

fatra

Technical Specification

Uninsulated Box Gutter System



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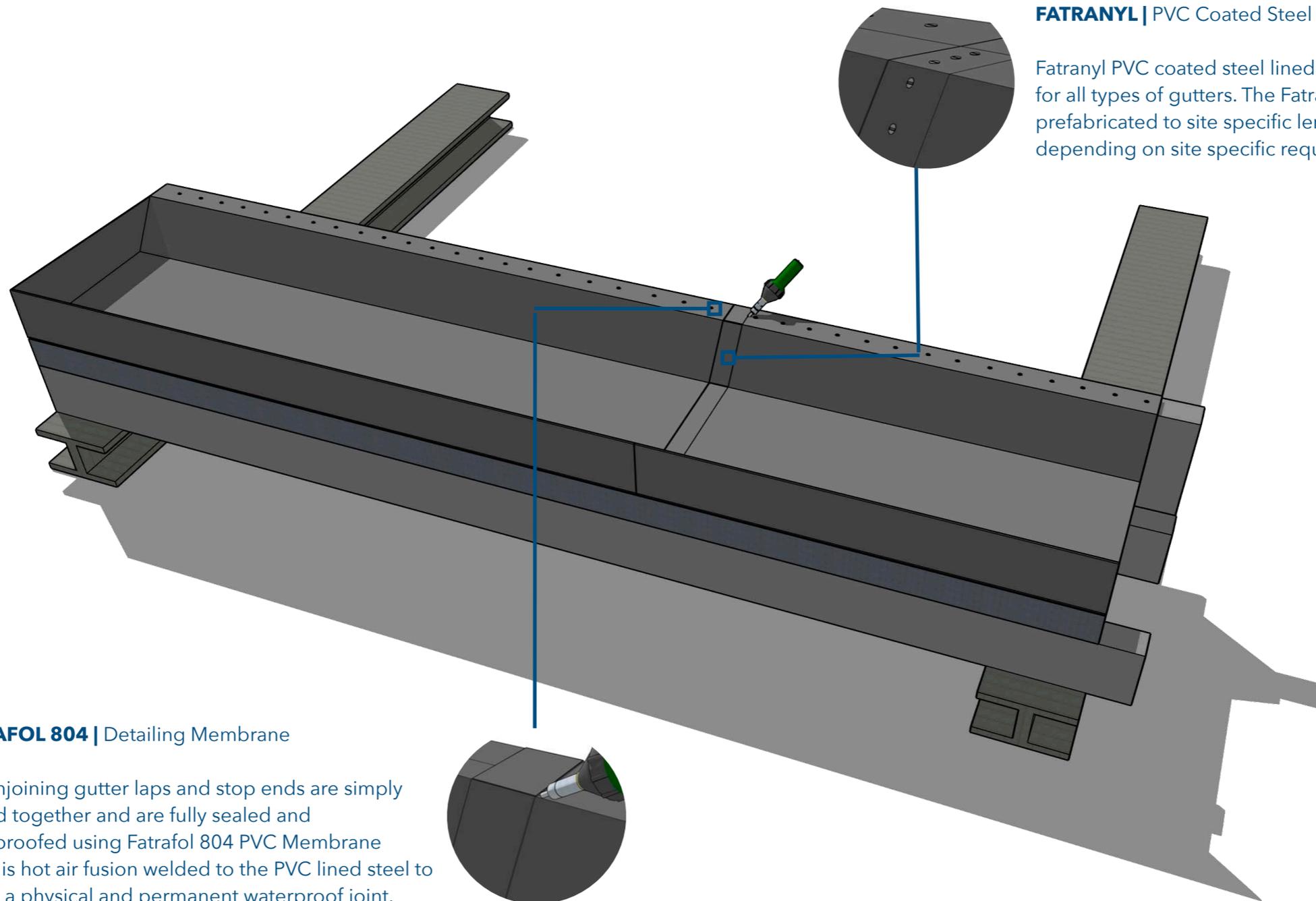
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PROPOSED | System

Fatra PVC coated box gutters have a span capability of up to 8m and offers superior sustainability and a reliable gutter solution compared to the traditional metal box gutters.

Fatra PVC coated gutters remove the requirement to seal the joints, stop ends and drainage points using silicone sealant which inevitably breaks down in a very short period of time. All joints, stop ends and drainage points in the gutter are hot air fusion welded with PVC membrane straps or prefabricated accessories creating a permanent and homogeneous waterproofed system with a life expectancy in excess of 30 years.

Fatra prefabricated stop ends, rainwater outlets and overflows can also be implemented to drastically reduce installation time on-site and create a fully homogenous PVC membraned box gutter.



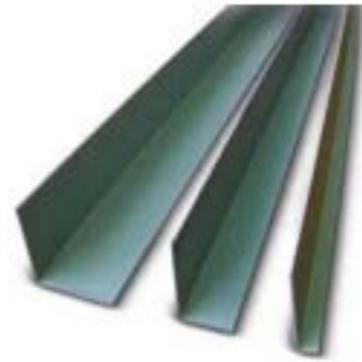
FATRANYL | PVC Coated Steel Lined Box Gutter

Fatranyl PVC coated steel lined gutters are designed for all types of gutters. The Fatranyl gutters are prefabricated to site specific lengths and widths depending on site specific requirements.

FATRAFOL 804 | Detailing Membrane

All conjoining gutter laps and stop ends are simply riveted together and are fully sealed and waterproofed using Fatrafol 804 PVC Membrane which is hot air fusion welded to the PVC lined steel to create a physical and permanent waterproof joint.

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.

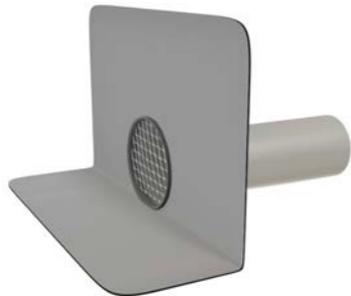
All fixing specifications, centre of fixings and relevant information regarding the fixing of the termination angles will be provide by Fatra Australia Pty Ltd based on the system being implemented, substrate and wind load calculations provided by Fatra Australia Pty Ltd.

FATRA | Accessories



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.



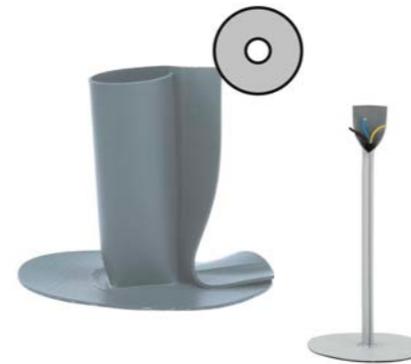
PREFABRICATED | Wall Overflows

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 | 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.



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.

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[®]

A⁺BRE
ENP 336-415-429
ENVIRONMENTAL
RATING



CE

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 |

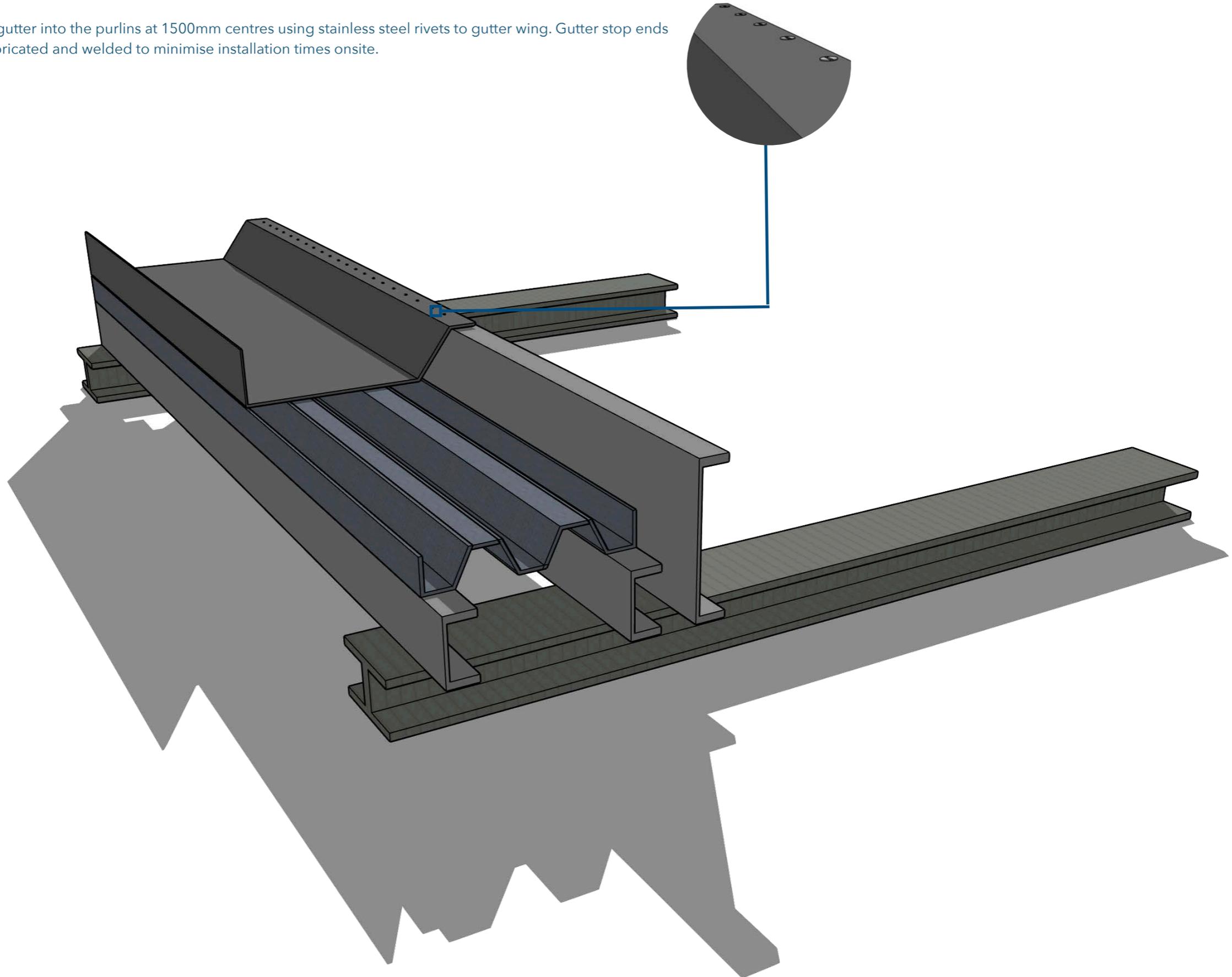
Materials are to be stored in a safe location and avoid being exposed to the elements or other damage such as mechanical or external contractors. All materials are to be stored in a safe and secure manner which will not result in dislodgement or displacement. Fatrafol membranes are to be covered and 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.

FIXING FATRANYL PVC GUTTER |

1 |

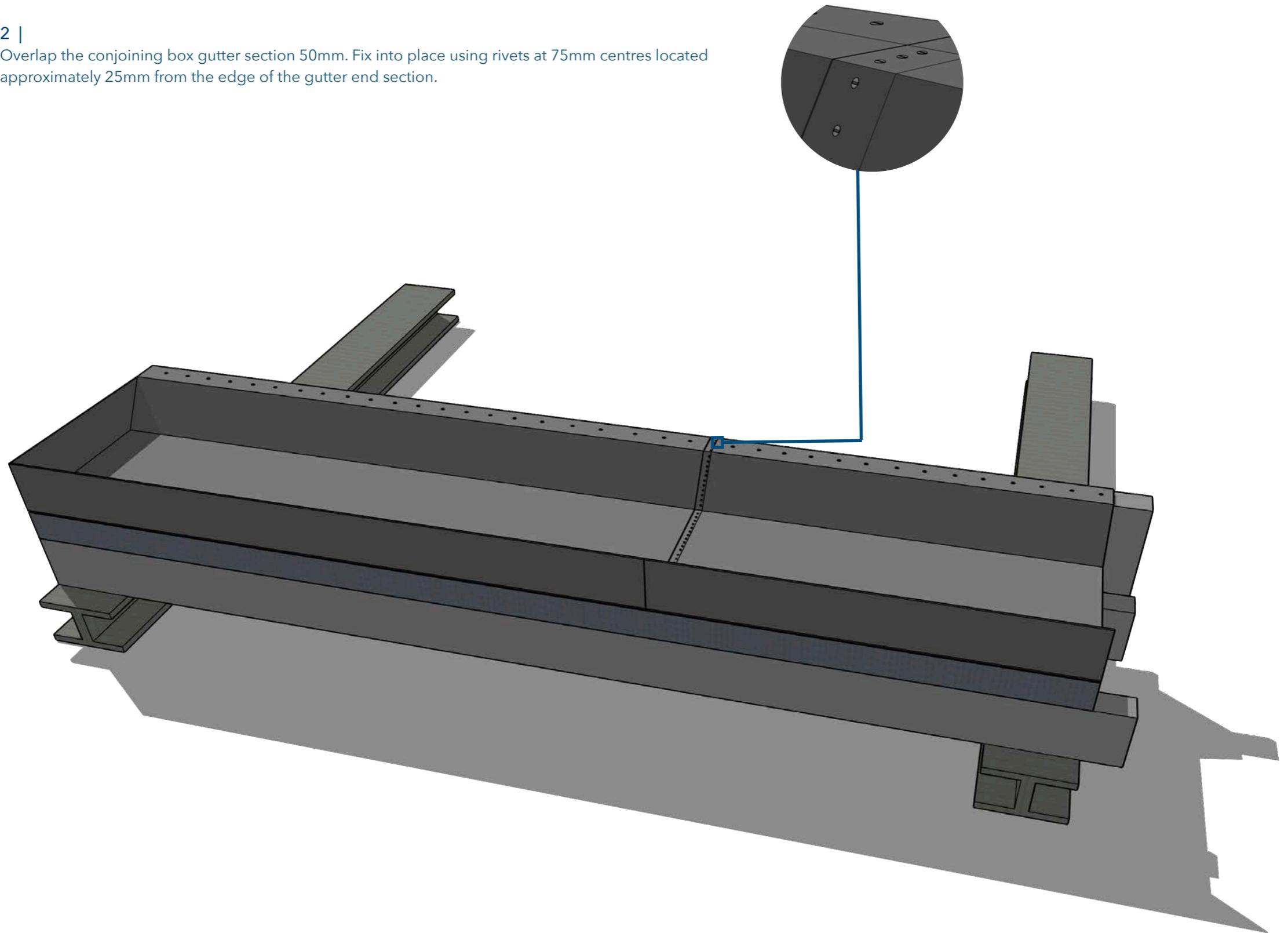
Fix the PVC gutter into the purlins at 1500mm centres using stainless steel rivets to gutter wing. Gutter stop ends come prefabricated and welded to minimise installation times onsite.



CONJOINING BOX GUTTER SECTIONS |

2 |

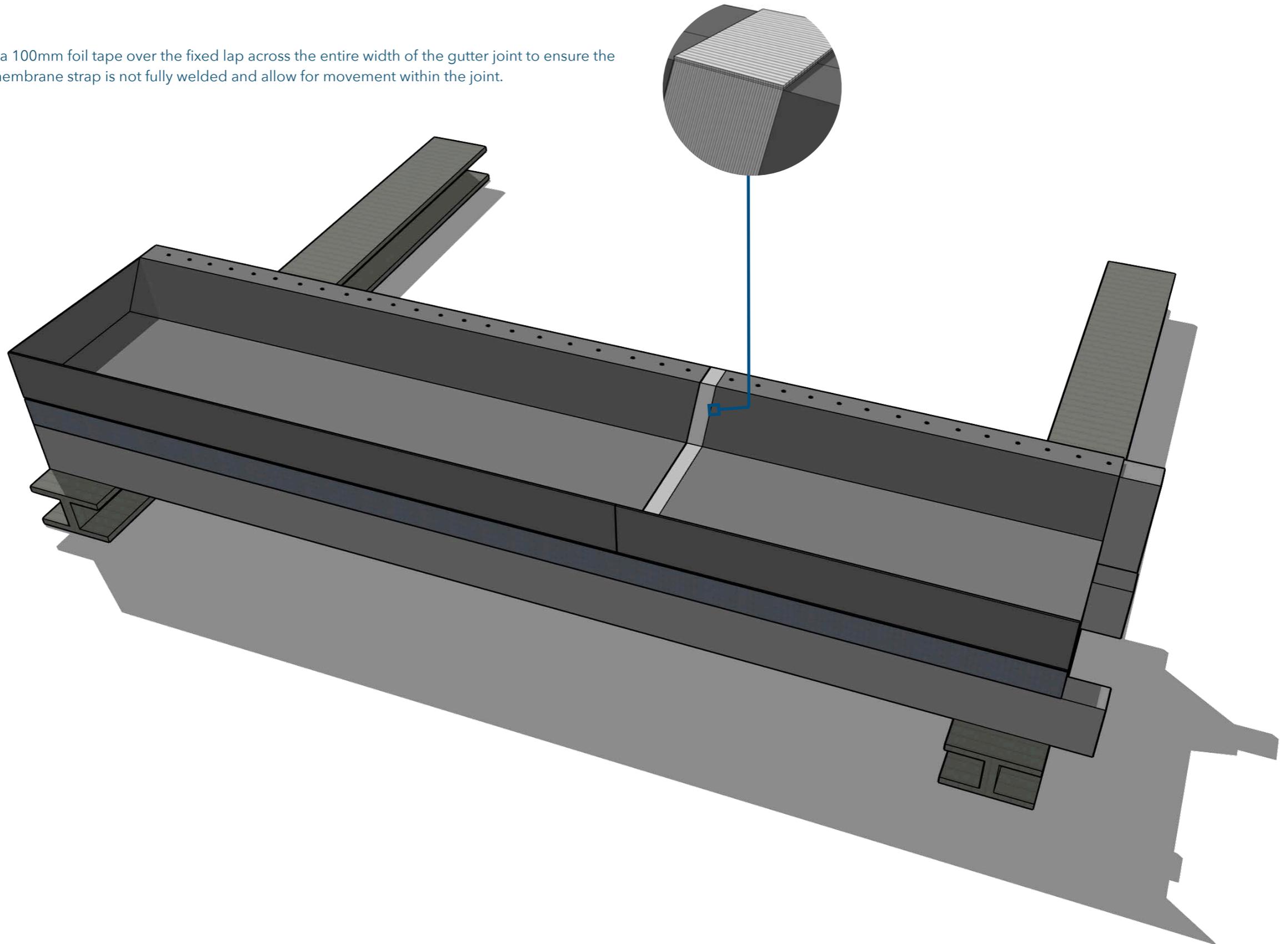
Overlap the conjoining box gutter section 50mm. Fix into place using rivets at 75mm centres located approximately 25mm from the edge of the gutter end section.



CONJOINING BOX GUTTER SECTIONS |

3 |

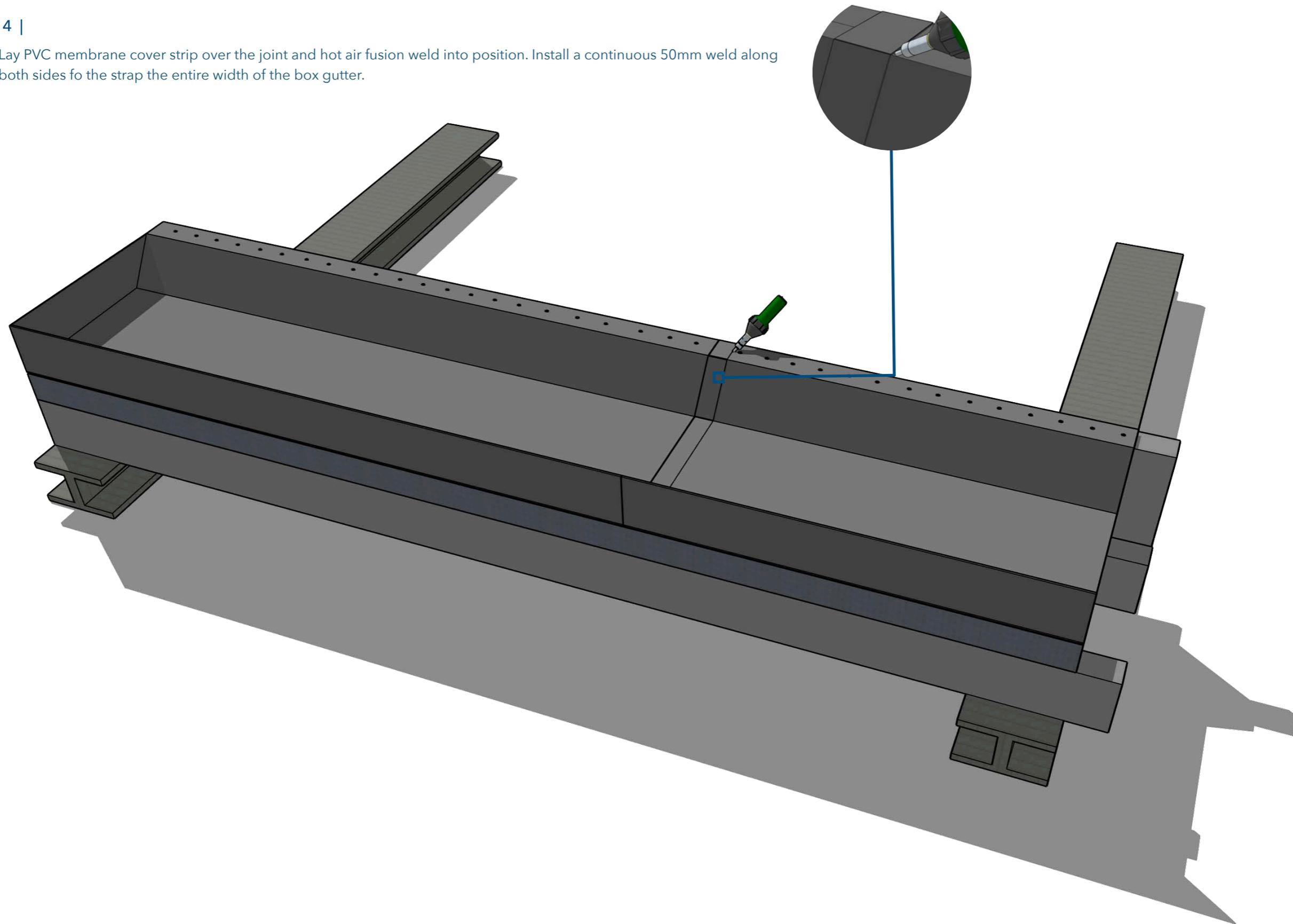
Install a 100mm foil tape over the fixed lap across the entire width of the gutter joint to ensure the PVC membrane strap is not fully welded and allow for movement within the joint.



GUTTER MEMBRANE STRAP |

4 |

Lay PVC membrane cover strip over the joint and hot air fusion weld into position. Install a continuous 50mm weld along both sides of the strap the entire width of the box gutter.

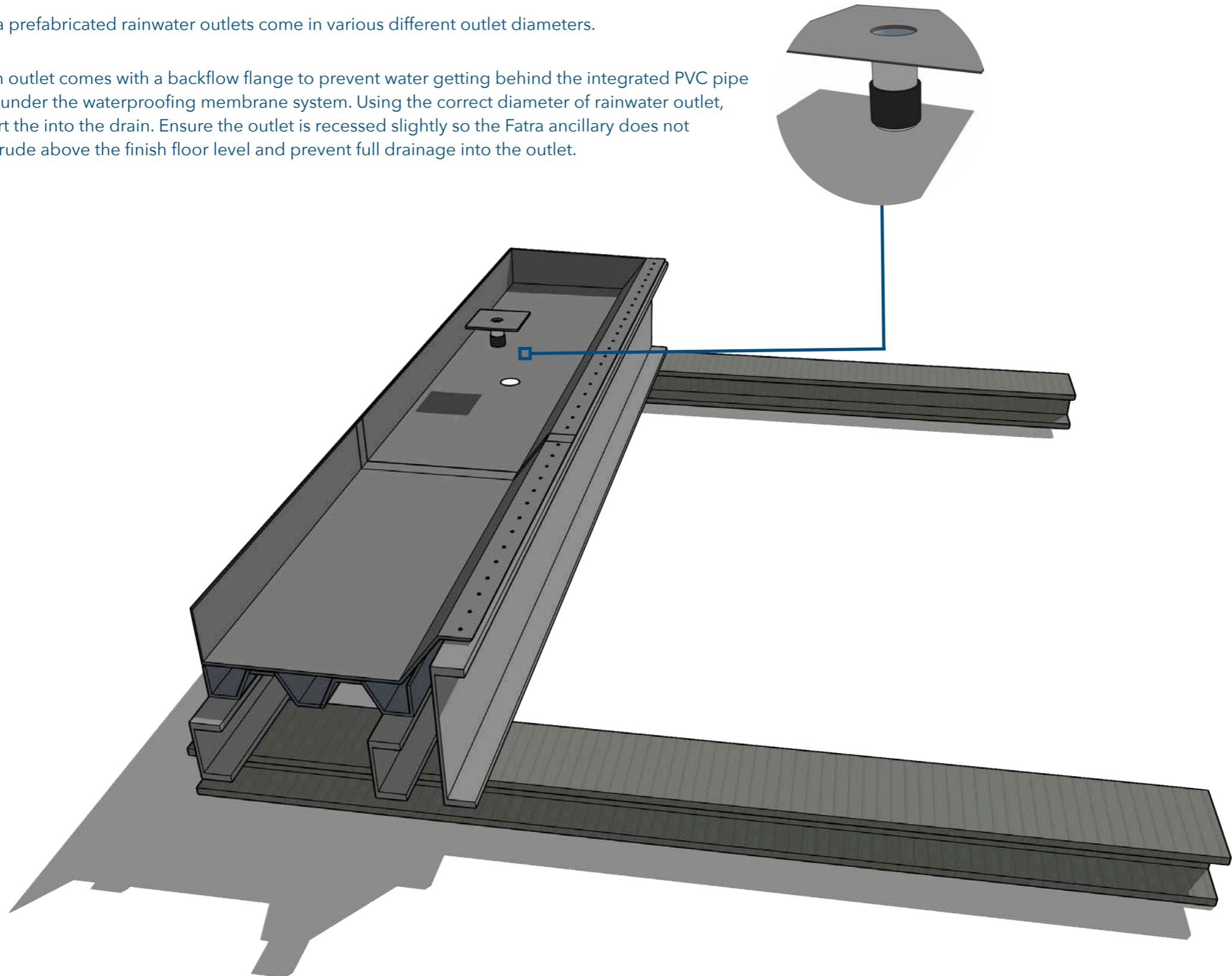


RAINWATER | FLOOR OUTLET DETAILING

1 |

Fatra prefabricated rainwater outlets come in various different outlet diameters.

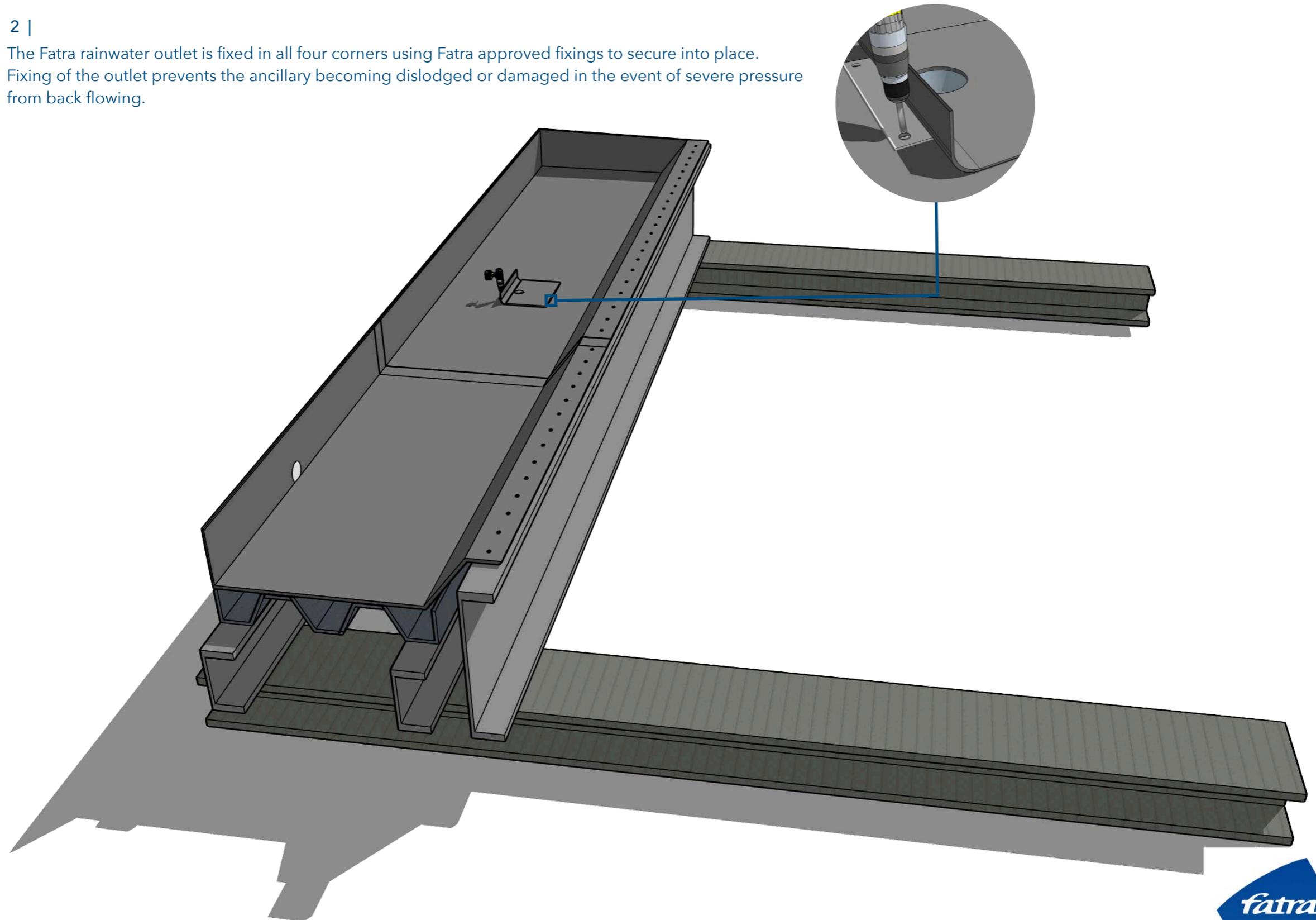
Each outlet comes with a backflow flange to prevent water getting behind the integrated PVC pipe and under the waterproofing membrane system. Using the correct diameter of rainwater outlet, insert the into the drain. Ensure the outlet is recessed slightly so the Fatra ancillary does not protrude above the finish floor level and prevent full drainage into the outlet.



RAINWATER | FLOOR OUTLET DETAILING

2 |

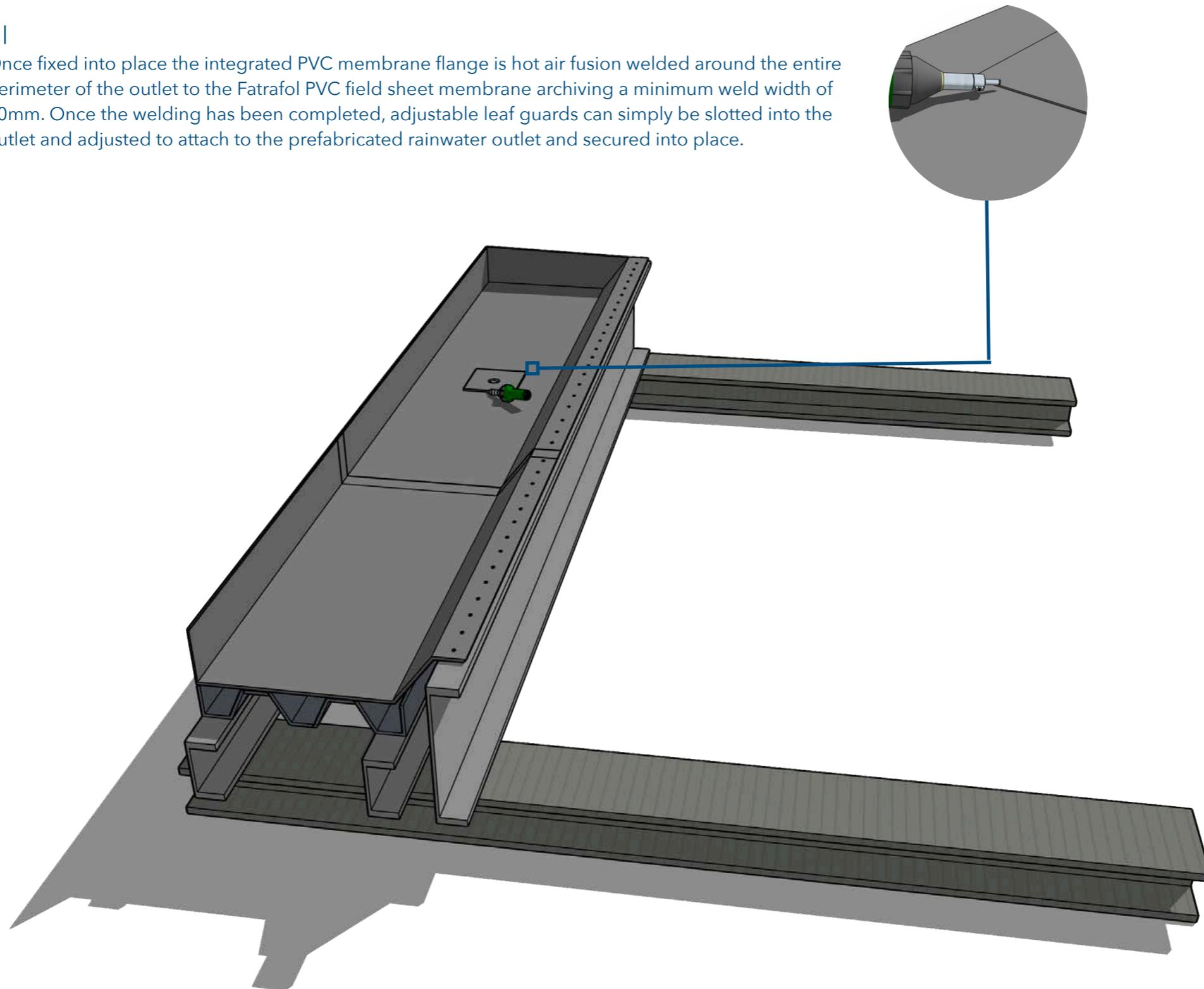
The Fatra rainwater outlet is fixed in all four corners using Fatra approved fixings to secure into place. Fixing of the outlet prevents the ancillary becoming dislodged or damaged in the event of severe pressure from back flowing.



RAINWATER | FLOOR OUTLET DETAILING

3 |

Once fixed into place the integrated PVC membrane flange is hot air fusion welded around the entire perimeter of the outlet to the Fatrafol PVC field sheet membrane archiving a minimum weld width of 40mm. Once the welding has been completed, adjustable leaf guards can simply be slotted into the outlet and adjusted to attach to the prefabricated rainwater outlet and secured into place.

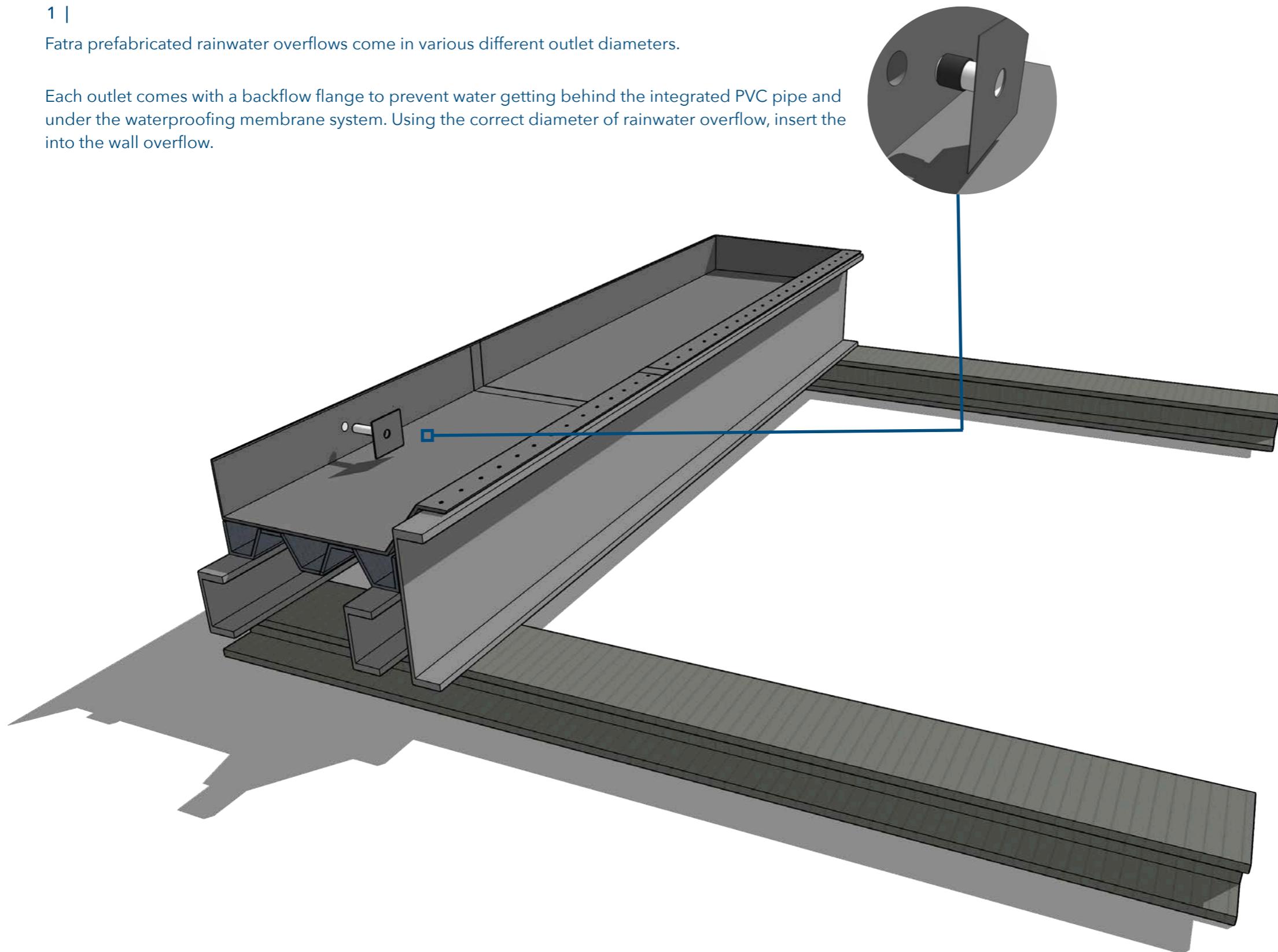


RAINWATER | OVERFLOW DETAILING

1 |

Fatra prefabricated rainwater overflows come in various different outlet diameters.

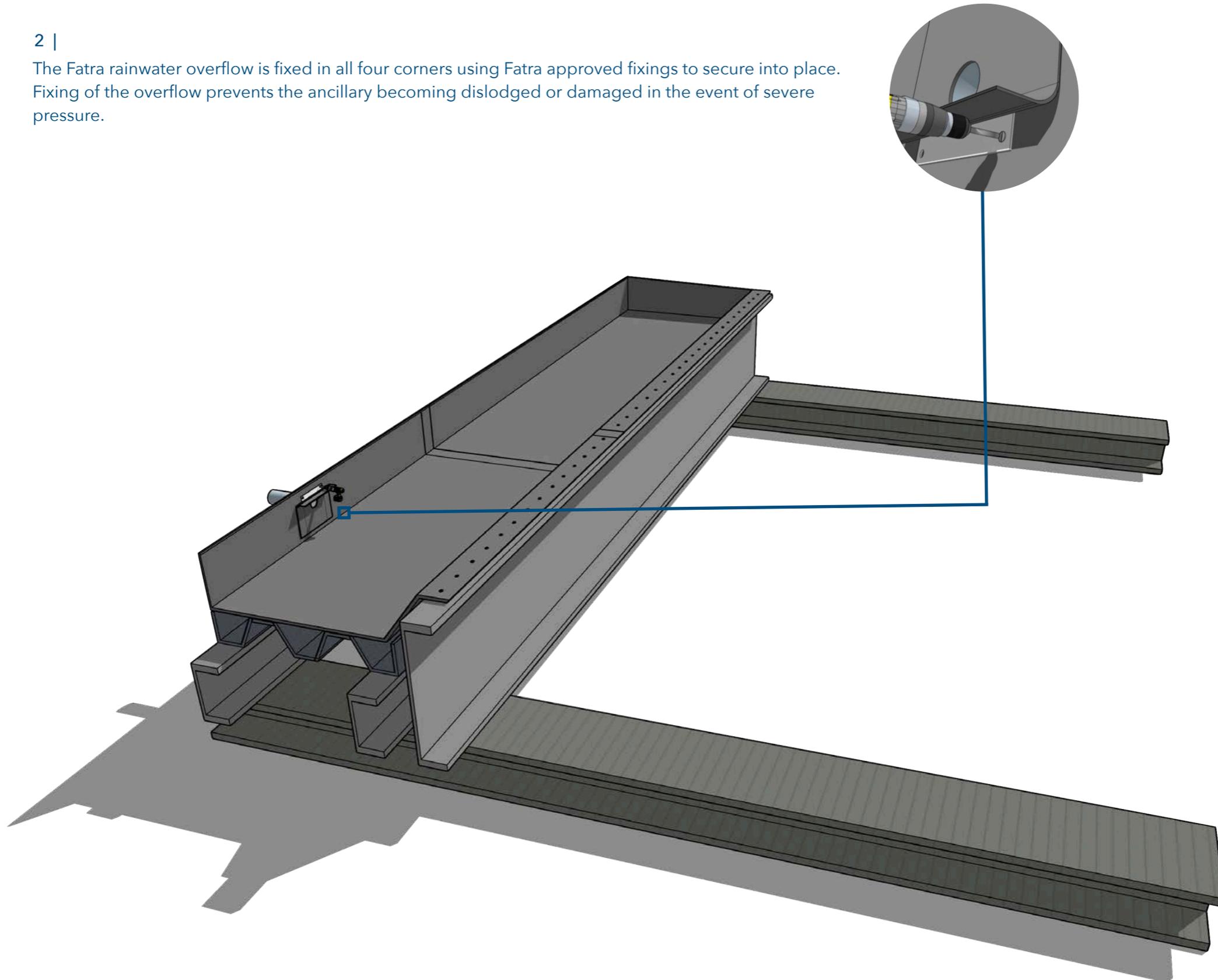
Each outlet comes with a backflow flange to prevent water getting behind the integrated PVC pipe and under the waterproofing membrane system. Using the correct diameter of rainwater overflow, insert the into the wall overflow.



RAINWATER | OVERFLOW DETAILING

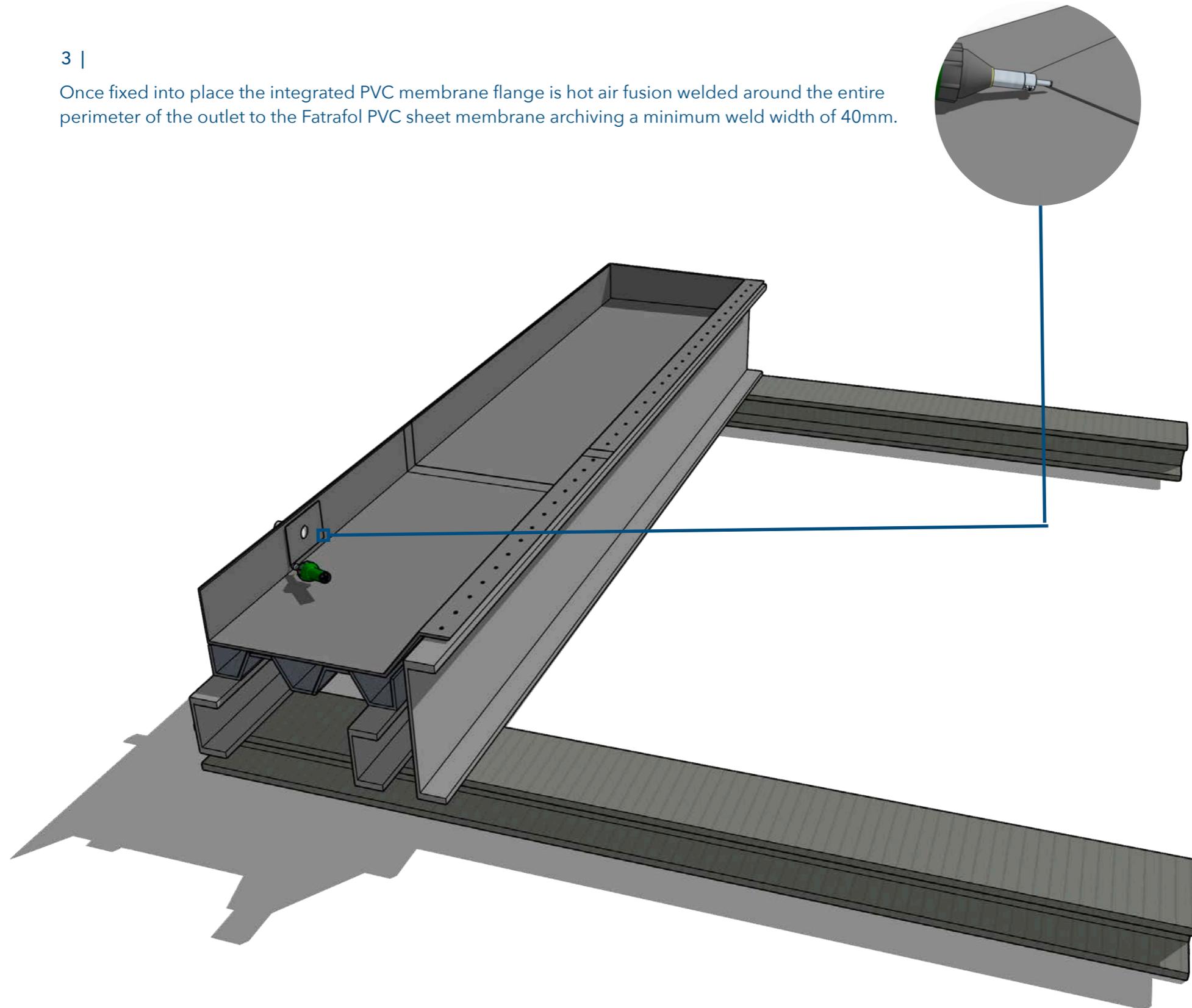
2 |

The Fatra rainwater overflow is fixed in all four corners using Fatra approved fixings to secure into place. Fixing of the overflow prevents the ancillary becoming dislodged or damaged in the event of severe pressure.



3 |

Once fixed into place the integrated PVC membrane flange is hot air fusion welded around the entire perimeter of the outlet to the Fatrafol PVC sheet membrane archiving a minimum weld width of 40mm.

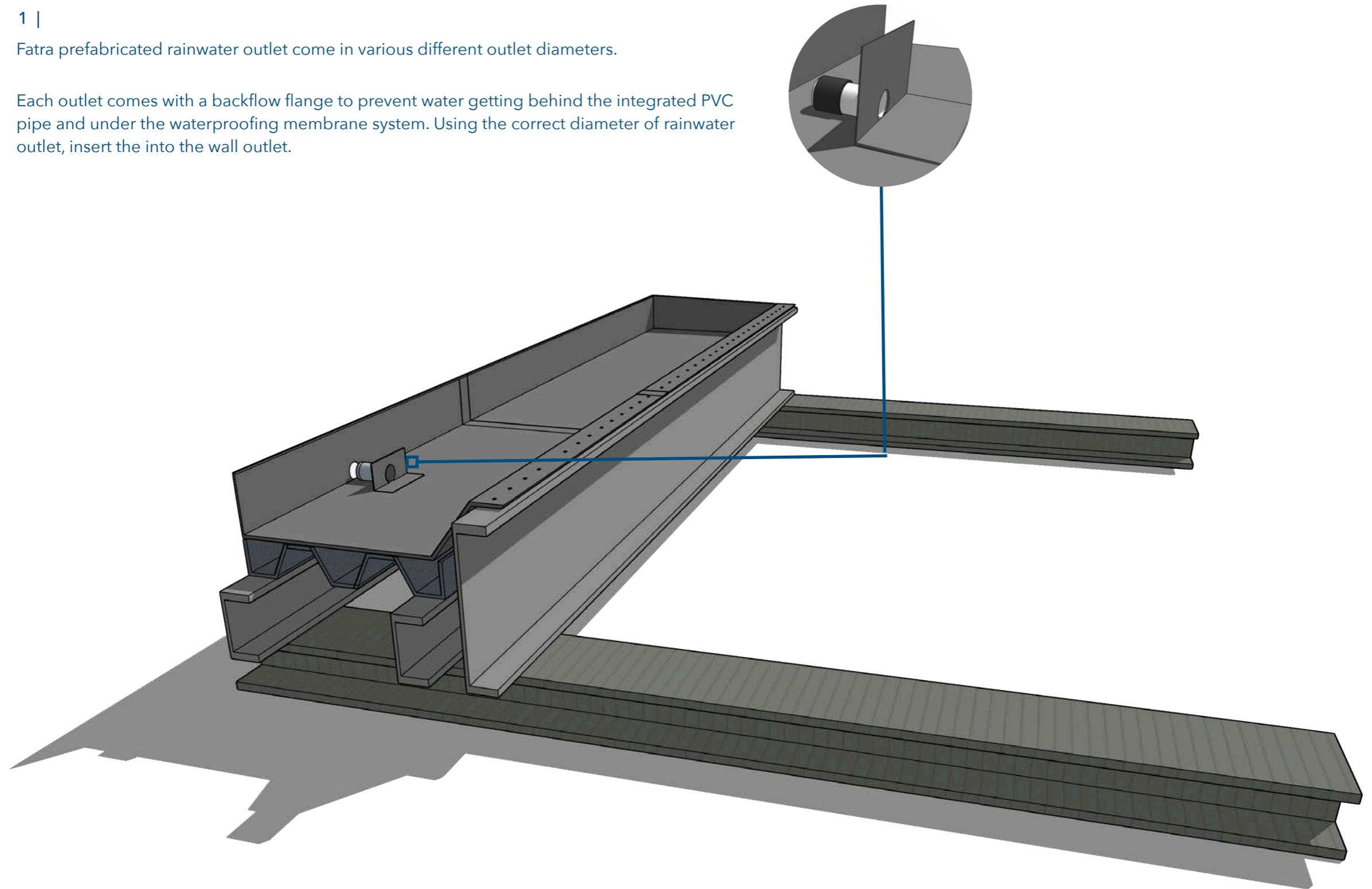


RAINWATER | WALL OUTLET

1 |

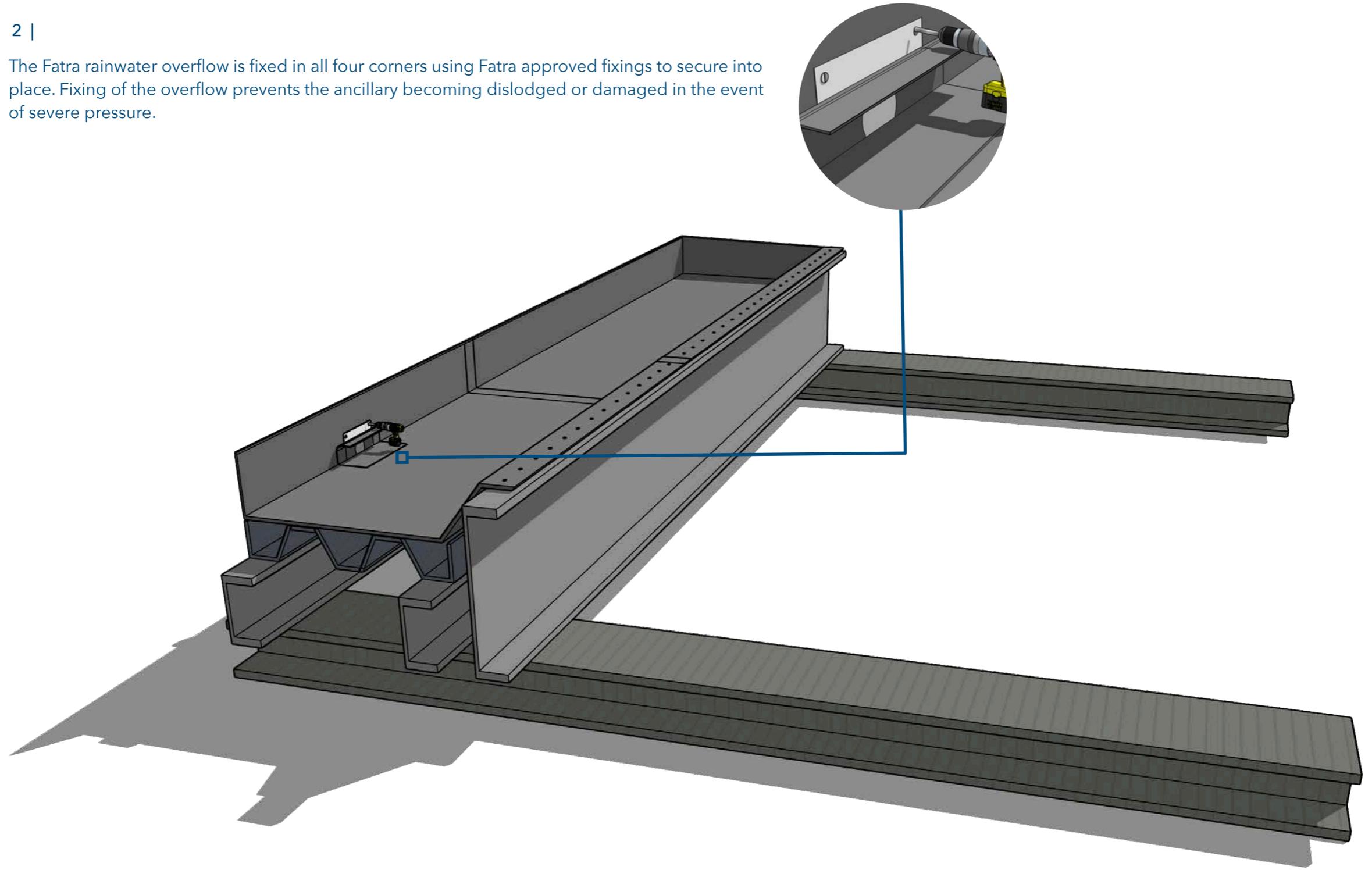
Fatra prefabricated rainwater outlet come in various different outlet diameters.

Each outlet comes with a backflow flange to prevent water getting behind the integrated PVC pipe and under the waterproofing membrane system. Using the correct diameter of rainwater outlet, insert the into the wall outlet.



2 |

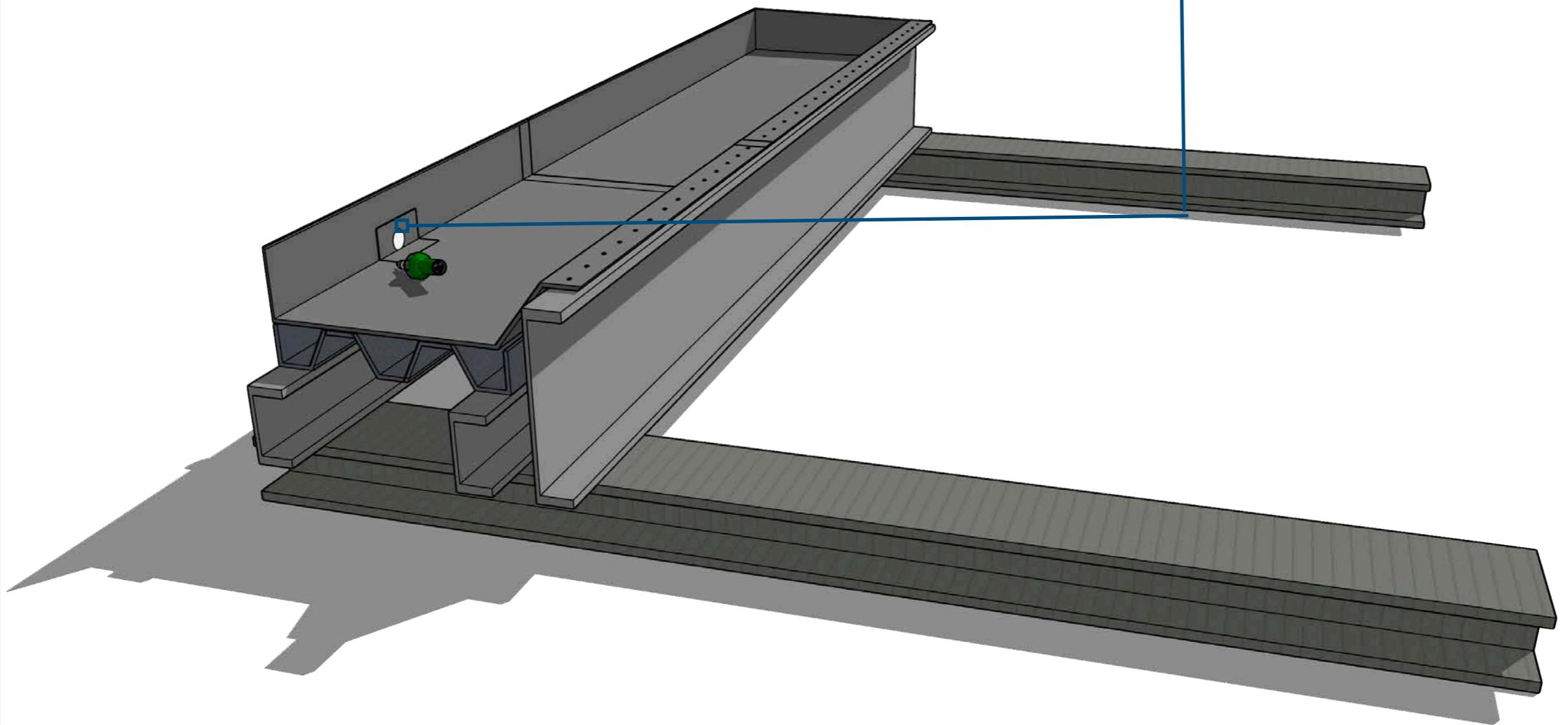
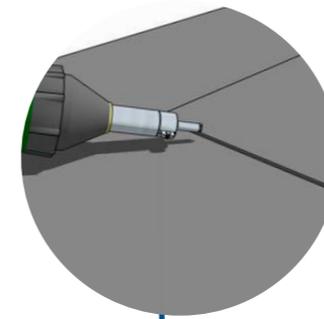
The Fatra rainwater overflow is fixed in all four corners using Fatra approved fixings to secure into place. Fixing of the overflow prevents the ancillary becoming dislodged or damaged in the event of severe pressure.



RAINWATER | WALL OUTLET

3 |

Once fixed into place the integrated PVC membrane flange is hot air fusion welded around the entire perimeter of the outlet to the Fatrafol PVC sheet membrane archiving a minimum weld width of 40mm.



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 machine¹⁾, 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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