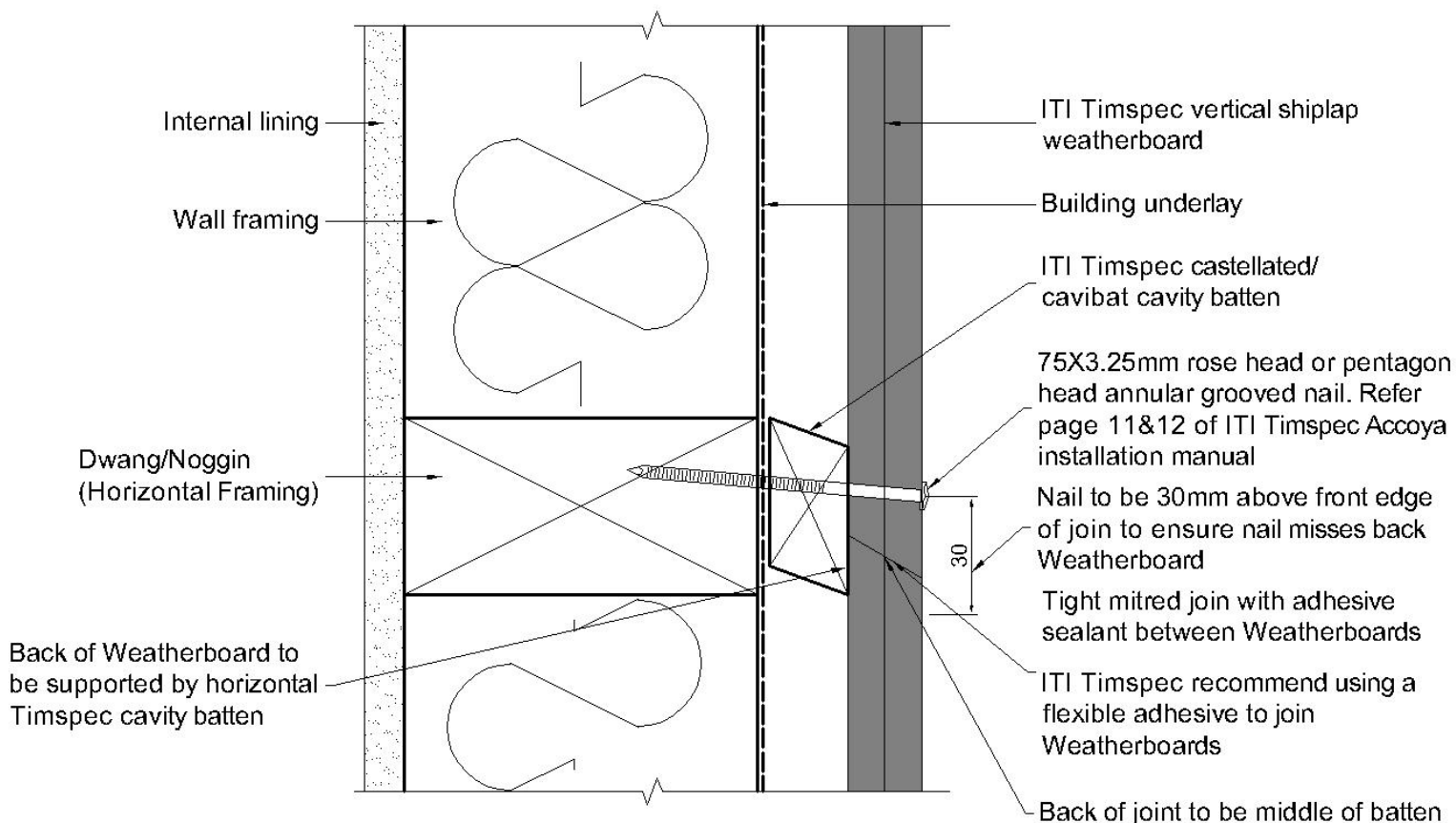
**FIGURE 13. 6 VC 302 INTERNAL CORNER - BUTTED**



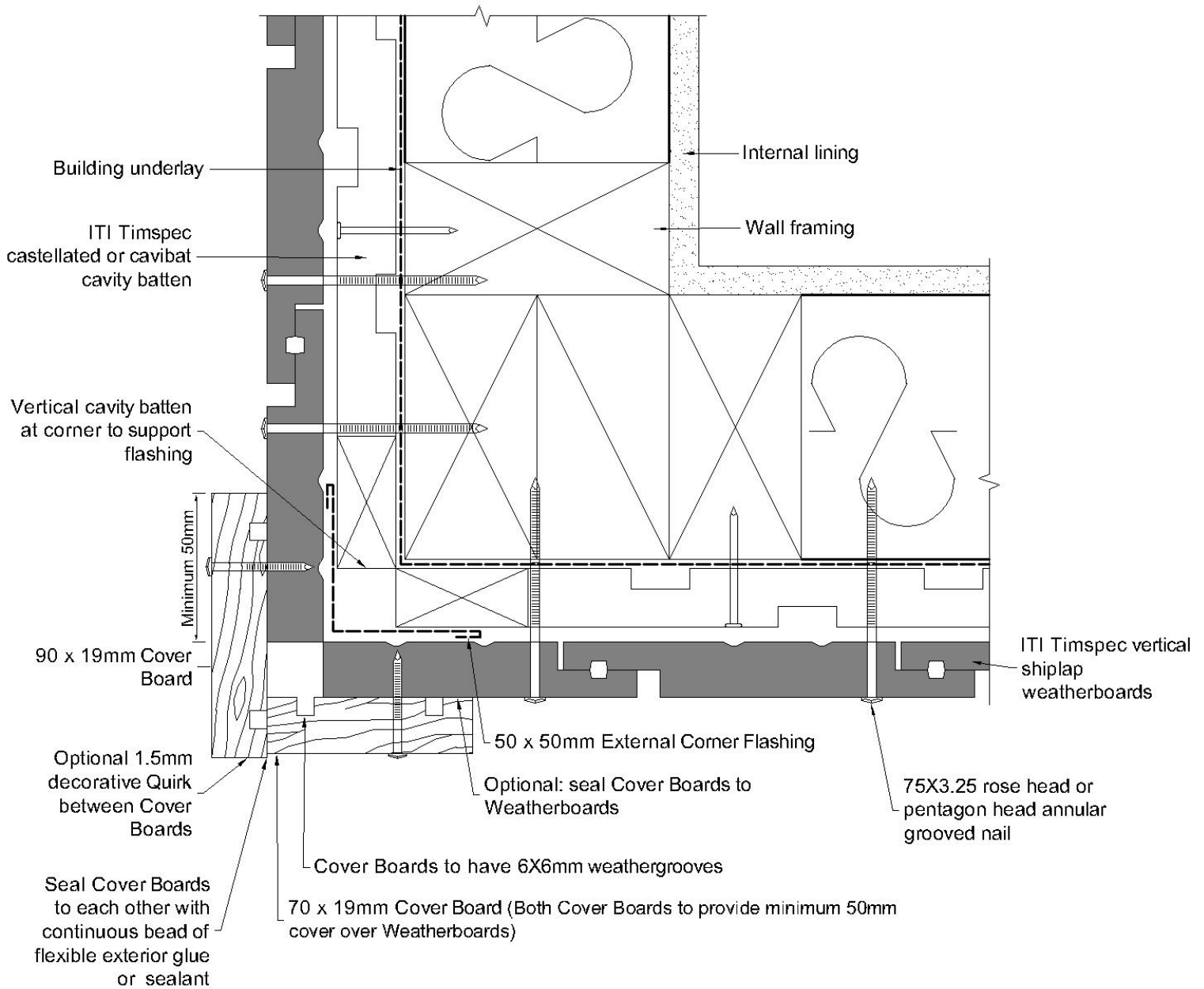
**FIGURE 13. 7 VC 401 INTER-STOREY CAVITY JUNCTION**



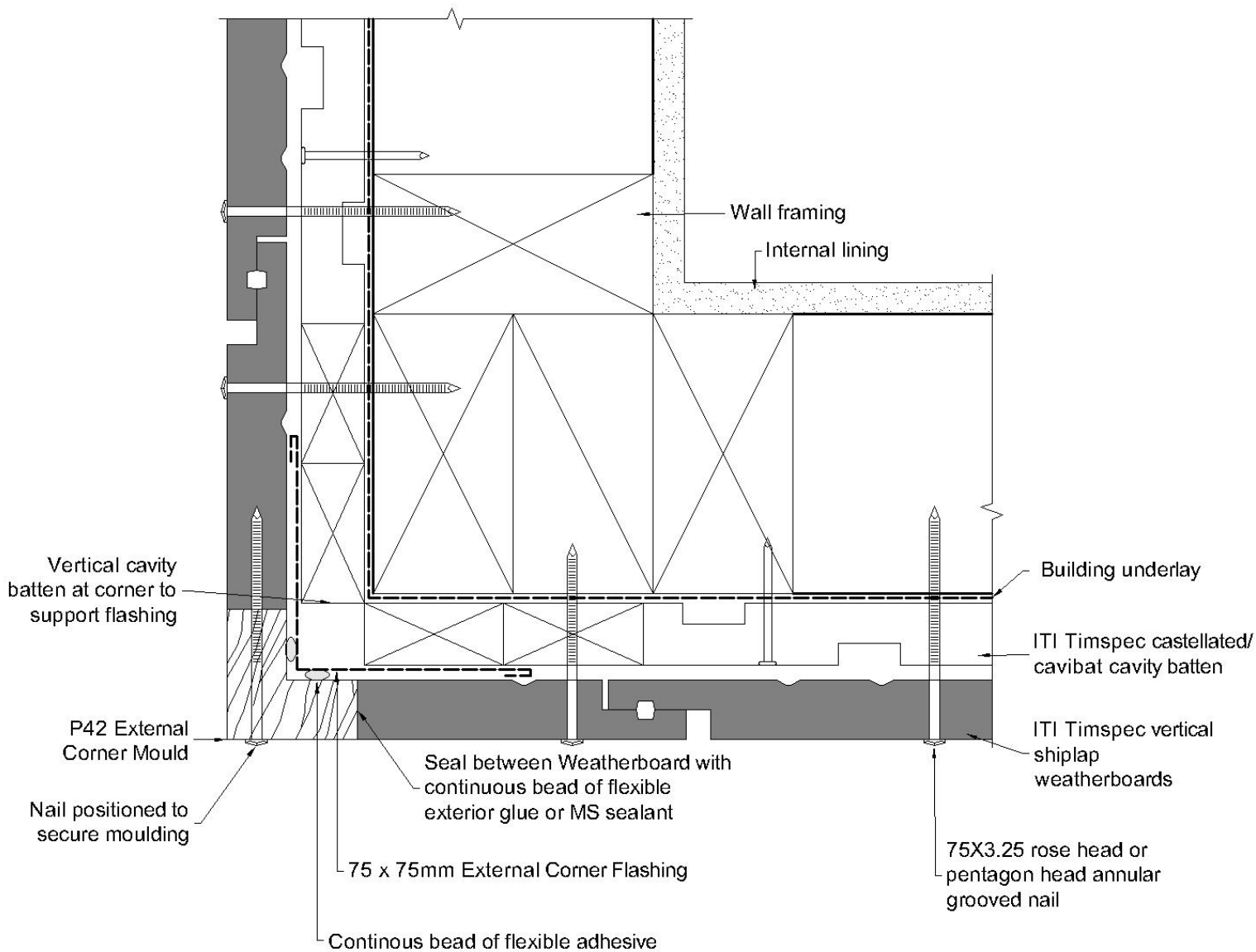
**FIGURE 13. 8 VC 402 WITHIN BOARD JOINT – SCARF JOINT**



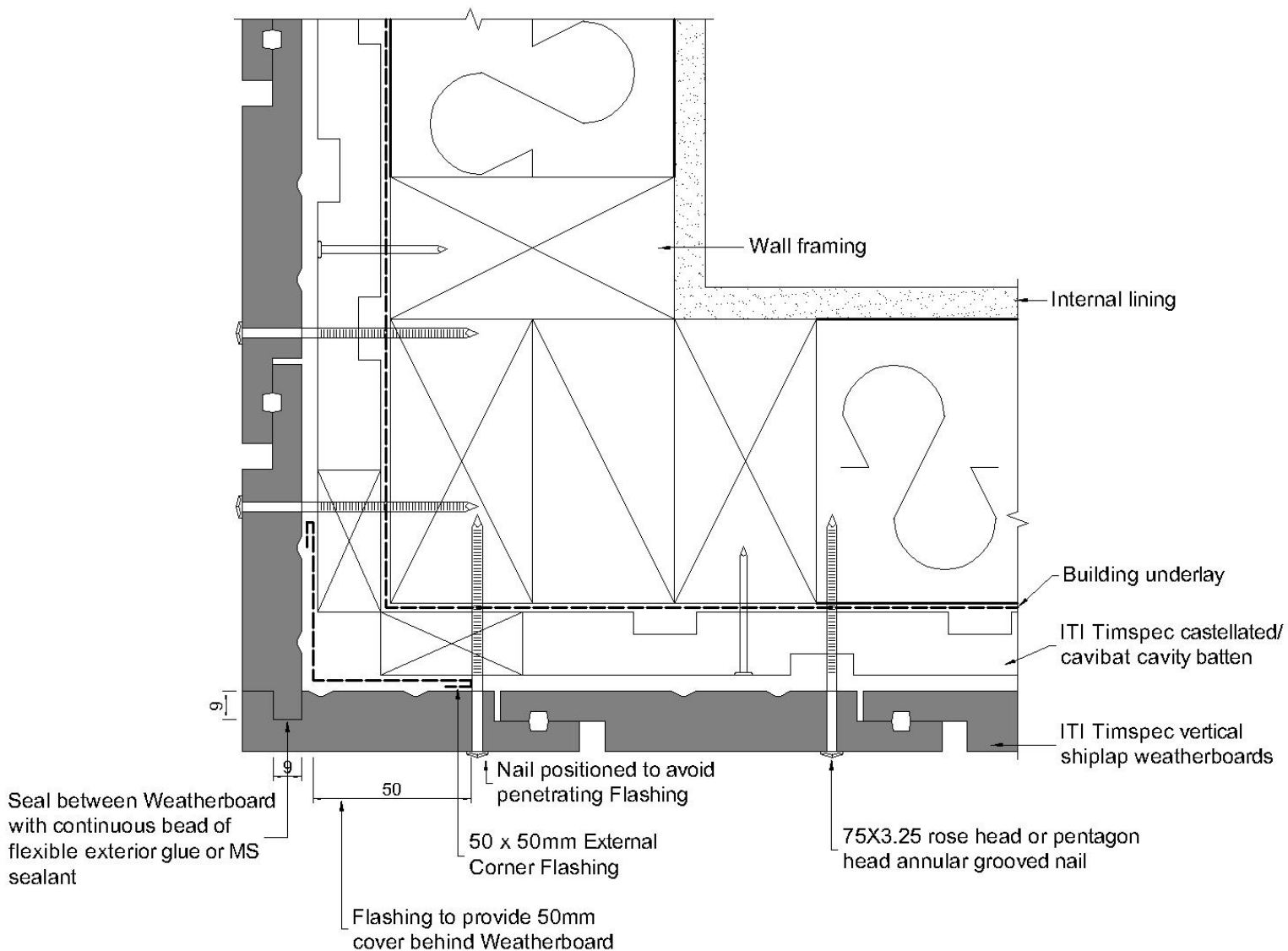
**FIGURE 13. 9 VC 403 EXTERNAL CORNER - BOXED**



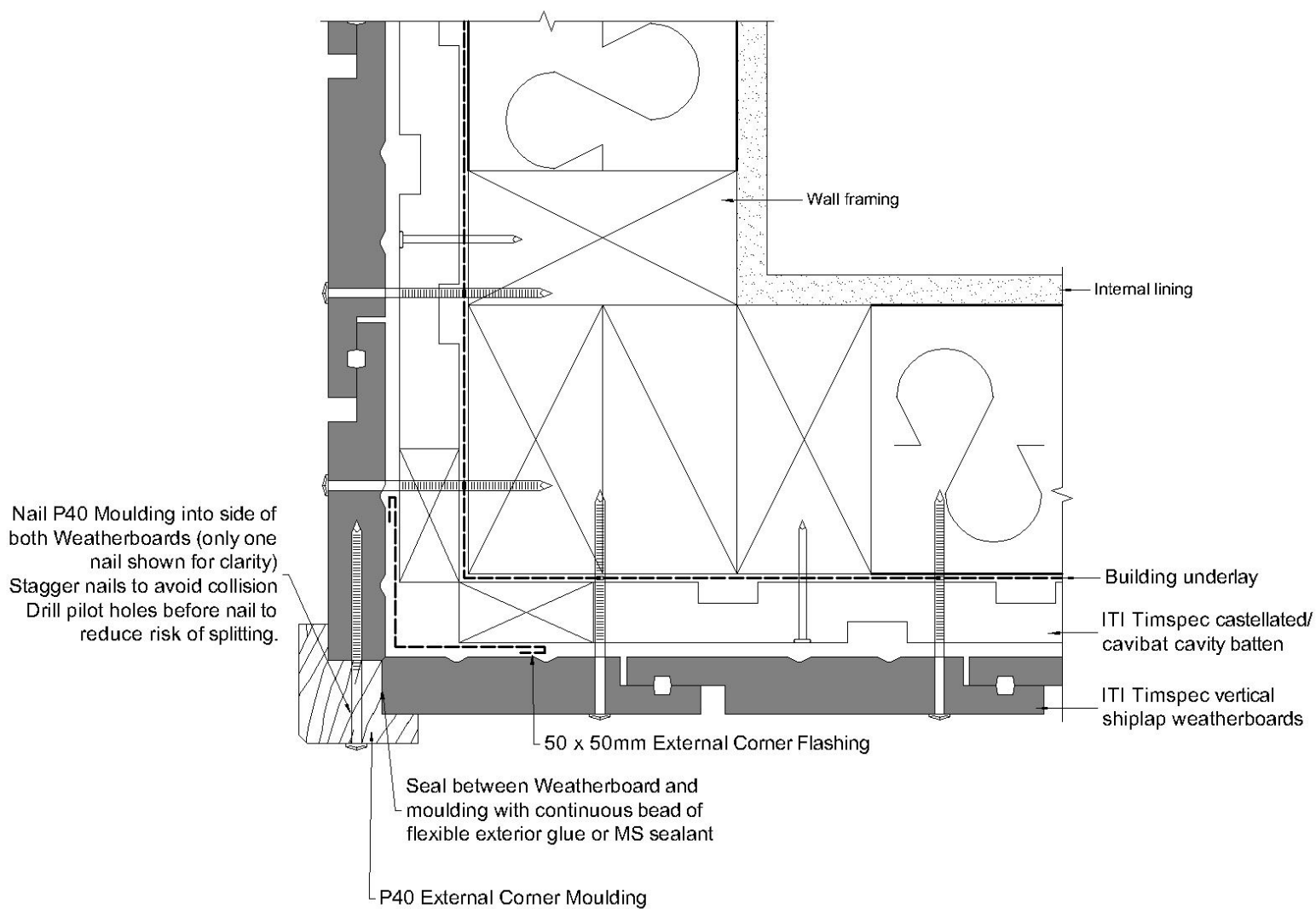
**FIGURE 13. 10 VC 404 EXTERNAL CORNER – P42 CORNER MOULDING**



**FIGURE 13. 11 VC 405 EXTERNAL CORNER – NOTCHED & LAPPED**

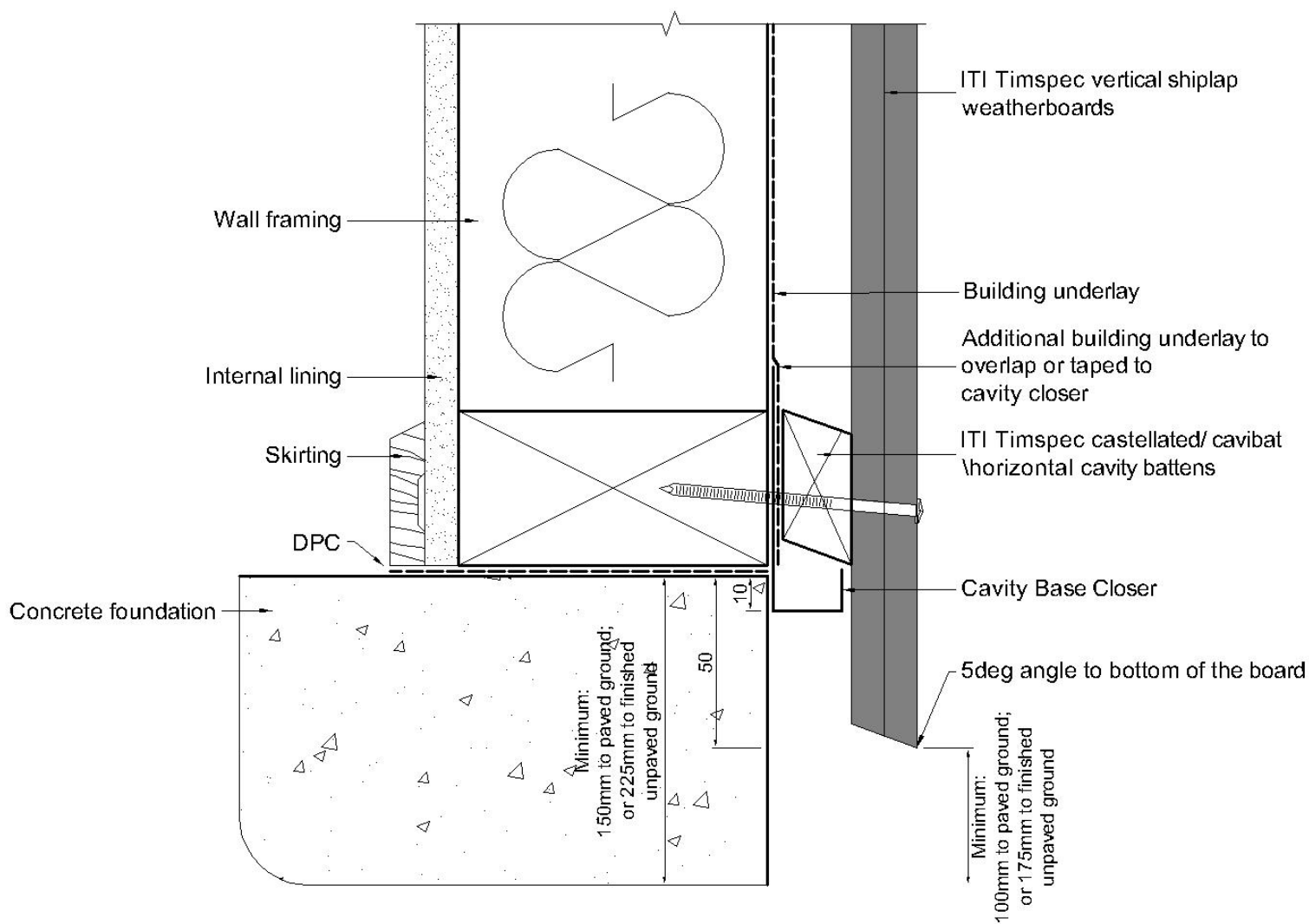


**FIGURE 13. 12 VC 406 EXTERNAL CORNER – P40 CORNER MOULDING**

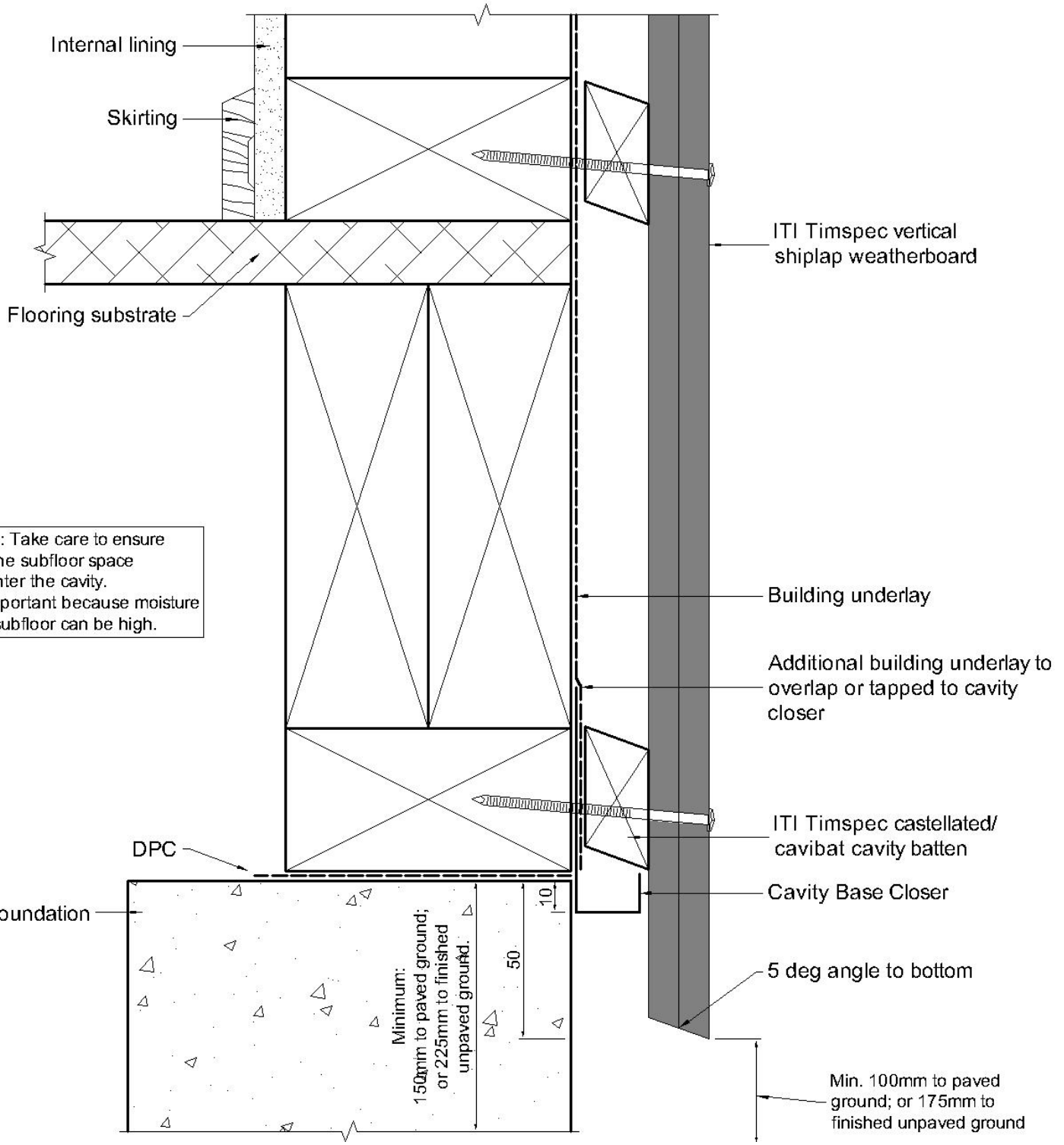




**FIGURE 13. 13 VC 501 BASE, CONCRETE SLAB ON GROUND**

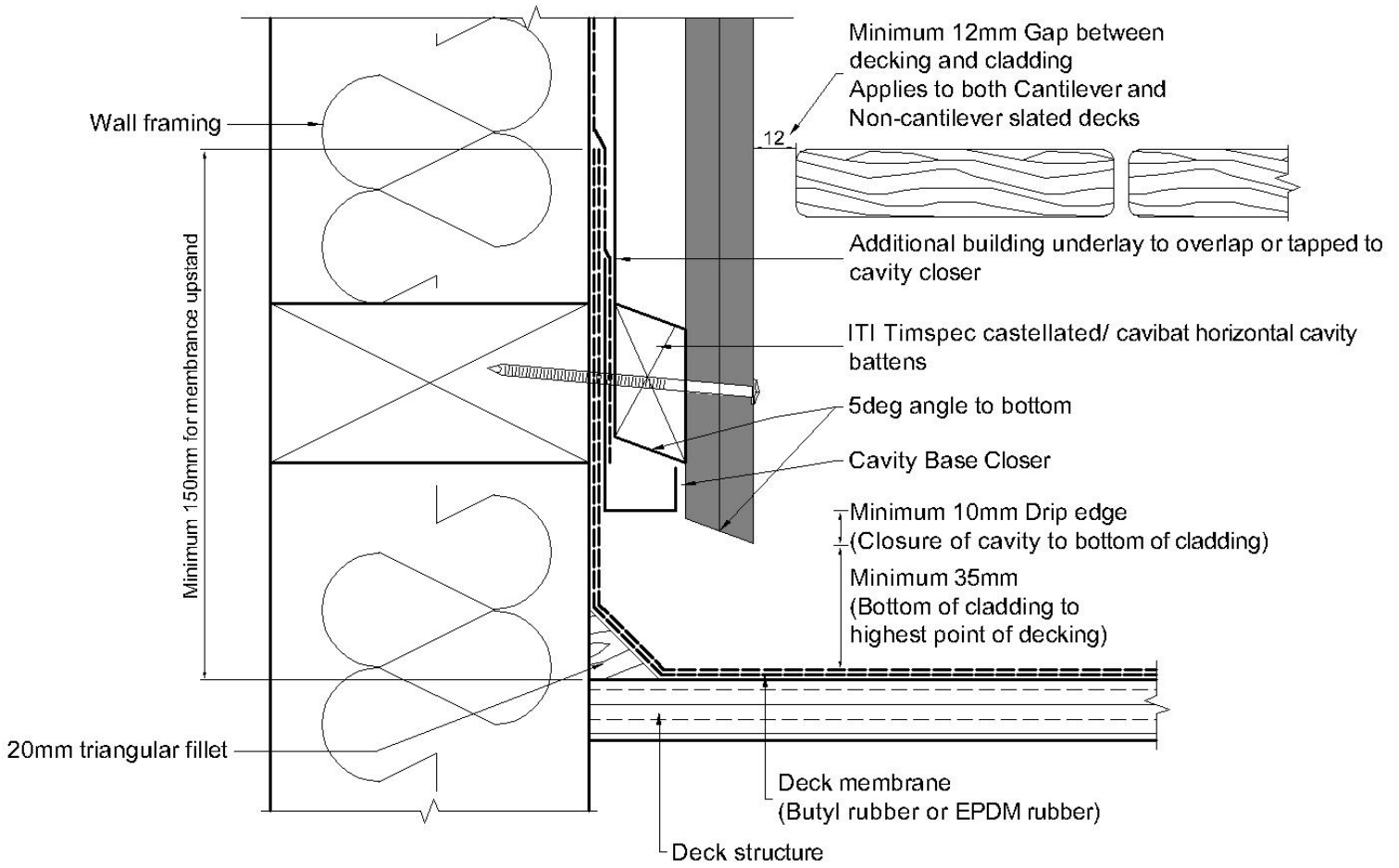


**FIGURE 13. 14 VC 502 BASE OF WALL – TIMBER FLOOR**

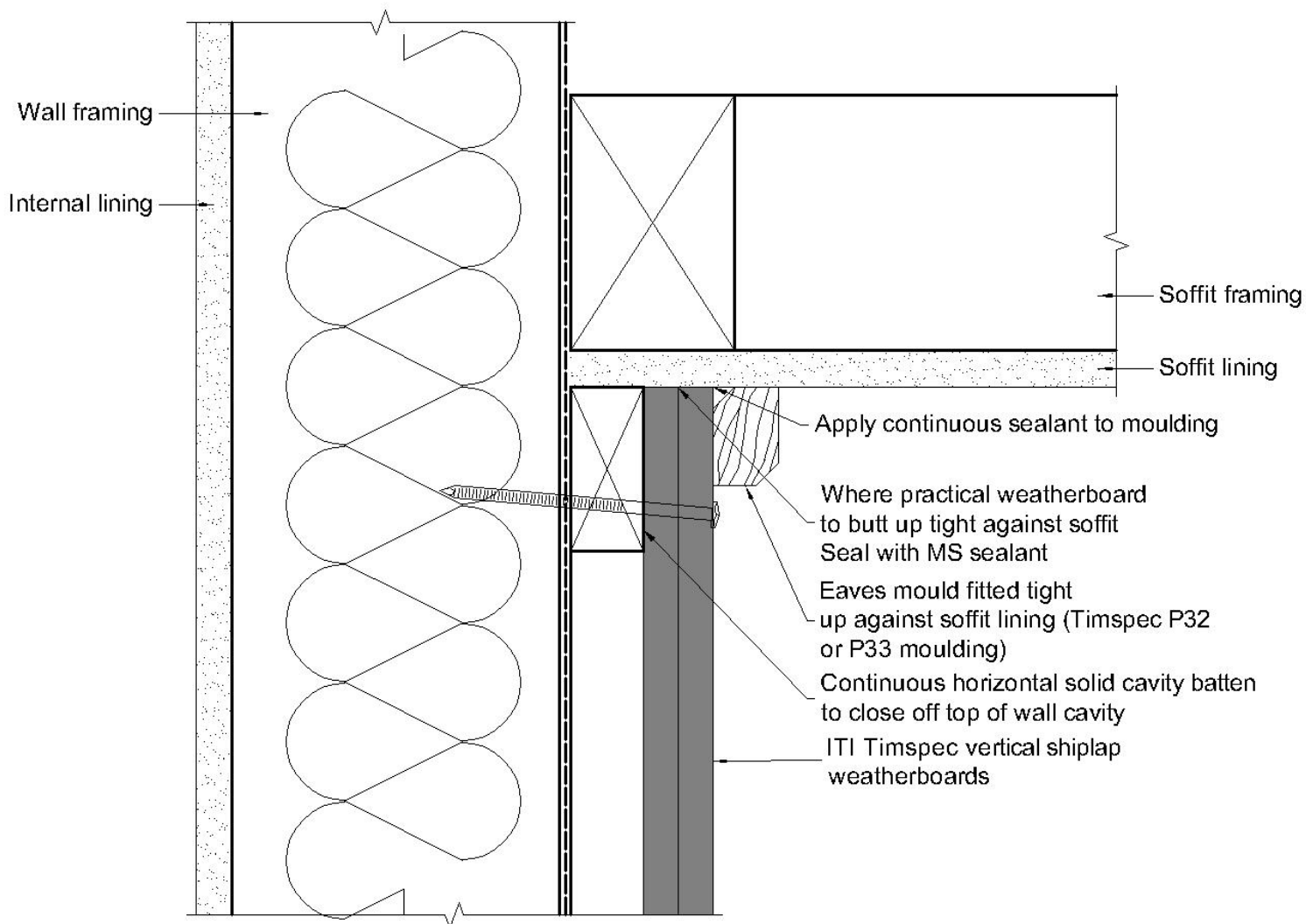


Important: Take care to ensure air from the subfloor space cannot enter the cavity. This is important because moisture levels in subfloor can be high.

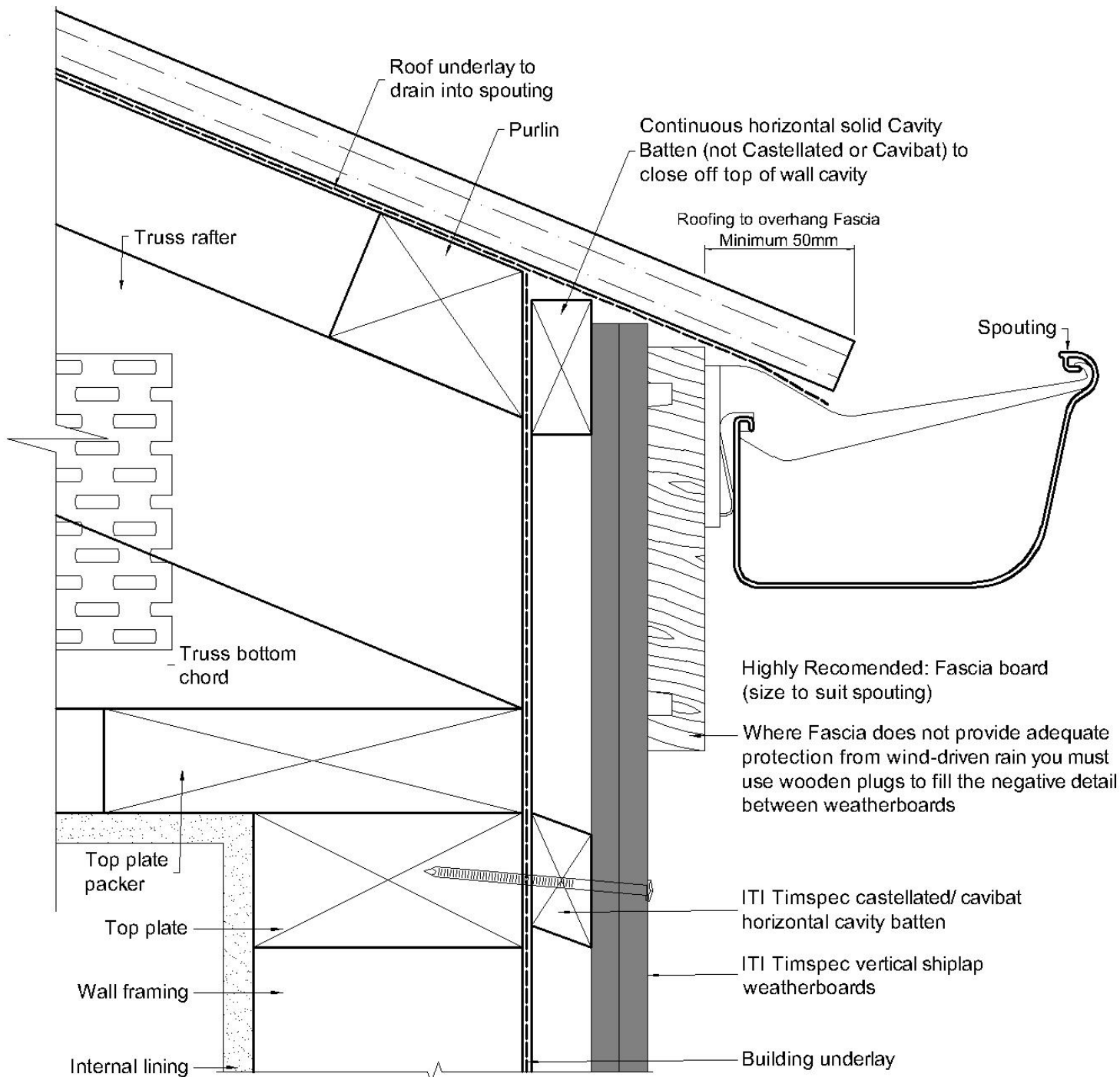
**FIGURE 13. 15 VC 503 BASE, CLADDING FINISH ABOVE DECK**



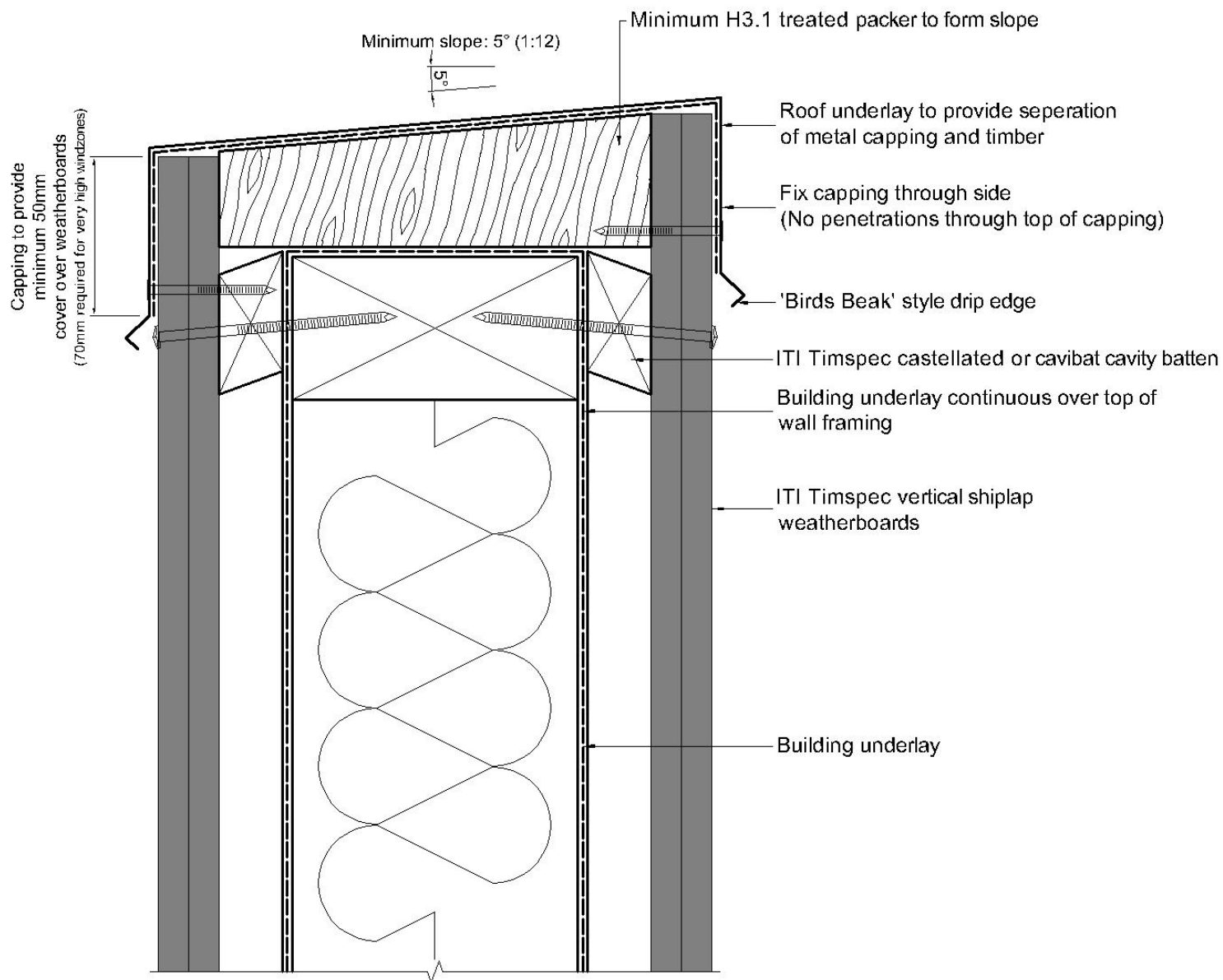
**FIGURE 13. 16 VC 601 ROOF/ WALL TOP PLATE – FLAT SOFFIT**



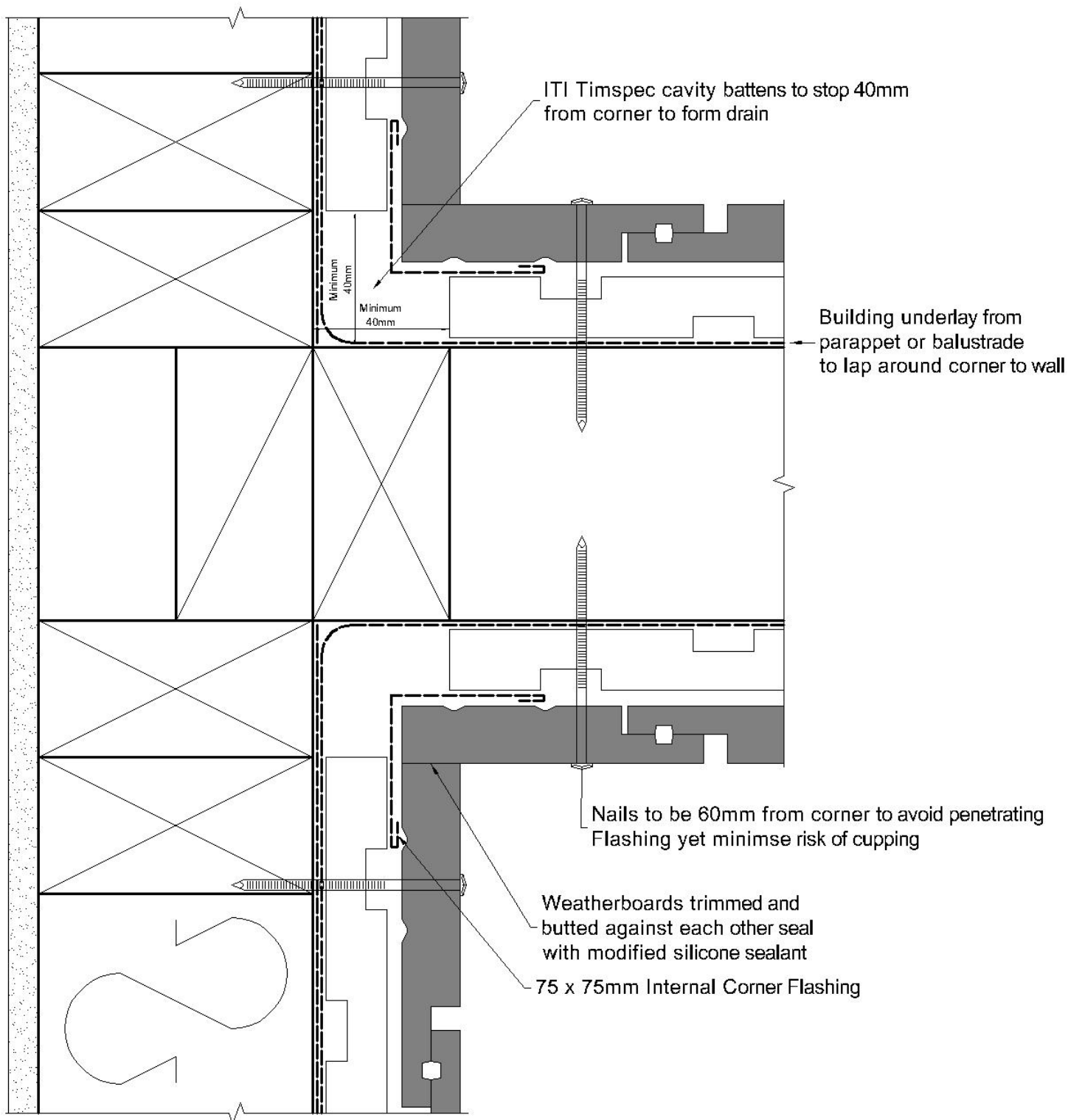
**FIGURE 13. 17 VC 602 ROOF/ WALL TOP PLATE - NO SOFFIT**



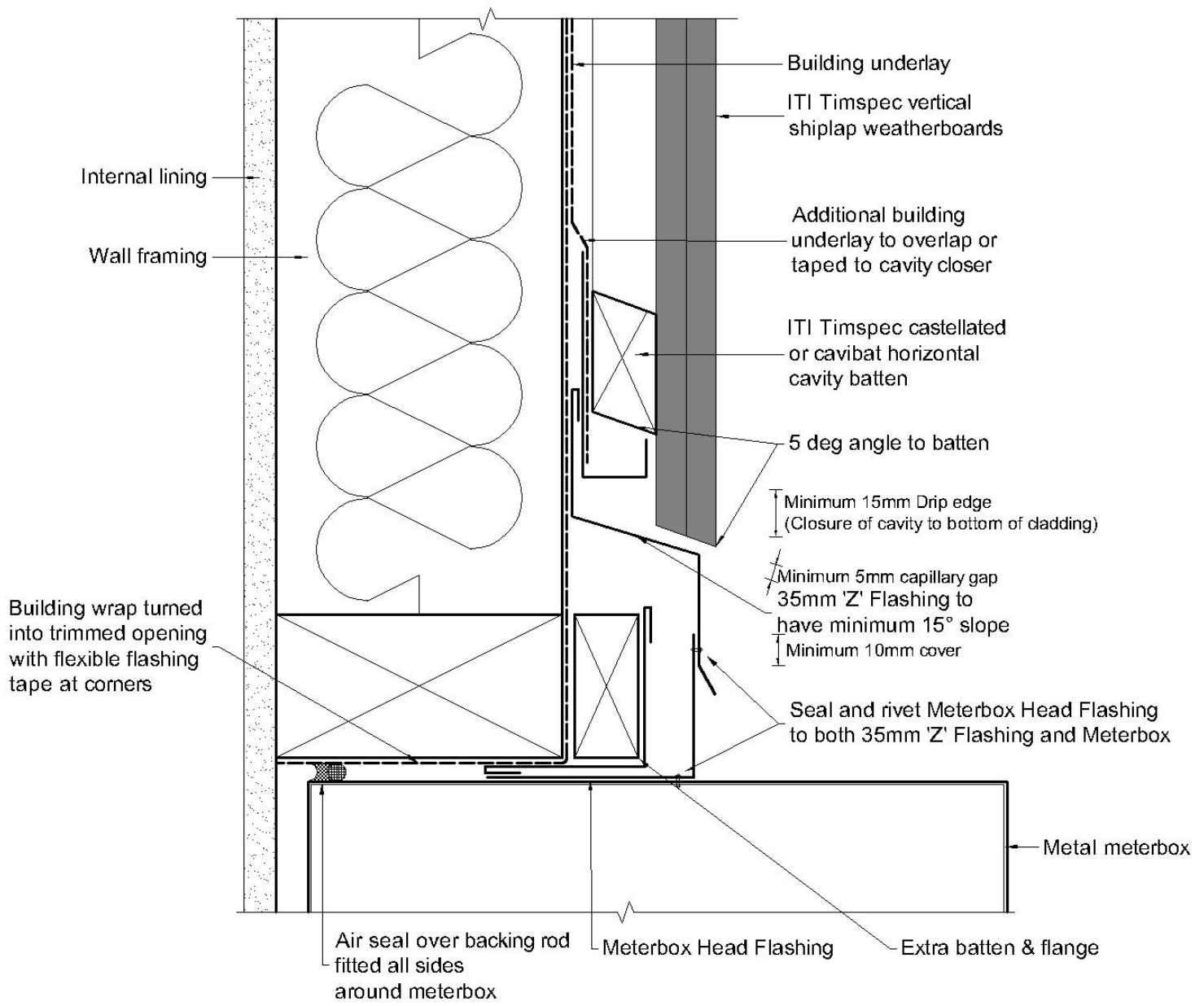
**FIGURE 13. 18 VC 701 PARAPET CAPPING EXPANSION JOINT**



**FIGURE 13. 19 VC 702 BALUSTRADE, INTERSECTION WITH WALL**

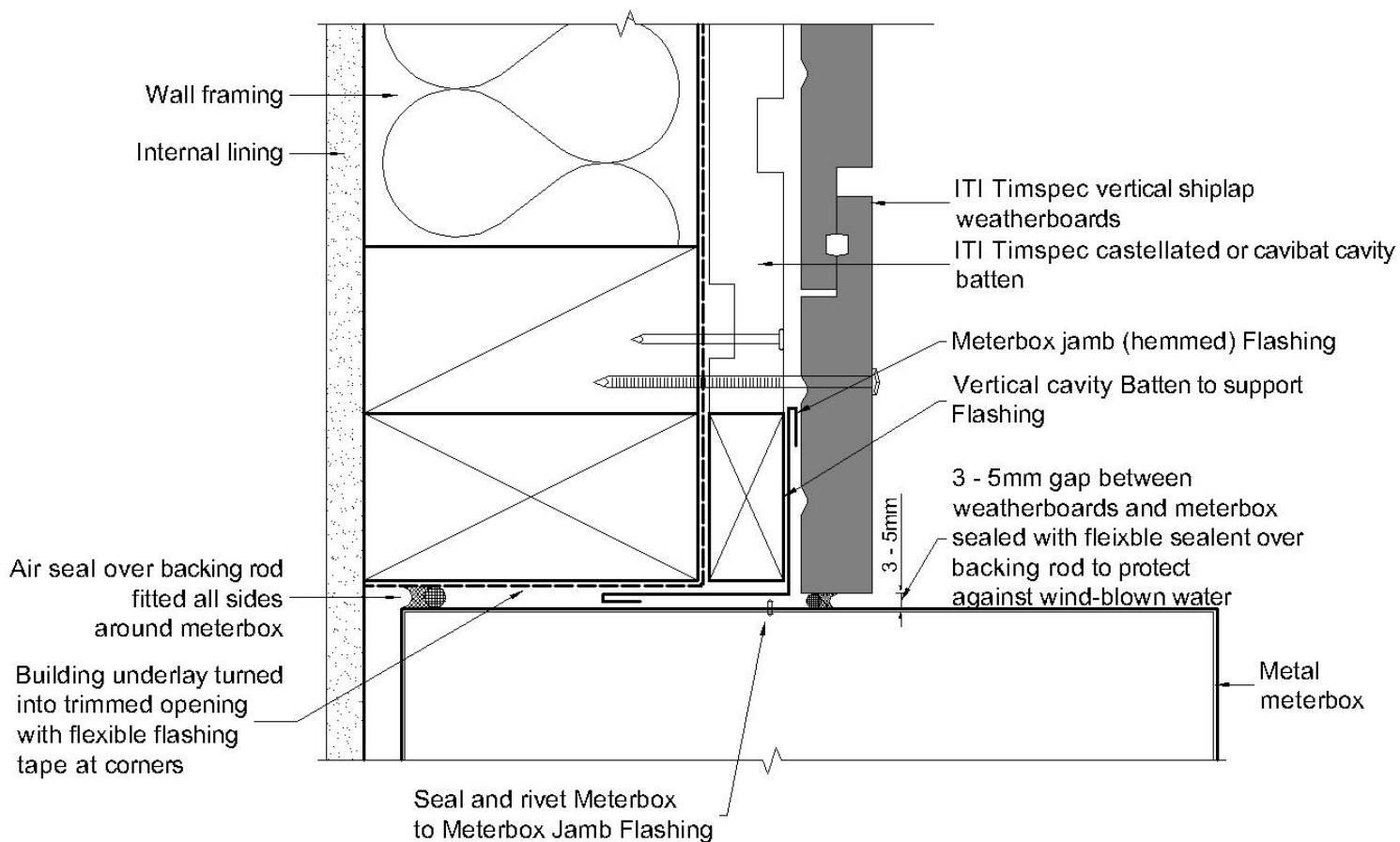


**FIGURE 13. 20 VC 801 METER BOX HEAD**

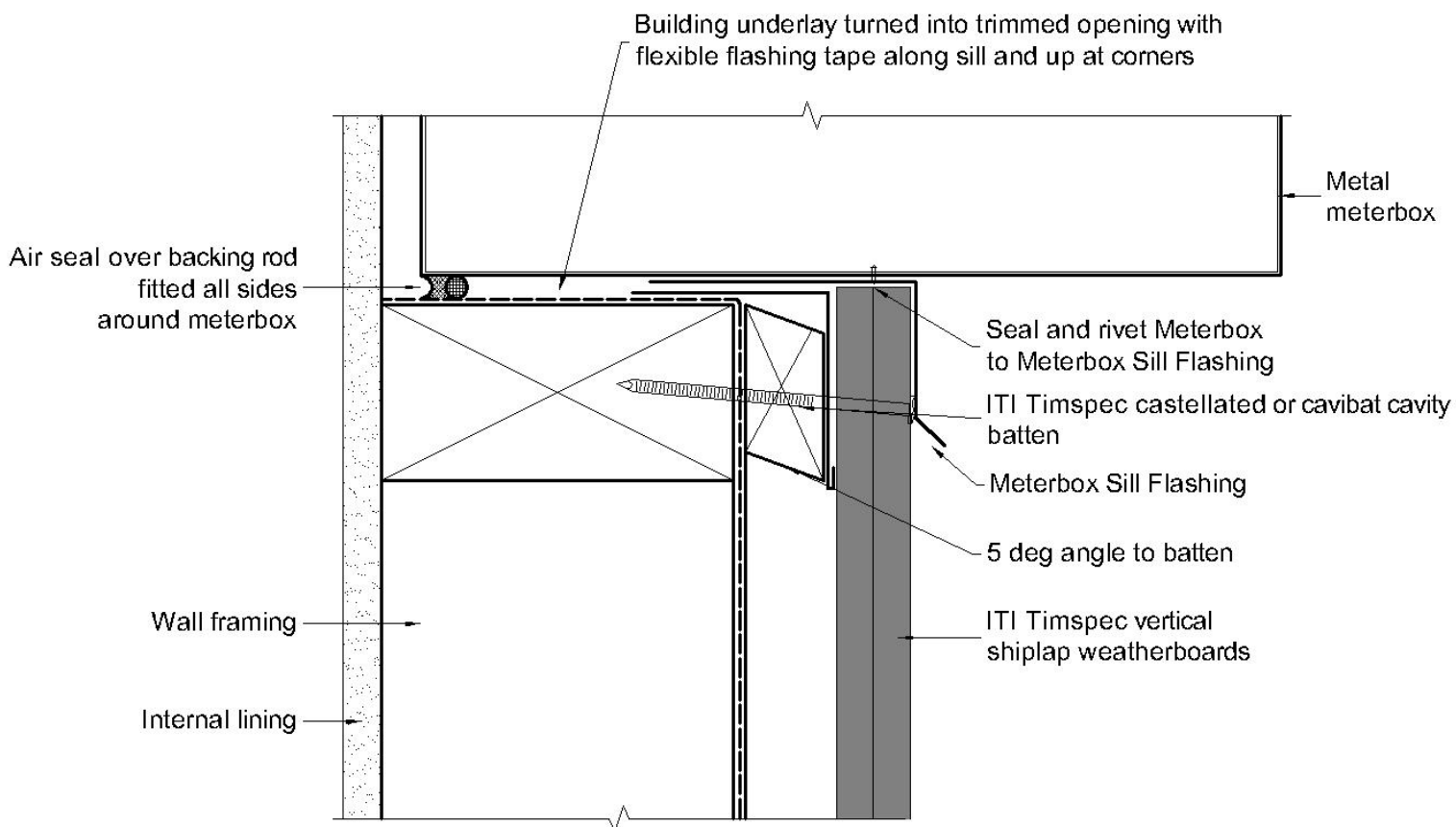




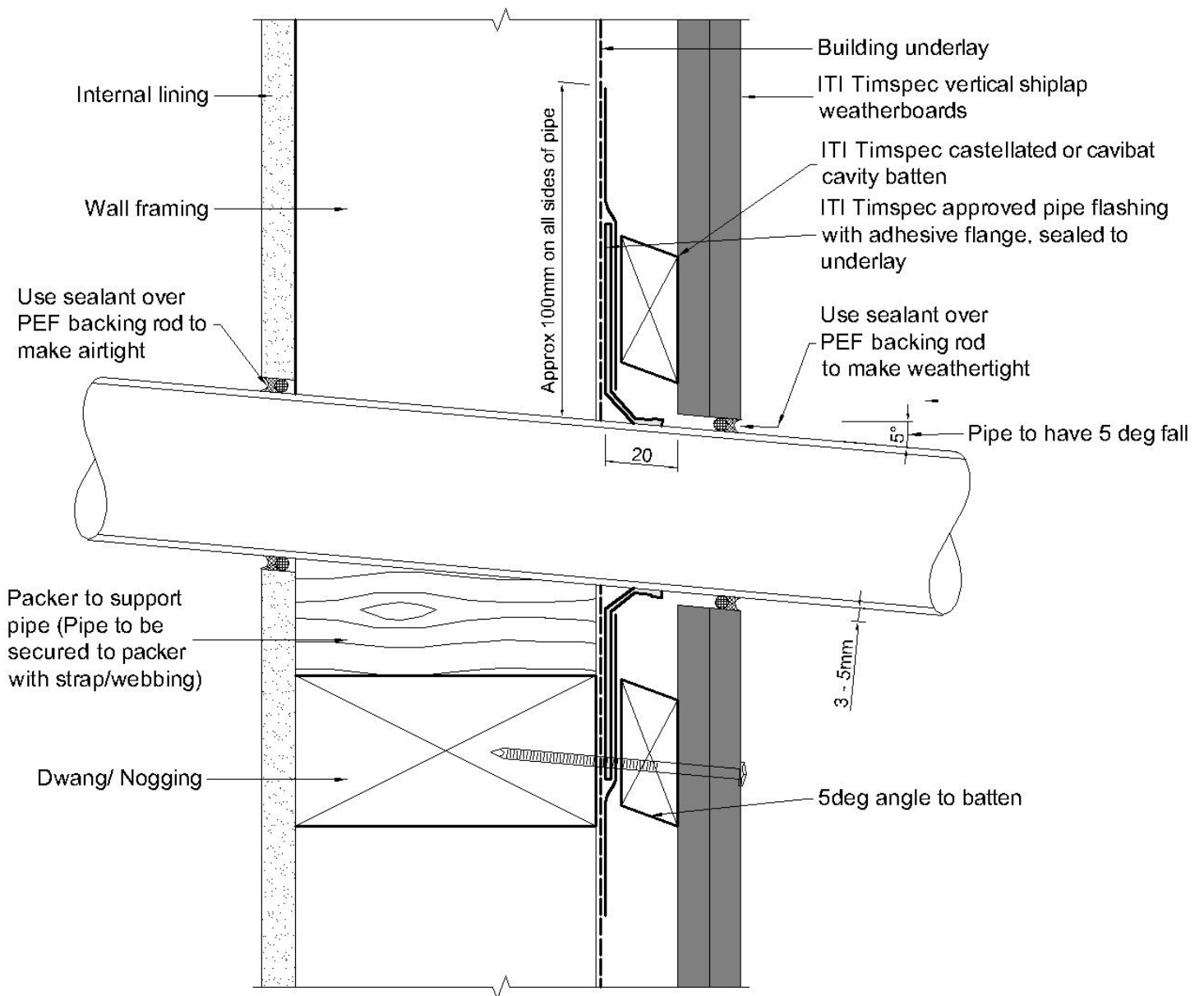
**FIGURE 13. 21 VC 802 METER BOX JAMB**



**FIGURE 13. 22 VC 803 METER BOX SILL**



**FIGURE 13. 23 VC 851 PIPE PENETRATION DETAIL**



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