



fatra

Technical Specification

Insulated Fully Adhered Cold Store System

PAGE 3 | Proposed System

PAGE 4 | Metal Ancillaries

PAGE 5 | Accessories

PAGE 6 | System Benefits & Accreditations

PAGE 7 | Installation Procedure

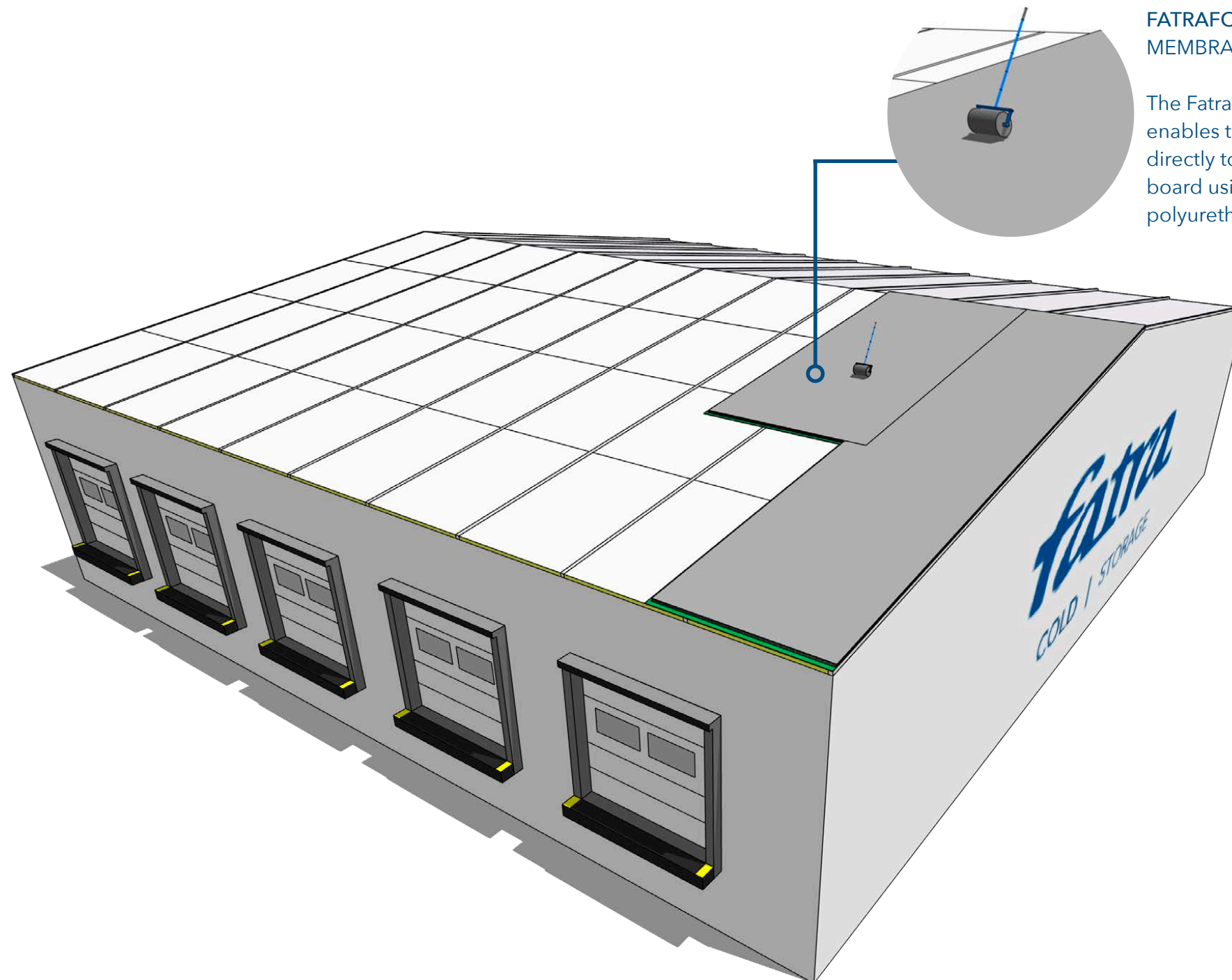
PAGE 20 | Welding & Tools

PAGE 22 | Testing Procedure

PROPOSED | System

The Fatra cold store insulated roof panel system provides a fully adhered system which is bonded directly to a steel lined roof panel using the Fatrabond moisture curing polyurethane adhesive. Unlike liquid applied membranes, the Fatrafol 807v is unaffected by substrate moisture and inclement weather conditions during installation which can cause the membrane to delaminate & defect prematurely. All joints, laps and terminations are hot air fusion welded creating a permanent and physical bond and does not rely on adhesives sealants or tapes to create a waterproofed joint.

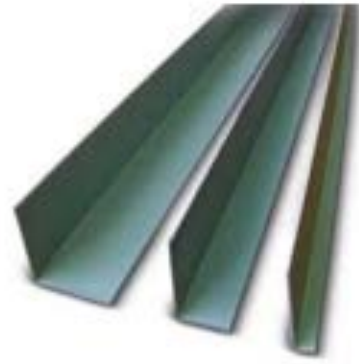
The fully adhered system improves drainage, the overall aesthetics of the roof system due to not being exposed to a certain amount of wind flutter and also reduces disruption to the client. Insulated roof panels are constantly exposed to excessive structural movement, the Fatrafol PVC membrane has the ability to move with the roof panels without causing the membrane to shear and tear unlike liquid applied systems which fail along the joints of the roof panel causing water to be absorbed in the roof panel core and potentially the internal building envelope.



FATRAFOL 807v | FLEECE BACK PVC SHEET MEMBRANE

The Fatrafol 807v has a fleece backing which enables the PVC membrane to be fully adhered directly to the KoalaKool tissue faced insulation board using the Fatrabond 1215 moisture curing polyurethane adhesive.

FATRANYL METAL | Ancillaries



FATRANYL | Chase Termination Metal

50mm x 15mm PVC coated zinc/stainless steel angle for termination of PVC membrane upturns. To be installed and mechanically fixed into a continuous saw-cut slot. A 2mm - 5mm gap between each section of metal is required to allow for structural movement. Metals are to be mechanically fixed at 150mm centres using the relevant fixings with a band of polyurethane/modified silicone sealant into the saw-cut slot and across the top of the termination metal to provide adequate seal.

FATRANYL | Internally Coated Peel Stop Bar

40mm x 40mm internal PVC coated zinc/stainless steel angle for the base of all perimeter and internal wall upturns to provide protection from high wind exposure and shrinkage of membrane. To be installed and mechanically fixed over the field sheet membrane. A 2mm - 5mm gap between each section of metal is required to allow for structural movement. Metals are to be mechanically fixed at 150mm centres using adequate fixings.

FATRANYL | Externally Coated Termination Metal

50mm x 50mm external PVC coated zinc/stainless steel angle. To be installed over hob detailing to provide protection from sharp edges affecting the PVC membranes performance. A 2mm - 5mm gap between each section of metal is required to allow for structural movement. Metals are to be mechanically fixed at 150mm centres using adequate fixings.

FATRANYL | Externally Coated Crush & Fold Metal

50mm x 50mm x 15mm external PVC coated zinc/stainless steel angle. To be installed to the outside edge of the perimeter hob to provide protection from sharp edges affecting the PVC membranes performance and provide a termination metal which sits slightly away from the outside vertical face of the building to prevent moisture running down the face of the building. A 2mm - 5mm gap between each section of metal is required to allow for structural movement. Metals are to be mechanically fixed at 150mm centres using adequate fixings.

FATRANYL | PVC Coated Site Specific Metals

Fatra have the ability to fabricate any termination metals, flashings and such items to site specific requirements. This will be established upon completion of a site survey by a Fatra Australia representative.

All fixing specifications, centre of fixings and relevant information regarding the fixing of the termination angles will be provide by Fatra Australia Pty Ltd based on the system being implemented, substrate and wind load calculations provided by Fatra Australia Pty Ltd.

PREFABRICATED | Rainwater Outlets



The prefabricated outlets are inserted in the rainwater outlet after the field sheet membrane has been installed. The outlets come complete with the back flow protection flange. The PVC membrane flange is then simply hot air fusion welded to the field sheet achieving a consistent 50mm weld around the entire perimeter.

PREFABRICATED | Wall Outlets



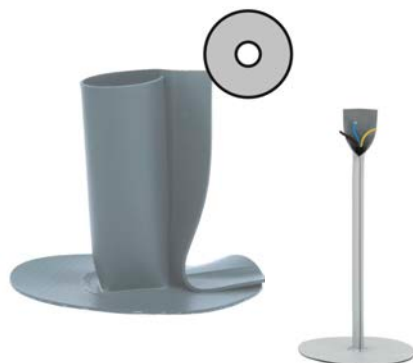
The prefabricated wall outlets are inserted in the rainwater outlet after the PVC membrane has been installed. The outlets come complete with the back flow protection flange. The PVC membrane flange is then simply hot air fusion welded to the membrane achieving a consistent 50mm weld around the entire perimeter.

PREFABRICATED | Wall Overflows



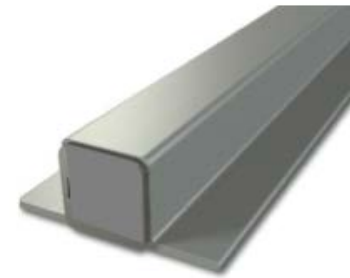
The prefabricated wall overflows are inserted in the wall overflow pipe after the PVC membrane has been installed. The outlets come complete with the back flow protection flange. The PVC membrane flange is then simply hot air fusion welded to the membrane achieving a consistent 50mm weld around the entire perimeter.

PREFABRICATED | Pipe Collars



The prefabricated pipe collars cover all different diameters of pipes/post. The prefabricated pipe collars drastically reduce installation and material cost whilst providing an added benefit of being able to wrap the collars around the pipes and posts when you're restricted to sliding them over the top.

FATRAFIX | Bar



Fatra offer a unique ancillary which enables the client to mechanically anchor items such as solar panels, air conditioning units, timber decking and the like to the structure without having to penetrate the waterproofing membrane and create extensive detailing and weak points in the waterproofing membrane. The Fatrafix bar is an aluminium bar which is encapsulated in PVC membrane which is simply welded to the field sheet membrane.

PREFABRICATED | Internal & External Corners



The Fatra prefabricated corners are used to improve the aesthetics of the system for corner detailing. The corners also reduce labour install times onsite reducing the overall cost of the system.

FATRABOND | Contact Adhesive



The Fatrabond contact adhesive is a two sided application to both Fatra PVC membrane and the substrate its being applied to. The fatrabond contact adhesive can be applied to high parapet walls to avoid bagging of the membrane and improve the aesthetics of the the vertical membrane.

STANDING SEAM | Replicate



The Fatra standing seam replicate is for roofs where the client requires a metal roof look with the performance of a Fatra PVC membrane system, the standing seam replicate provides the perfect solution. This system is purely for modern architecture and provides excellent aesthetics to bespoke projects to create the look of a metal roof.

SYSTEM | Benefits

Excellent resistance to weather
Structural strength & resistance to mechanical stress
UV stable
Reflects up to 80% of UV Radiation
Reduced H&S risk
Cost affective
High chemical resistance
Root resistant
Excellent fire rating
High tensile strength
100% recyclable material
Lightweight
Excellent weldability
ISO 9001 Accreditation
ISO 14001 Accreditation
FM Approval Certification
BRE Eco Point
BBA certified 30 year life expectancy
Material warranties up to 25 years
Installation Quality Inspection throughout installation
Reduced time and leak detection costs

FATRA | Accreditation



BREEAM®



PREPARATION |

Ensure the surface is clean, dry and free from dirt and debris prior to commencing works onsite. Remove any protruding items in the surface which may damage the PVC sheet membrane. All mechanical plant, air conditioning units and associated item must be lifted slightly from the surface when installing the field sheet membrane to enable the membrane to be installed over the entire area.

Care must be taken to avoid damaging or disjoining the air conditioning units. Decommissioning may be required. Once the field sheet membrane has been installed the feet of the mechanical plant units must have suitable protection installed below to protect the PVC membrane. The plant can be lowed back down as soon as the field sheet has been laid and fully inspected for defects.

The existing membrane and substrate is to be assessed by a certified and approved engineer/consultant prior to commencing any works onsite to ensure a full scope of works relating to appropriate methodologies of preparation required is provided.

All preparation is to be carried out in accordance with engineer/consultants reports and Fatra Australia's technological methodologies. Preparation considerations include but aren't limited to:-

- A. Removal of existing membrane if existing membrane is deemed unsuitable to install directly over.
- B. Removal of defected sections of existing membrane such as vulcanised laps, bubbling and or delaminating membranes, corner fillets, cast in reglets and outlets.
- C. Removal of cappings, flashing, skylights, doors, mechanical plant and similar items which will impede the installation process.
- D. Localised repairs to cracks, expansion joints and similar aspects
- E. Mechanical surface grinding
- F. Re-levelling, creation or rectification of falls.
- G. Priming or sealing of the surface
- H. Cleaning and removal of any dirt, debris or chemicals present on the substrate.
- I. Removal of redundant materials present within the area.

STORAGE |

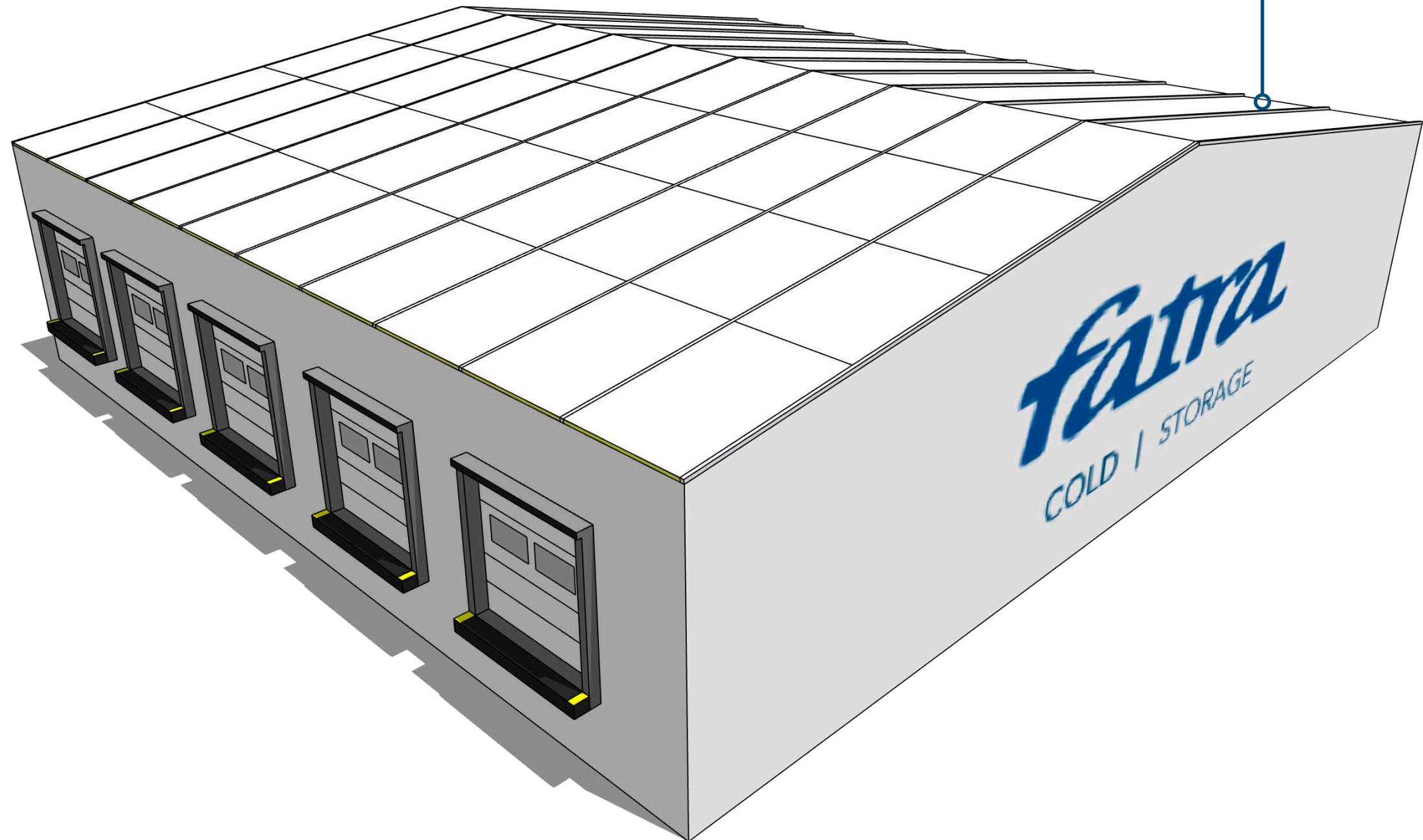
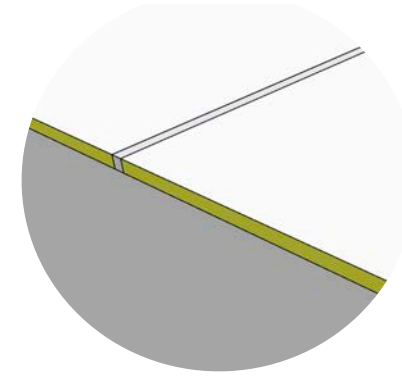
Materials are to be stored in a safe location and avoid being exposed to the elements or other damage such as mechanical or external contractors. All materials are to be stored in a safe and secure manner which will not result in dislodgement or displacement. Fatrafol membranes are to be covered and protected from the UV at all times until the point of installation of the Fatrafol PVC membrane to protect the underside of the PVC membrane rolls from being exposed to the UV.

It is advisable that loose items such as Fatranyl angles, fixings and associated accessories are stored in a safe and secure box to prevent them being damaged or displaced.

ROOF PANEL | SUBSTRATE PREPARATION

Substrate checks before commencing works

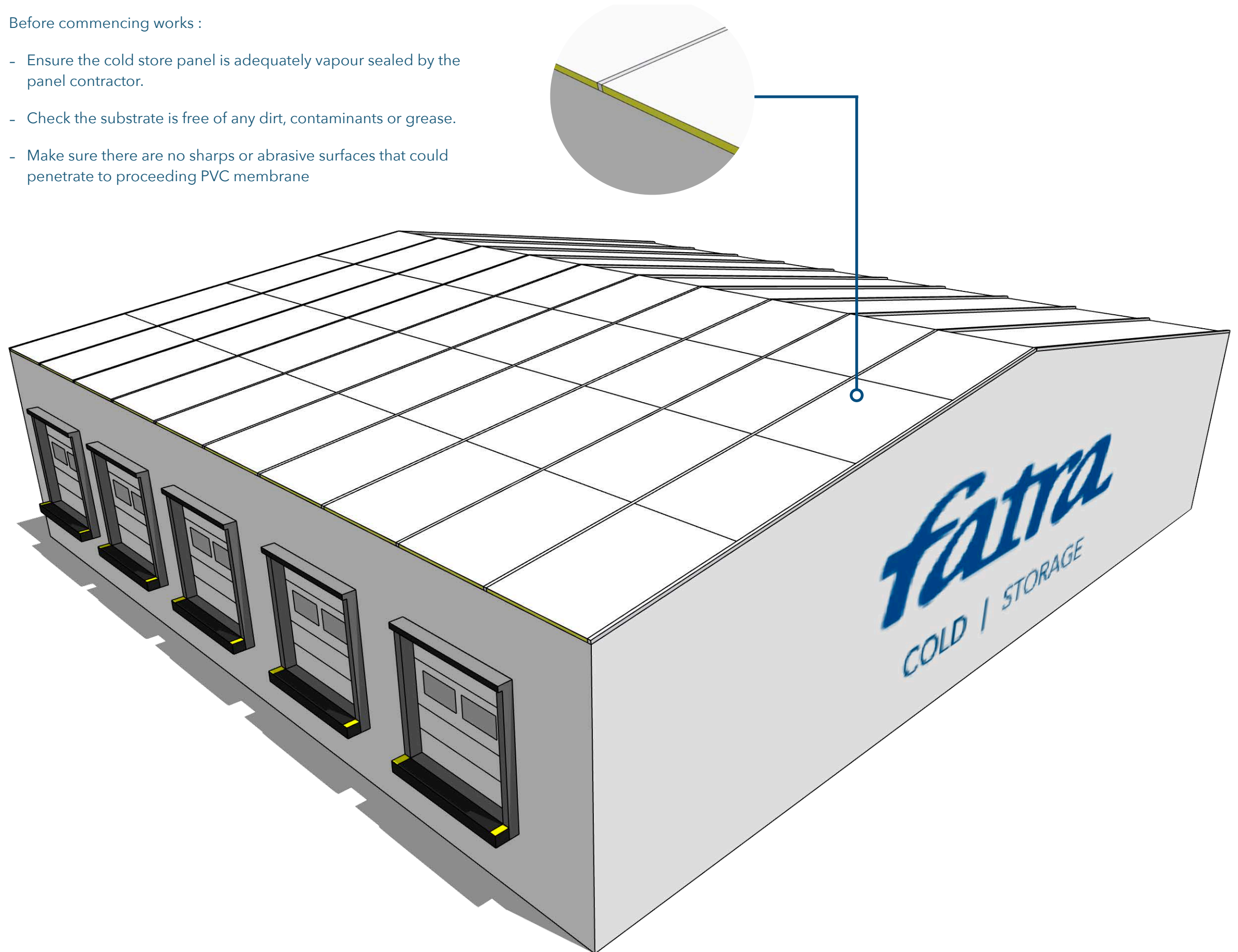
1. Ensure there is no panel skin delamination as this can remove structural integrity from the roof panel.
2. Panel deflection limits should be within the Australian standards guidelines.
3. Core Sampling should be carried out if there is any concern of water or ice build up in the panels.
4. Rust Treatment - Check roof for any deterioration and treat before commencing works.
5. Structural Loading - Have a suitably qualified structural engineer confirm that the structure is capable of taking the additional weight of the new roof membrane.
6. Fastener pull testing - Test the pullout strength of the fasteners to the skin of the roofing panel to confirm that the correct loadings can be achieved to the Australian standards.



ROOF PANEL | SUBSTRATE PREPARATION

Before commencing works :

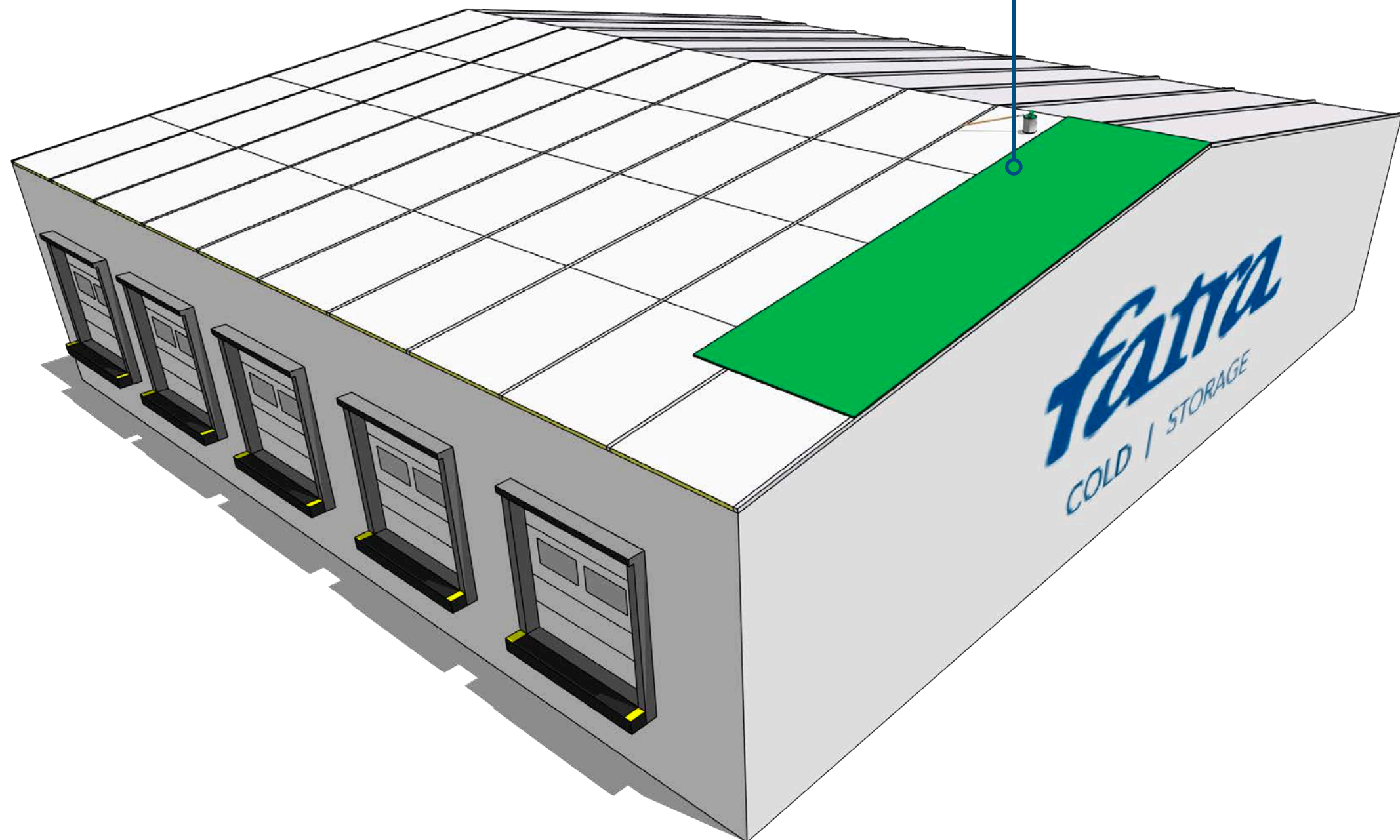
- Ensure the cold store panel is adequately vapour sealed by the panel contractor.
- Check the substrate is free of any dirt, contaminants or grease.
- Make sure there are no sharps or abrasive surfaces that could penetrate to proceeding PVC membrane



FATRABOND | FATRABOND 1215 FLEECE BACK ADHESIVE

Roller apply Fatrabond adhesive over the cold store insulated roof panel where the Fatrafol

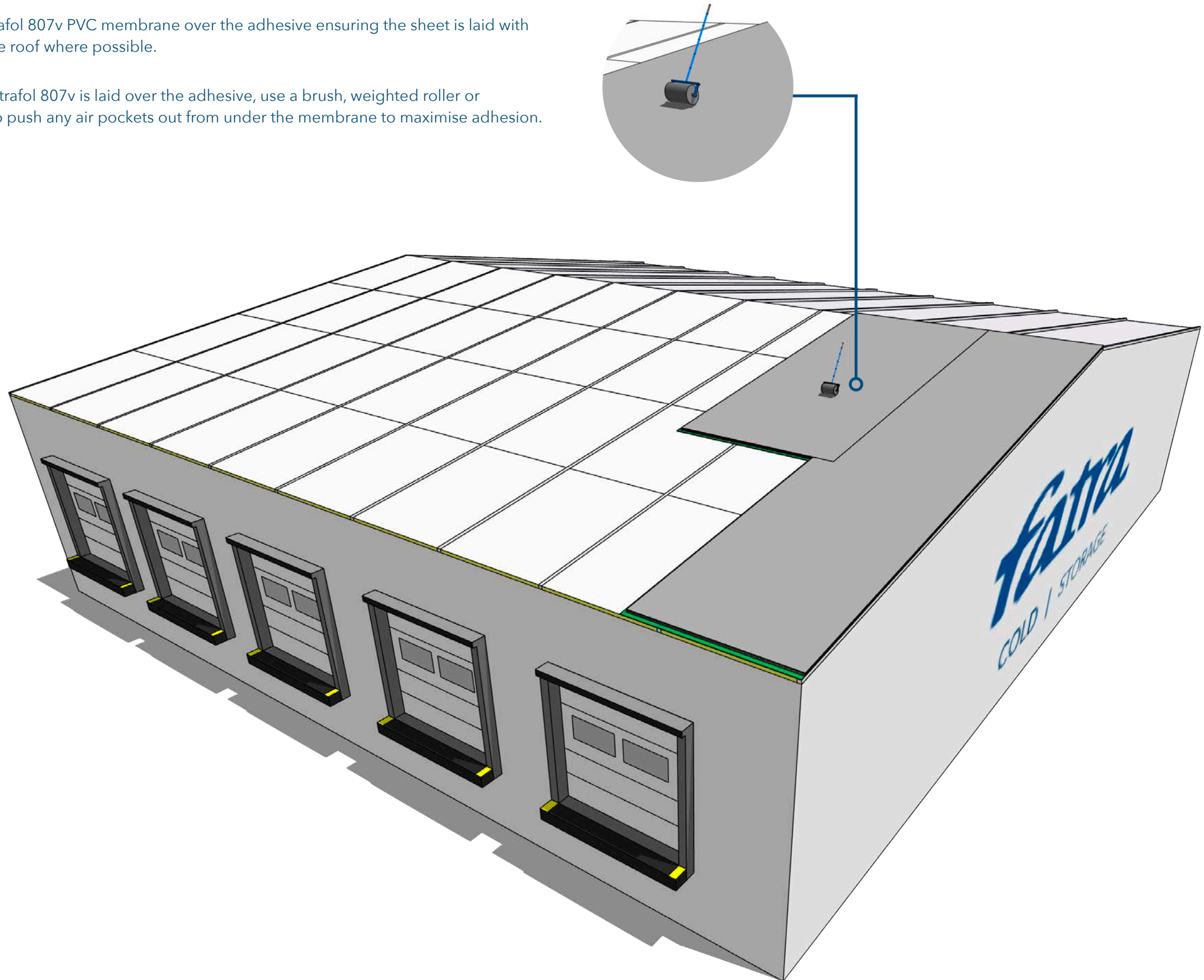
807v will be laid in accordance with Fatra technological methodologies. Ensure an even consistent coverage is achieved.



FATRAFOL | 807v PVC SHEET MEMBRANE

Roll the Fatrafol 807v PVC membrane over the adhesive ensuring the sheet is laid with the fall of the roof where possible.

Once the Fatrafol 807v is laid over the adhesive, use a brush, weighted roller or squeegee to push any air pockets out from under the membrane to maximise adhesion.

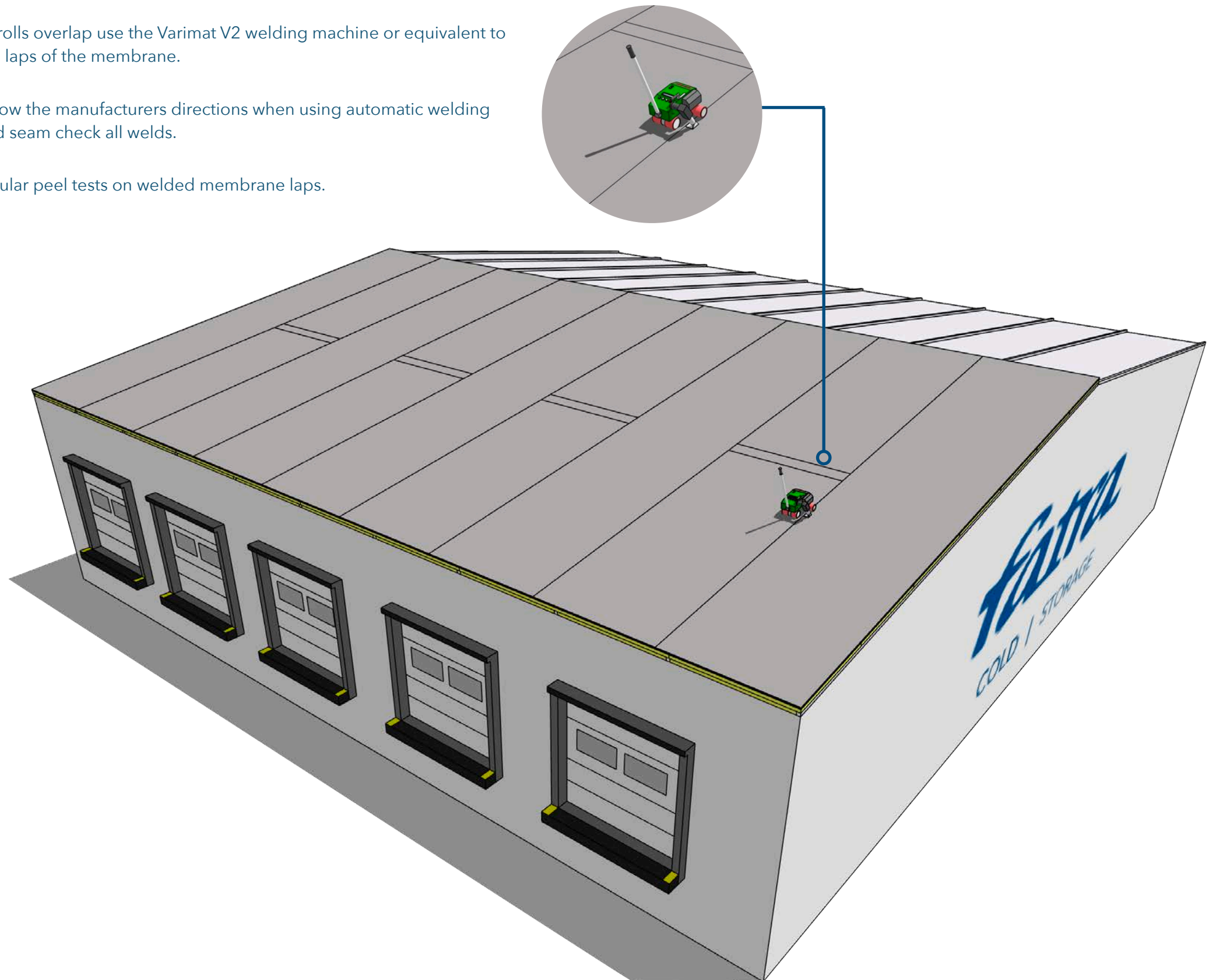


FATRAFOL | 807v PVC SHEET MEMBRANE

Where the 2 rolls overlap use the Varimat V2 welding machine or equivalent to weld the side laps of the membrane.

Ensure to follow the manufacturers directions when using automatic welding machines and seam check all welds.

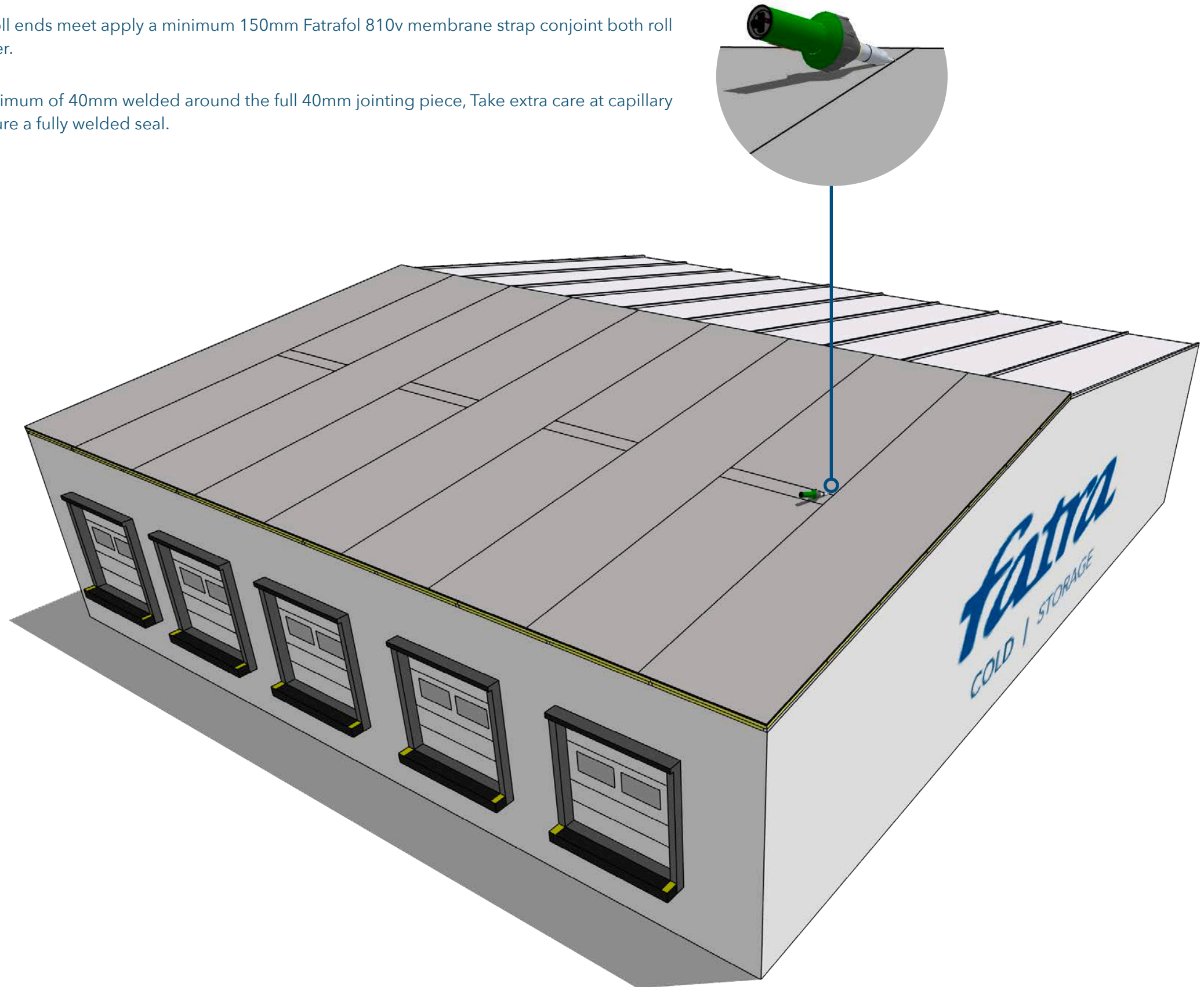
Carry out regular peel tests on welded membrane laps.



FATRAFOL | 810v PVC SHEET MEMBRANE

Where the roll ends meet apply a minimum 150mm Fatrafol 810v membrane strap conjoint both roll ends together.

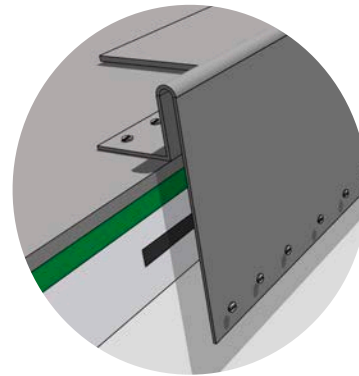
Ensure a minimum of 40mm welded around the full 40mm jointing piece, Take extra care at capillary joints to ensure a fully welded seal.



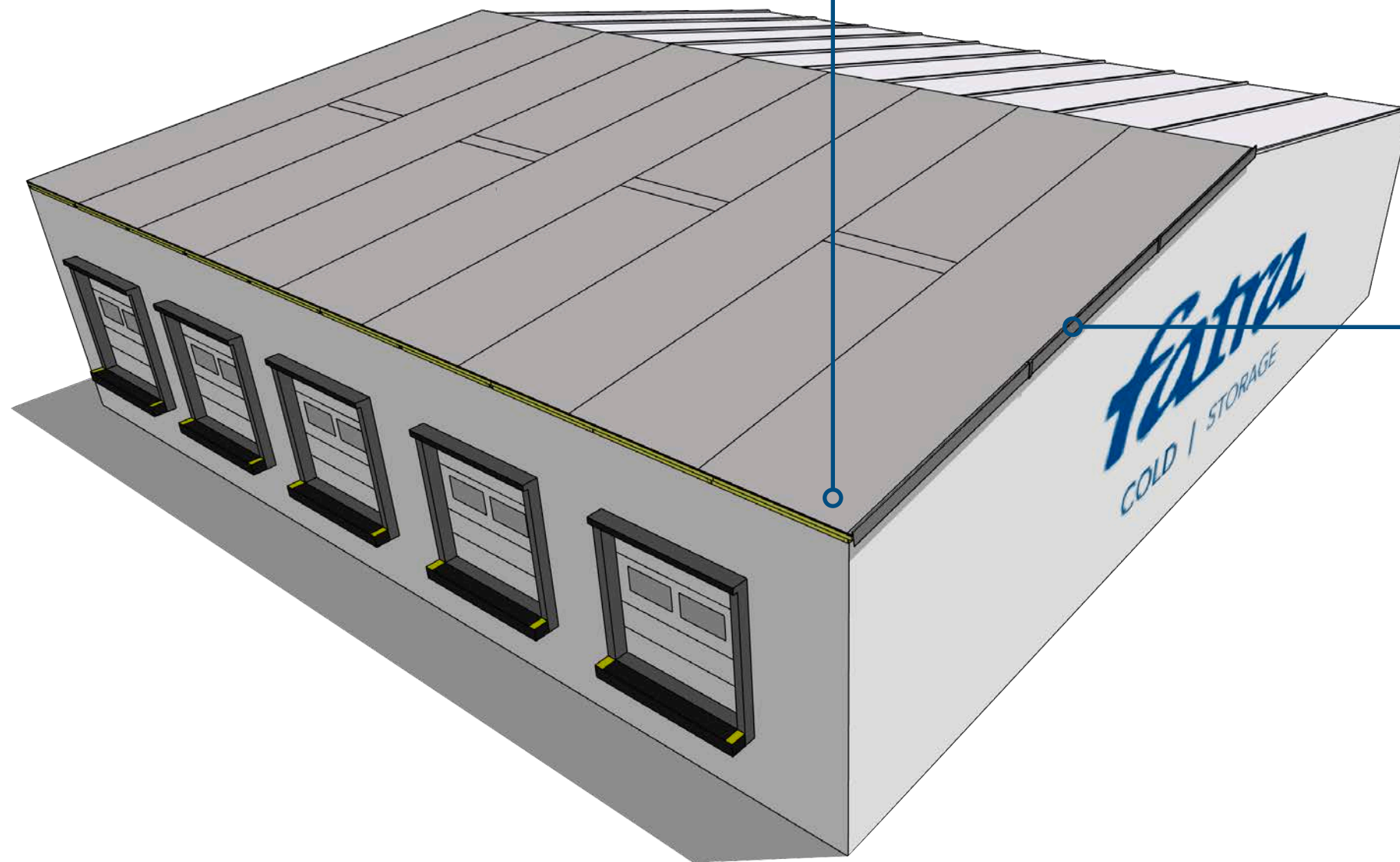
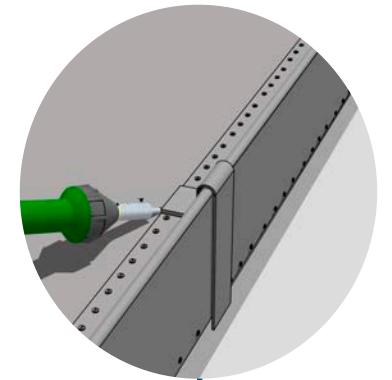
VERGE TERMINATION | PVC COATED ANGLES

Any Fatranyl verge termination angles must be sealed against the outside vertical face of the building using Fatra butyl sealing tape to air seal the termination and avoid corrosion.

Fixing of the outside vertical face or installation of a ledger support angle maybe required to suitably secure the Fatranyl angle and prevent the Fatranyl angle being dislodged or damaged when exposed to high winds. Consultation with a Fatra technical representative and approved engineered is advised prior to implementing this detail.



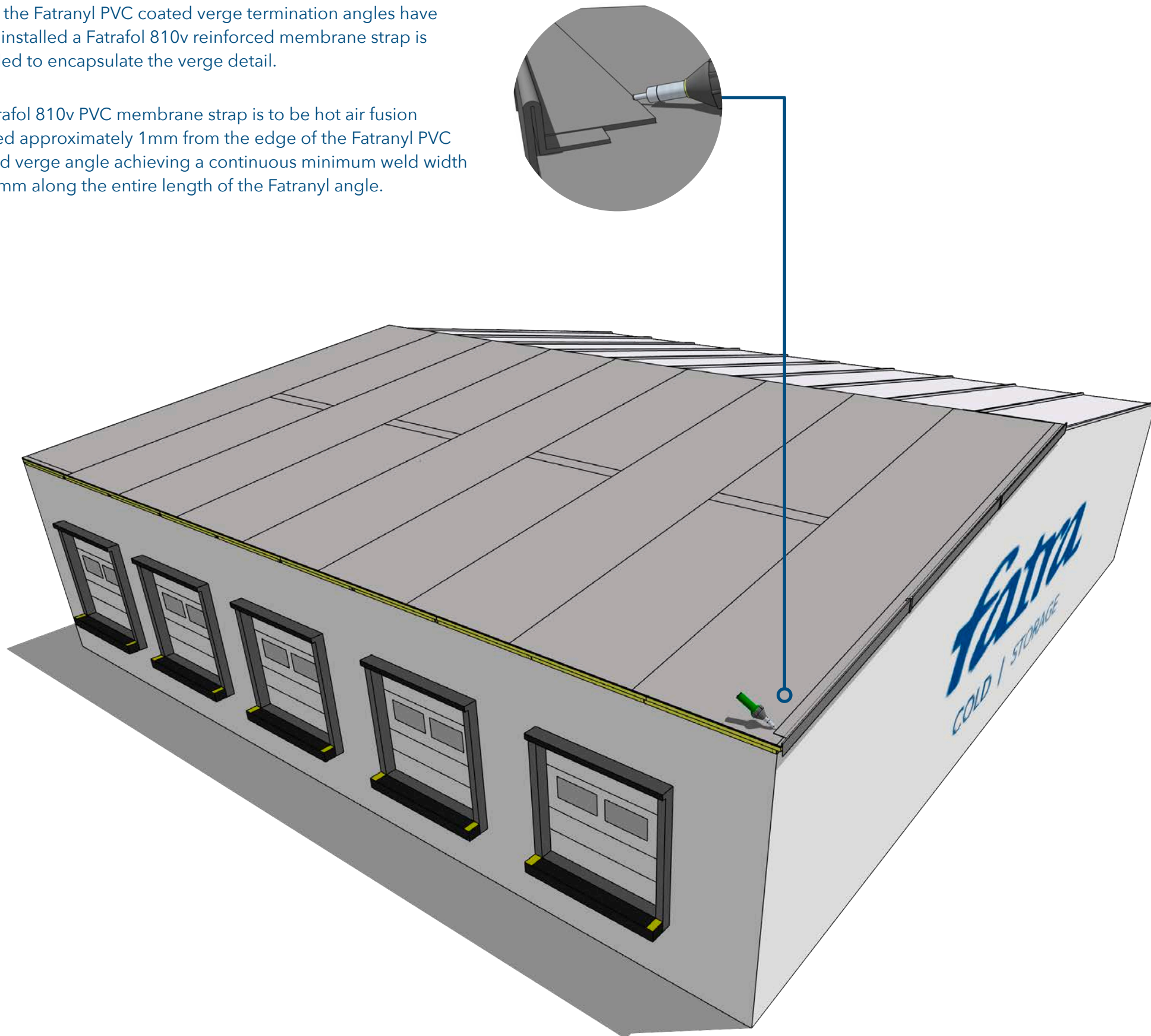
Once these have been fixed into place, a Fatrafol 804 detailing membrane butt strap must be hot air fusion welded over the expansion gaps of the conjoining metals. This is to be installed to the top horizontal face running down the outside vertical face and slightly underneath the externally coated PVC angle to completely waterproof the joints. A minimum 40mm weld is to be achieved around the entire perimeter of the butt strap with the exception of the underside section. The butt strap is not to be fully welded to the outside face underside of the butt strap to ensure the butt strap does not tear or damage when exposed to structural movement.



VERGE TERMINATION | PVC MEMBRANE STRAP

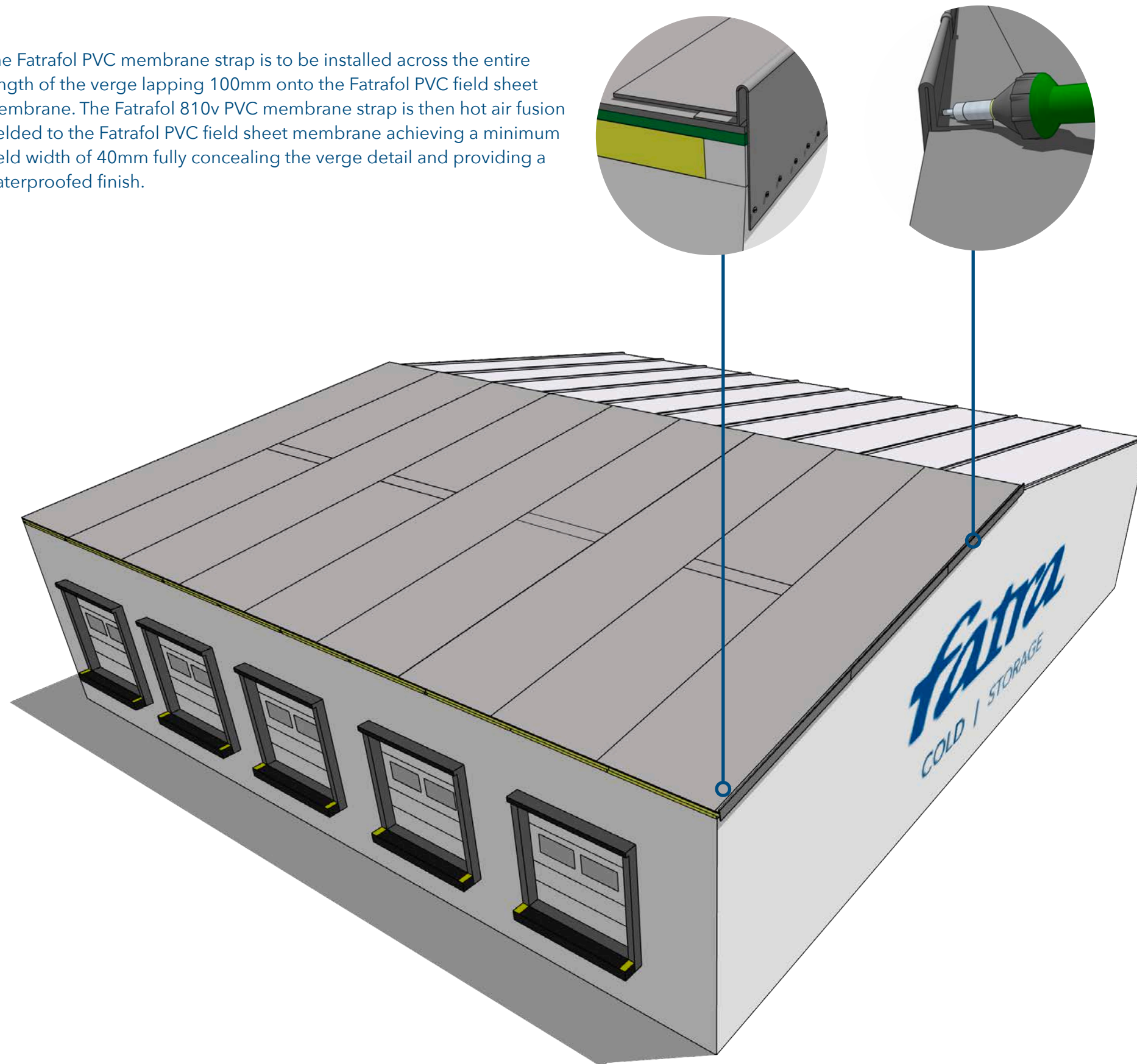
Once the Fatranyl PVC coated verge termination angles have been installed a Fatrafol 810v reinforced membrane strap is installed to encapsulate the verge detail.

A Fatrafol 810v PVC membrane strap is to be hot air fusion welded approximately 1mm from the edge of the Fatranyl PVC coated verge angle achieving a continuous minimum weld width of 40mm along the entire length of the Fatranyl angle.



VERGE TERMINATION | PVC COATED ANGLES

The Fatrafol PVC membrane strap is to be installed across the entire length of the verge lapping 100mm onto the Fatrafol PVC field sheet membrane. The Fatrafol 810v PVC membrane strap is then hot air fusion welded to the Fatrafol PVC field sheet membrane achieving a minimum weld width of 40mm fully concealing the verge detail and providing a waterproofed finish.



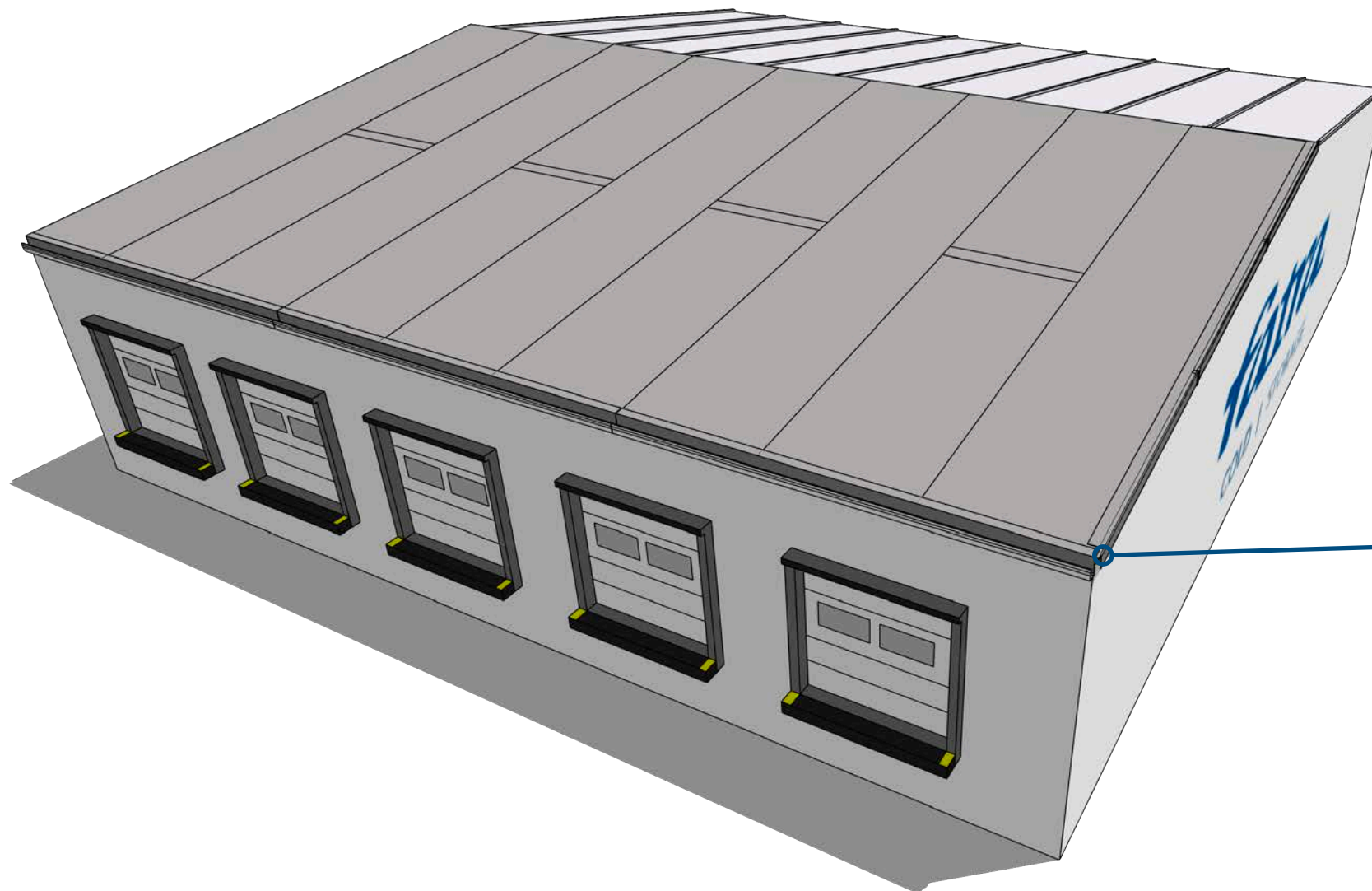
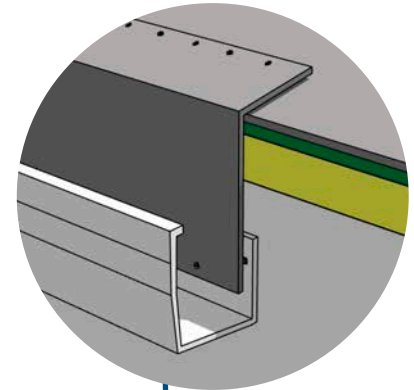
EAVES GUTTER TERMINATION | CRUSH & FOLD PVC ANGLES

Where the membrane connects to an eaves gutter, a Fatranyl PVC coated crush & fold angle is used. Consultation with a Fatra Technical representative is advised to discuss the project specific objectives and requirements.

Fix the Fatranyl PVC coated crush & fold termination angle along the entire length of the eaves gutter at 150mm centres using Fatra approved fixings to secure into place. Fix the horizontal section of the Fatranyl angle which sits on top of the substrate. The fixing locations must always be no closer than 10mm from the edge of the Fatranyl angle but always in the bottom third section to allow enough room to complete a hot air fusion weld when installing the PVC membrane. Ensure to fix into the face or connect gutter angle to a ledger angle to ensure angle can not be dislodged by high winds.

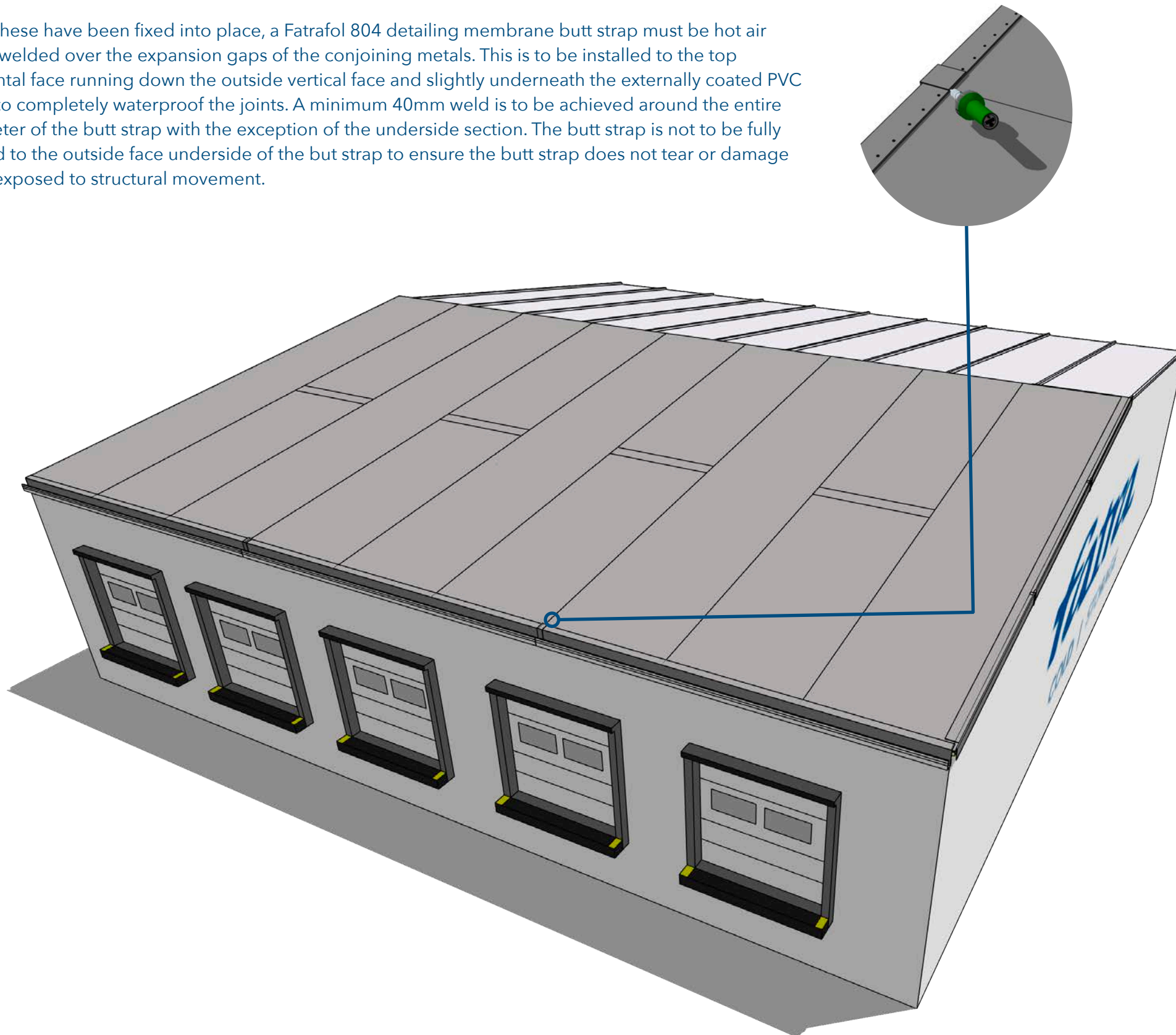
Any Fatranyl crush and fold termination angle must be sealed against the outside vertical face of the gutter using Fatra butyl sealing tape to air seal the termination and avoid corrosion.

Fixing of the outside vertical face or installing a ledger support angle maybe required to suitably secure the Fatranyl angle and prevent the Fatranyl angle being dislodged or damaged when exposed to high winds. Consultation with a Fatra technical representative and approved engineer is advised prior to implementing this detail.



EAVES GUTTER TERMINATION | CRUSH & FOLD PVC ANGLES

Once these have been fixed into place, a Fatrafol 804 detailing membrane butt strap must be hot air fusion welded over the expansion gaps of the conjoining metals. This is to be installed to the top horizontal face running down the outside vertical face and slightly underneath the externally coated PVC angle to completely waterproof the joints. A minimum 40mm weld is to be achieved around the entire perimeter of the butt strap with the exception of the underside section. The butt strap is not to be fully welded to the outside face underside of the butt strap to ensure the butt strap does not tear or damage when exposed to structural movement.

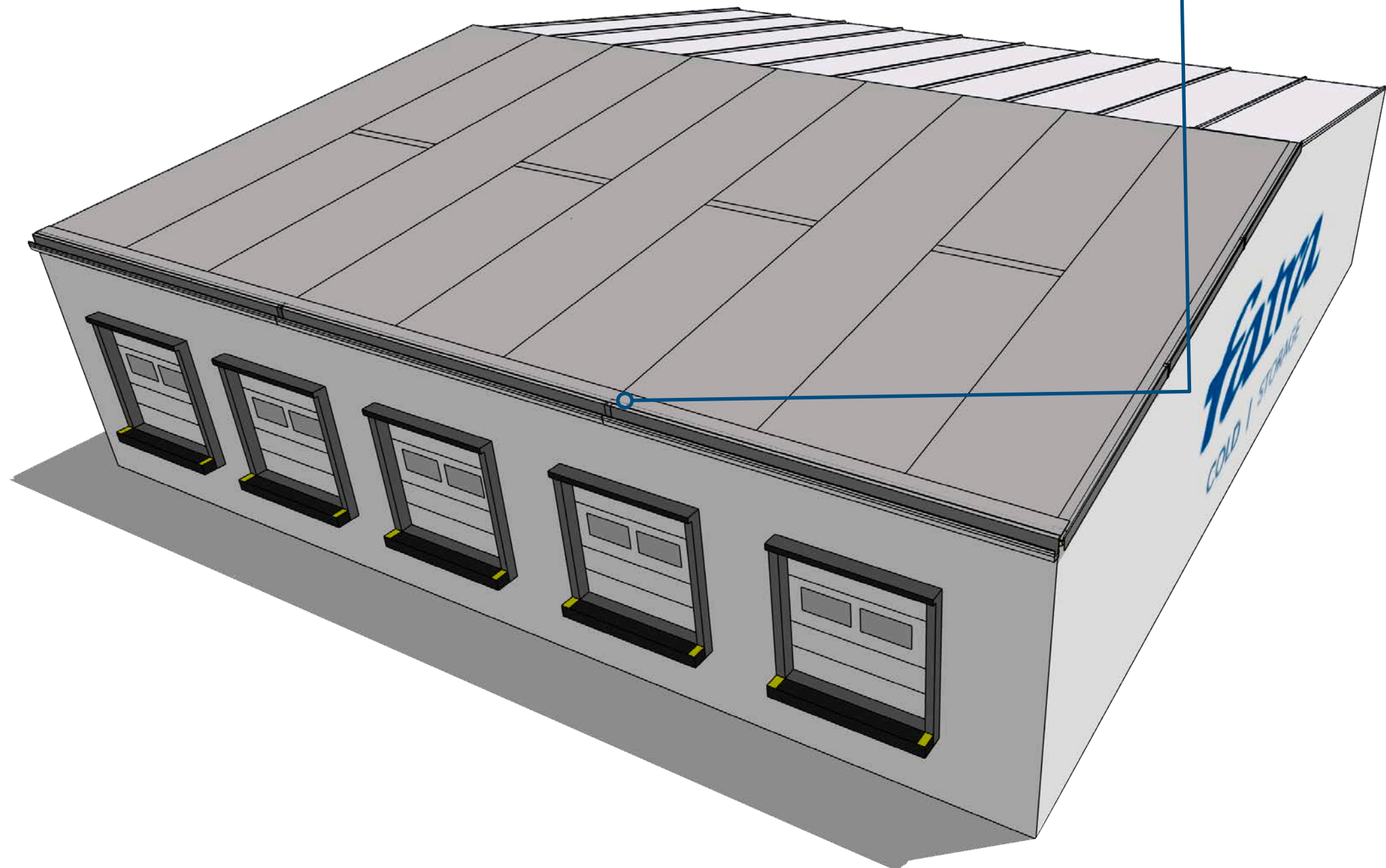


EAVES GUTTER TERMINATION | PVC MEMBRANE STRAP

Once the Fatranyl PVC coated crush and fold termination angles have been installed a Fatrafol 810v reinforced membrane strap is installed to encapsulate the eaves gutter detail.

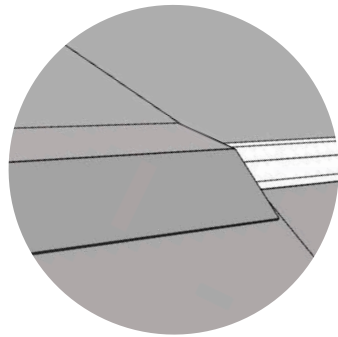
A Fatrafol 810v PVC membrane strap is to be hot air fusion welded approximately 1mm from the edge of the Fatranyl PVC coated verge angle achieving a continuous minimum weld width of 40mm along the entire length of the Fatranyl angle.

The Fatrafol PVC membrane strap is to be installed across the entire length of the gutter lapping 100mm onto the Fatrafol PVC field sheet membrane. The Fatrafol 810v PVC membrane strap is then hot air fusion welded to the Fatrafol PVC field sheet membrane achieving a minimum weld width of 40mm fully concealing the gutter detail and providing a waterproofed finish.

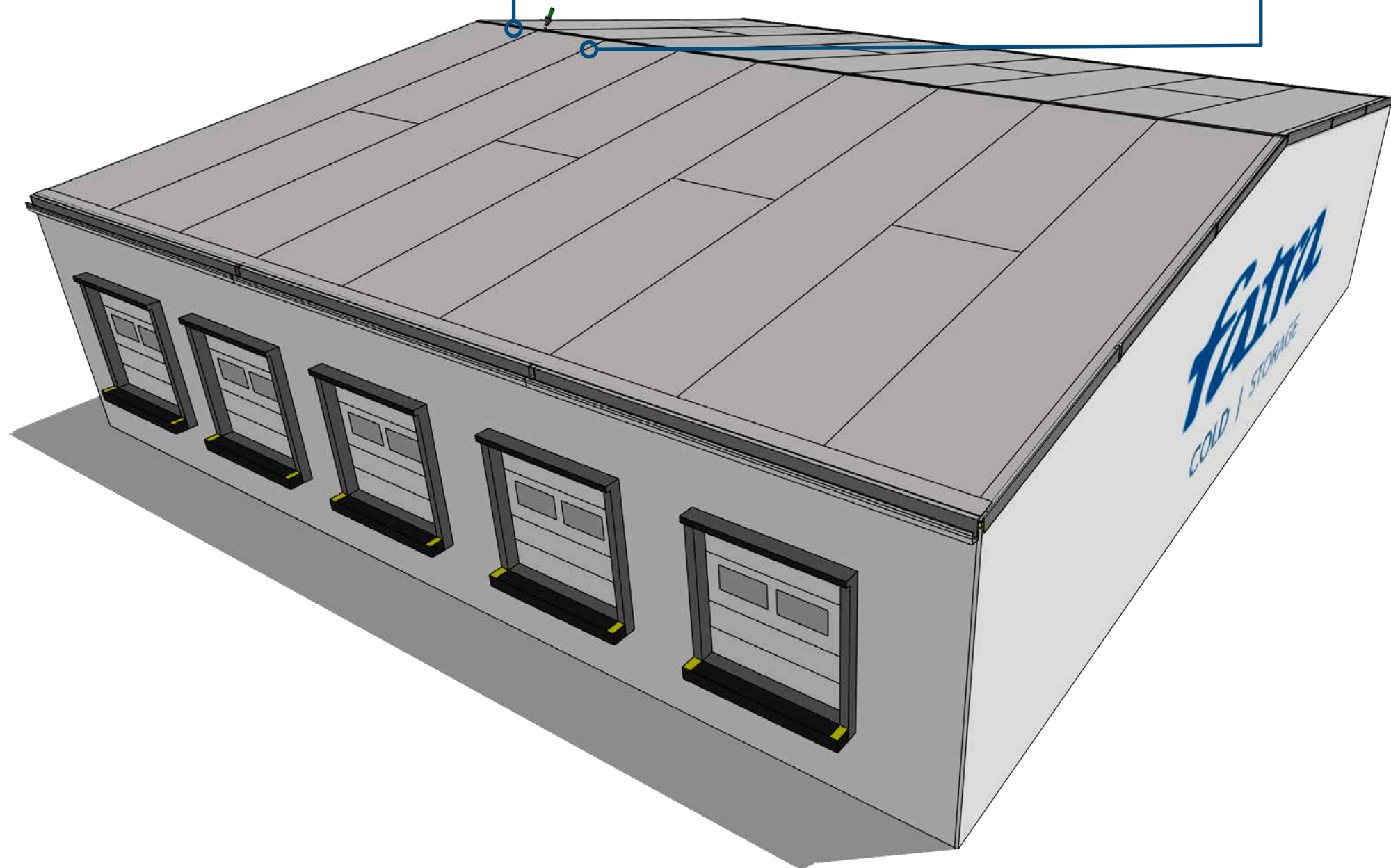
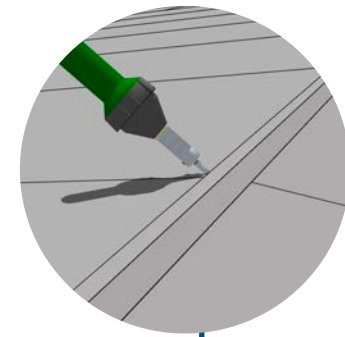


RIDGE DETAIL | GALVANISED FLASHING

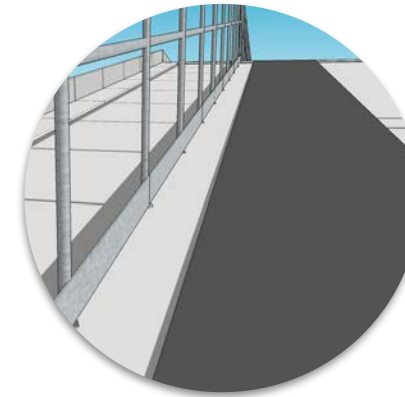
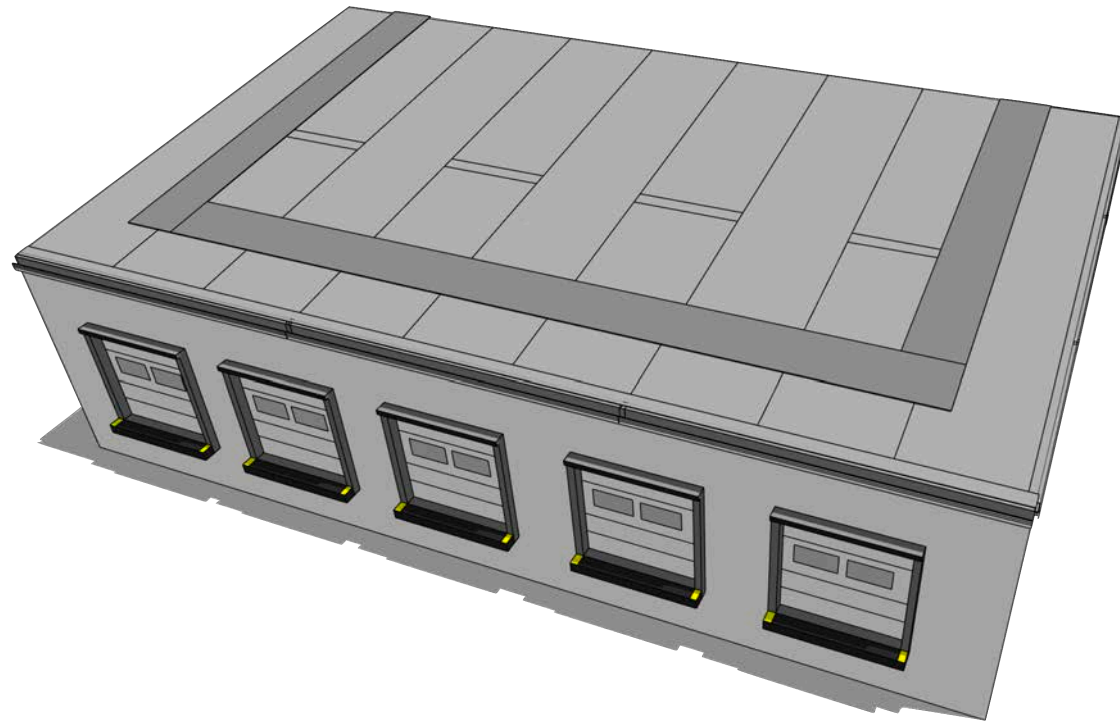
Fix a galvanised ridge flashing at staggered centres either side of the ridge to adequately secure the ridge flashing into place.



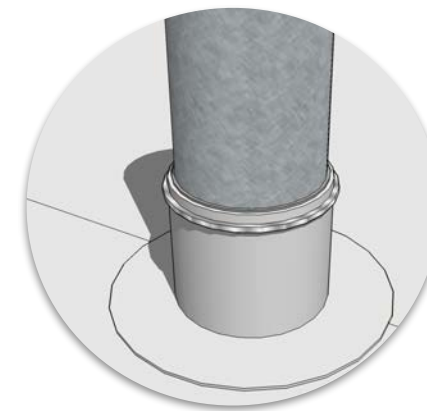
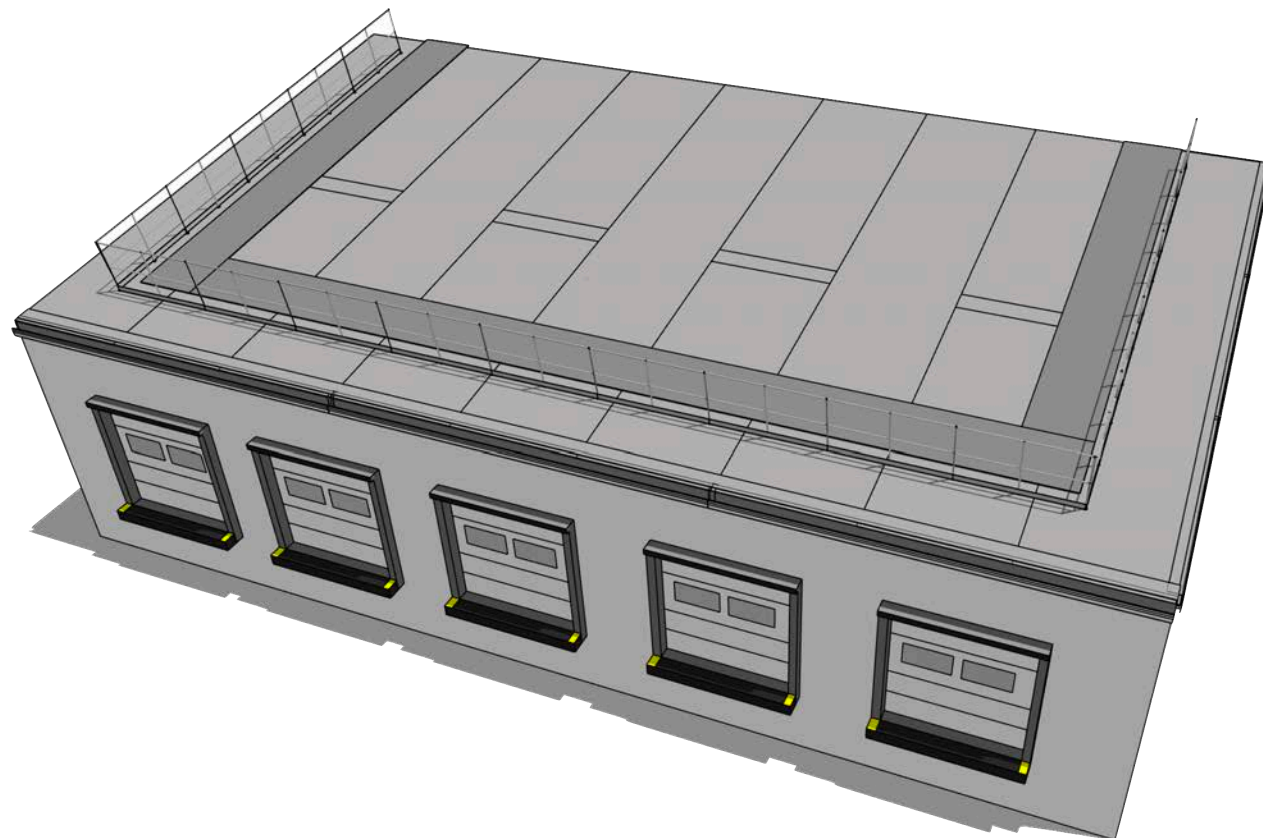
Apply Fatrabond contact adhesive directly onto the ridge flashing and the underside of the Fatrafol 810v membrane strap. Ensure the adhesive is only applied to the area where the ridge flashing is located and avoid applying adhesive to the PVC membrane section which is to be hot air fusion welded. Install Fatrafol 810v strap over the ridge flashing bonding it into place. Once fully bonded, hot air fusion weld both sides of the PVC membrane strap to the field sheet membrane achieving a minimum 40mm weld width.



HAND RAIL | DETAILING



Clearly mark out the location of the designated walkway. Roll out FatraWalk walkway membrane and tack into place using a hot air fusion welder. Once tacked into place carry out a continuous hot air fusion weld along both sides of the walkway membrane to secure into place.



Where perimeter handrails are installed, install Fatra prefabricated pipe collars which wrap around the support posts of the handrail. Apply a bead of polyurethane sealant behind the PVC pipe collar prior to welding. Hot air fusion weld the membrane flange to the field sheet. Install stainless clamping ring slightly below the top of the PVC pipe collar and tighten to create a pressure seal.

HOT AIR FUSION | Welding

HAND | Welding



When installing a membrane covering, the key task is to make entirely watertight and firm joints between waterproofing membrane sheets, membranes and linear plastic-coated metal profiles at the perimeter, and between membranes and accessories (rainwater outlets, vent outlets etc) in order to create a single unit. Two technologies are available to make these structural joints:

This method is based on the so-called fusion welding, which involves heat-melting contact surfaces of membrane overlaps and their simultaneous compression. This is achieved by hot air flowing out of a slot nozzle of a welding machine with continuous temperature control. Move the welding machine gently in the direction of an open joint (with the slot nozzle projecting 3 to 5 mm over the upper membrane edge). Heated contact surfaces must be pressed down immediately behind the nozzle, using a rubber or Teflon roller.

This joining method may be used at temperatures from -5°C for PVC-P/-10°C

AUTOMATIC | Welding



This method is similar to hot-air welding, differing only in that the welded surfaces are heated by thermal transfer from a wedge welder. Heated contact surfaces must be pressed down immediately behind the wedge welder, using a roller. This system is used only for automatic welding machines and is suitable for materials with lower thermal oxidation stability.

If a proper working process is followed, both methods can create joints with shear resistance of at least 80% of the waterproofing membrane shear resistance indicated by the manufacturer. Hot-air welding must be considered the primary method of joining FATRAFOL membranes. Membrane sheets are welded at their overlaps. If using a hand- operated welding machine, the weld must be at least 30 mm wide. Most automatic welding machines have a 40 mm wide welding nozzle.

Where membrane sheets are fastened mechanically, fixing washers must be positioned at least 10 mm from the edge of the lower fastened membrane sheet. The overlap of the upper membrane sheet behind the washer must be 10 mm greater than the weld width – see figure 7. Oval washers must always be aligned lengthwise with the joint axis. Hot-air welding may be performed using a hand-operated welding machine or an automatic welding machine

¹⁾, subject to adherence to this Instructions and applicable standards

HAND | Tools



- Hot-air welding machine with 40 mm and 20 mm wide slot nozzle
- Hot-air mobile automatic welding machine (recommended type: LEISTER VARIMAT, HERZ – Laron etc)
- Impact drill with set of drill bits for concrete and other materials
- Water extractor
- Vacuum pump and bells for vacuum tightness test
- Cordless screwdriver
- Angle grinder with metal cutting disc
- Other electrical equipment and devices such as automatic fastening machines, sealing guns, PU adhesive applicators etc
- Electrical extension cord
- Tension meter
- Folding ruler
- Steel ruler
- Greasy chalk
- Carpenter's pencil
- Knife with hook
- Scissors
- Membrane cutting pad
- Handheld rubber and teflon rollers
- Pressing roller (if membrane is bonded to substrate)
- Brass brush for cleaning slot nozzles
- Hammer Rivet pliers
- Sealant cartridge gun
- Joint testing needle
- PE bottles with delivery tube
- Steel cutter
- Cleaning cloths
- Flat and crosshead screwdrivers
- Rubber spatulas for cleaning membrane surface
- Hacksaw
- Sponges for removing puddles
- Hand metal shears
- PE waste bags
- Broom
- Spatulas for sealant
- Dustpan

TESTING | PROCEDURES

PEEL | Testing

All surfaces that are being welded must be clean of any dirt, debris or moisture before welding. Before commencing the installation test samples must be carried out to determine that the temperature and speed of welding is correct. These will vary depending on the membrane types and the welders technique and skill level. A peel test must be carried out to establish the correct heat and speed of the hot air fusion welding. This consists of using two small strips of membrane that has been welded at the seam. Pull away the upper strip of membrane to test the weld strength. If the seam separates the welding method is inadequate or the membrane is not in a condition to be welded. If tearing occurs it should be outside the seam weld either within the layer of reinforcement or in the synthetic sheeting.

SEAM | Probe Testing

Use a testing probe to check all types of welds (continuous and detail welds including T- joints) no earlier than 1 hour after welding. A testing needle used for this test is usually included in the welder's essential kit and delivered by the welding equipment manufacturer (Leister, Herz etc). Drive the needle in the direction of the weld axis and apply gentle side pressure on the joint to easily detect any non-welded or separated points in the weld. This test should be performed before securing the welds with a joint sealant for roofs with a stabilisation layer, inverted roofs, traffic roofs, green roofs and in all places where the waterproofing layer is to be covered with another layer.

ELECTRONIC | Leak Detection

Electronic leak detection method can be used to test the membrane and establish if moisture is penetrating the membrane and grounding through the substrate. This can be completed by either a dry or wet testing method depending on the specific details on site. The test procedure is a non intrusive method of leak detection and is a highly accurate method of leak detection. Wet testing procedures is done by applying water over the membrane surface and using the water and a conductive medium where an electronic field is created to trace a beach in waterproofing system.

The test procedure is also a non intrusive or destructive method of leak detection and pin points the source of the leak without having to flood the membrane. This method is used to establish if moisture is penetrating the membrane and grounding through the substrate.

SUBMERSION | Testing

Testing of water-tightness - may to some extent be used for this test. The use of this method is limited by roof deck specifications, in particular the permissible load of the load-bearing structure, maximum water level and the roof deck area. Typically, roof decks up to 100 m² in area are covered with a continuous water layer while larger roofs are only partly covered, e.g. in valleys between roof planes or in individual tested sectors. The maximum water column height should be determined by a structural engineer, with consideration being given to dynamic load of the roof deck.

MAINTENANCE |

Regular cleaning and clearing of leaves and any other debris is recommended for drainage and any other outlets within the structure to avoid build up and clogging of these areas. Visual checks should also be carried out for any damage caused by excessive weather or environmental damage such as fallen branches, hail etc.

Fatra can provide annual maintenance surveys of the area and issue a full report. This will give you assurance that the system is still performing at its optimum efficiency and is a proactive way of ensuring there is no damage or potential issues that could affect the integrity of the membrane. Contact Fatra for more details on how we can provide a suitable maintenance plan for the area.

INSPECTIONS |

A Fatra field technician is to attend at the start of the project to ensure all parties have read and understood the specification and requirements. Upon completion of the installation, a Fatra technician is to attend and carry out a project completion guide to inspect prior to issuing warranties. Once the inspection has been completed and any defects or rectifications have been completed, a final inspection will be carried to enable the issuing of material warranties.

WARRANTY |

Depending on what system is implemented Fatra can provide material warranties from 15 years to 25 years. A material warranty will only be issued once a Fatra field technician has inspected and passed the installation of the Fatra waterproofing system. All warranties are issued directly to the client.

QUALITY CONTROL |

Fatra systems are ISO 9001 & ISO 14001 accredited

Fatra to provide on going support with design and installation to ensure the most efficient system is implemented based on site specific details

Fatra to provide all relevant information and documentation

Applicator must have relevant licences and insurances to carry out the works in hand

Contractor are to be an approved Fatra applicator

SUBMISSIONS |

Fatra to attend site prior to commencing work and establish all necessary requirements

Fatra to provide technical data sheets, detail drawings of termination, specification and any other relevant documentation prior to commencing onsite.

Client to provide site specific section drawings for all details on each project to enable Fatra to provide detailing drawings for these sections.

MATERIALS |

Materials are to be stored in a safe location and avoid being exposed to the elements or other damage such as mechanical etc.

Fatra to provide a signed document prior to delivering materials to site clarifying that all materials are fit for purpose.

FATRA AUSTRALIA | Pty Ltd

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