DAM BUSTER®

Achieve Compliance with **Dam Buster Products**

NOTE: All Dam Buster® products are protected by various Australian and International Patents.

AUSTRALIAN OWNED #00581 CERTIFIED

This document is to be read in conjunction with the Dam Buster publications titled 'Product Technical Statement' and 'Evidence of Suitability.' This installation manual sets out installation requirements for Dam Buster's products.

DAM BUSTER INSTALLATION MANUAL

Version 4.2 (9 June 2023)

AHSCA ASSOCIATION OF HYDRAULIC SERVICES CONSULTANTS AUSTRALIA RESEARCH FOUNDATION

CERTIFIED PRODUCT
(DAM BUSTER RAINHEAD)

For testing of the Overflow Performance of Dam Buster rectangular rainheads.

GOOD DESIGN AWARD® WINNER

PRODUCT DESIGN
HARDWARE AND BUILDING

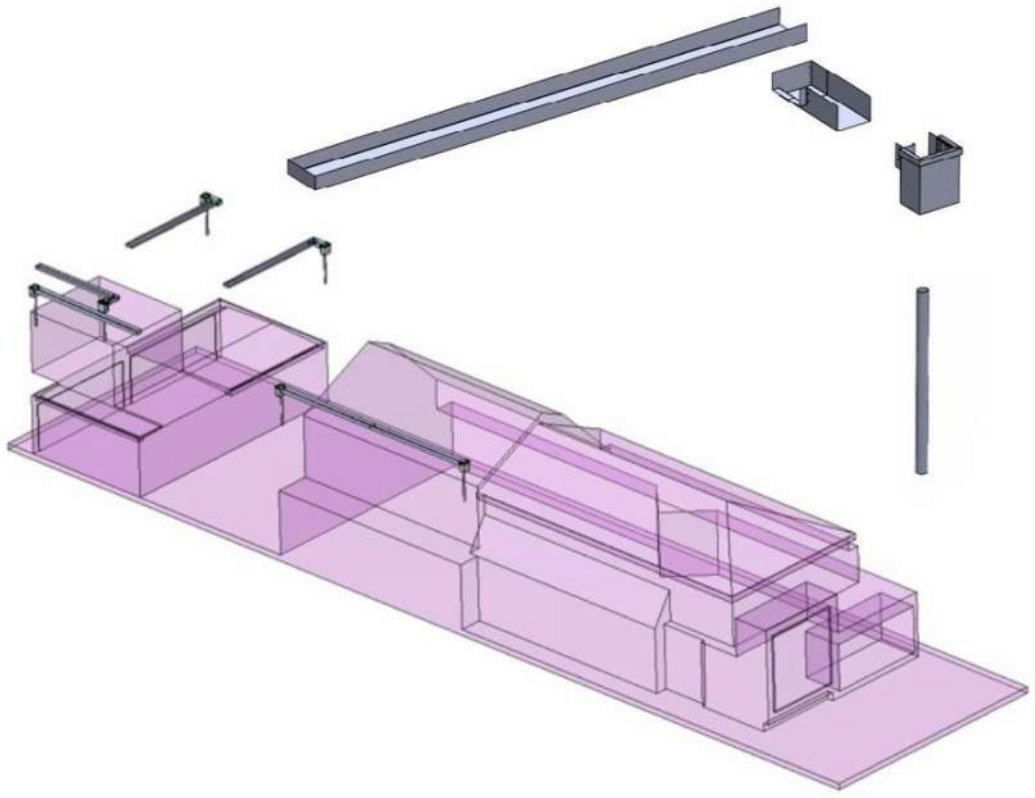
DAM BUSTER
RAINHEAD

"The Architectural Choice"

For ordering, installation details and compliance documentation, visit

www.dambuster.com.au

Dam Buster Roof Drainage System – Installation manual

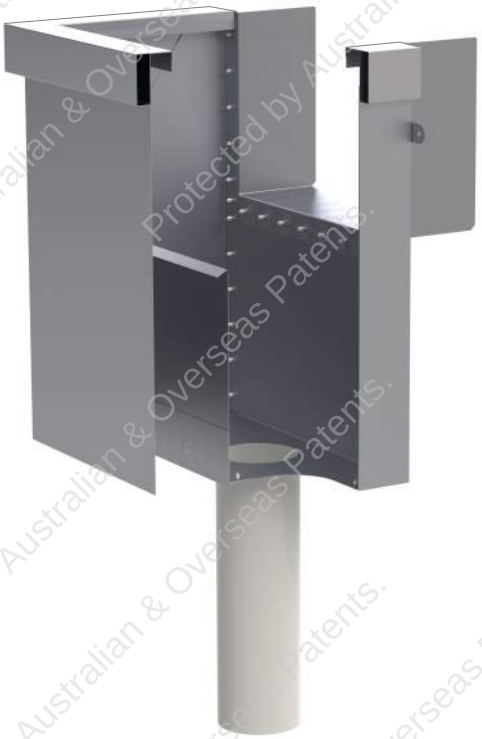


NOTE

Where this document refers to any code, guide or manual, this reference should be interpreted as being for the current legal version of the code, guide or manual for the relevant state or territory, unless noted otherwise.

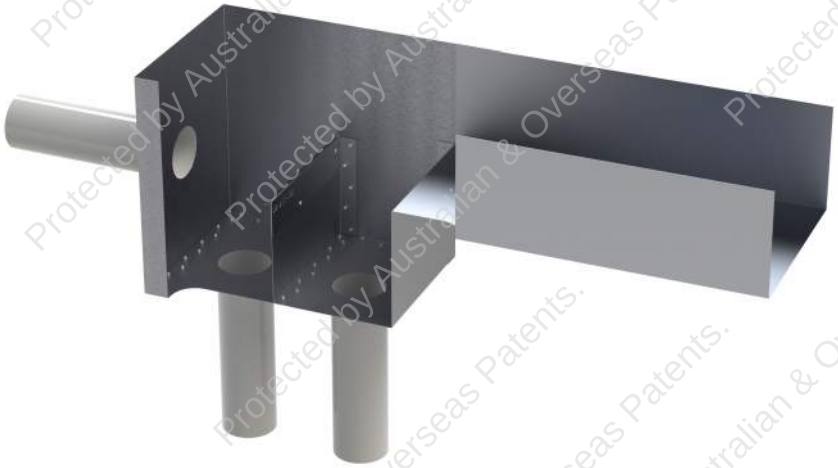
Dam Buster Roof Drainage System - Product Range

Overflow devices (1 of 2)



Dam Buster Rainhead

Dam Buster Curved Fronted Rainhead



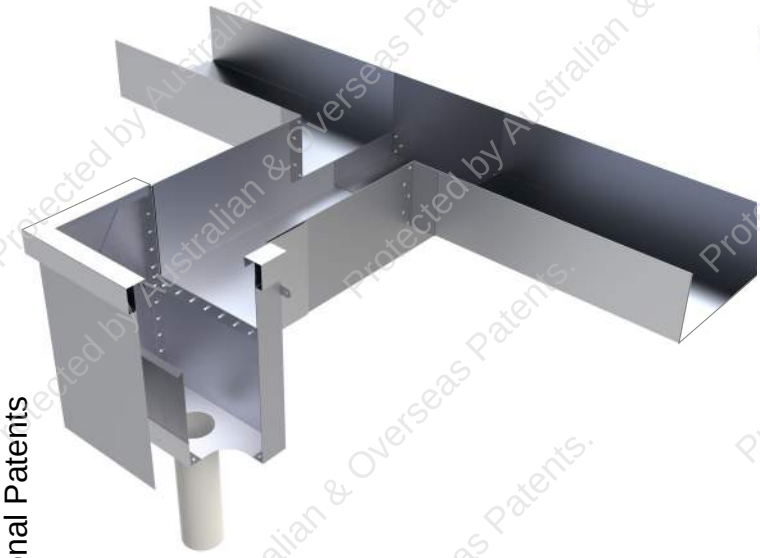
Dam Buster Sump

Dam Buster Back-to-Back Sump

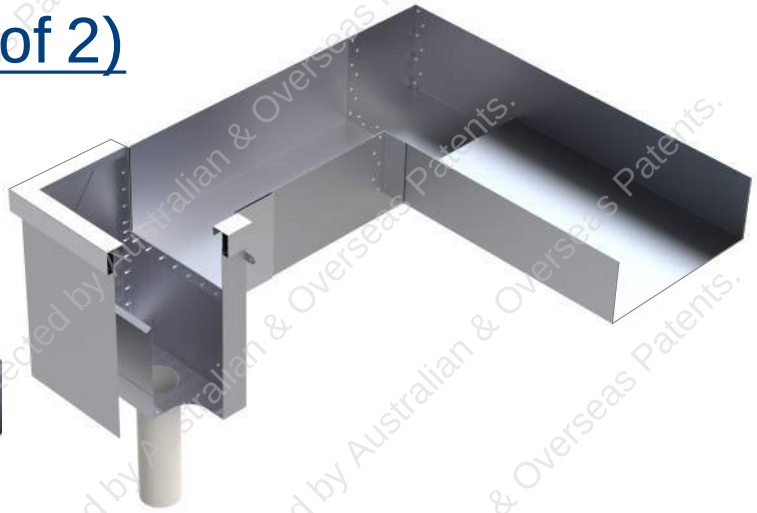
Dam Buster Continuous Sump

Dam Buster Roof Drainage System - Product Range (cont)

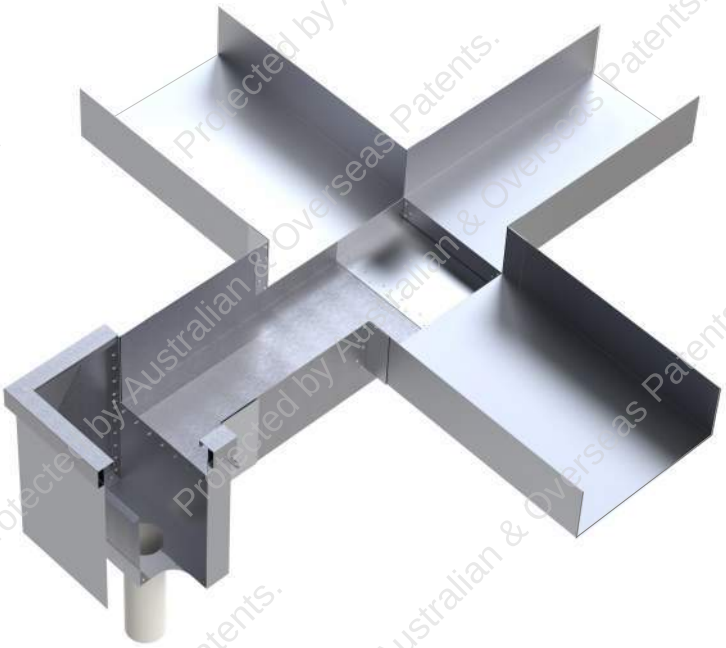
Overflow devices (2 of 2)



Dam Buster T Side Outlet & Rainhead



Dam Buster END Side Outlet & Rainhead
(LH & RH forms available)



Dam Buster CRUCIFORM Side Outlet & Rainhead

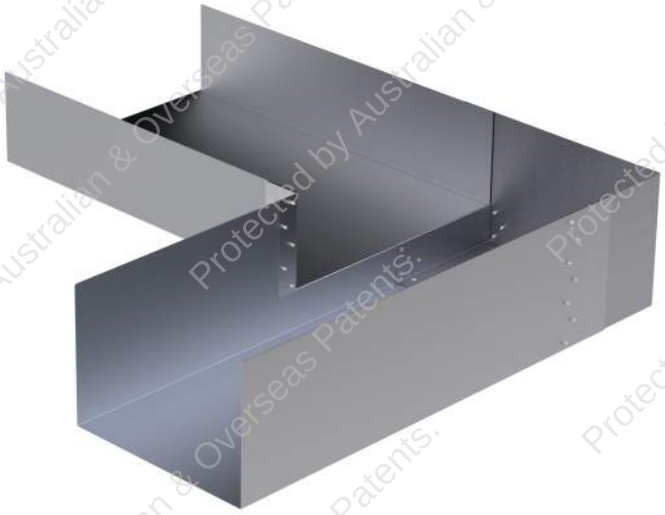
Dam Buster CORNER Side Outlet & Rainhead
(LH & RH forms available)

Dam Buster END Side Outlet & Sump
(LH & RH forms available)

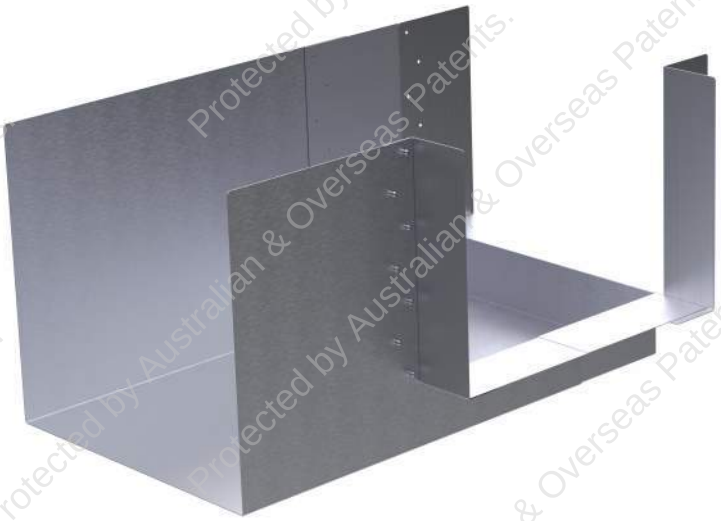
NOTE
The following Side Outlet & Sump combinations are also possible
Dam Buster T Side Outlet & Sump
Dam Buster Corner Side Outlet & Sump
Dam Buster Cruciform Side Outlet & Sump

Dam Buster Roof Drainage System - Product Range (cont)

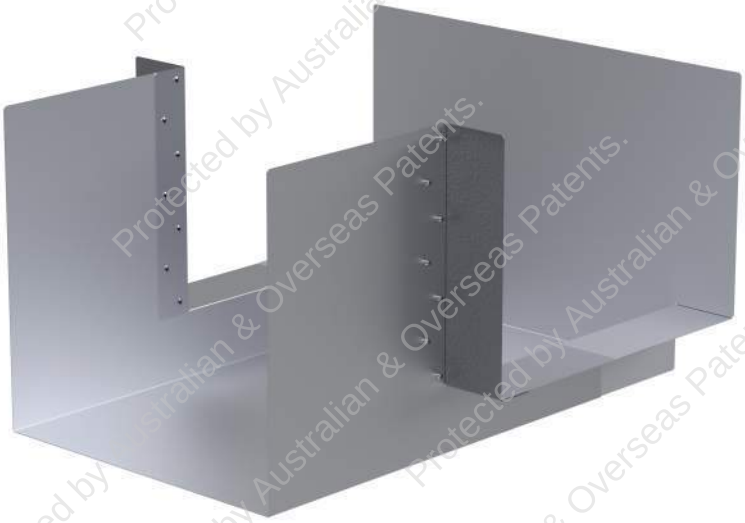
Upstream devices



Dam Buster Elbow



Dam Buster Corner Junction



Dam Buster T Junction

Safety Information

Safety Warning

Sheet metal products by their nature may contain sharp edges which may cut on contact. Therefore, appropriate PPE including the wearing of appropriately graded anti-cut gloves, eye protection and suitably protective clothing and footwear is recommended during handling of the Dam Buster product range.

Disclaimer

Dam Buster provides a range of high performance, standardized and conforming products which can provide some element of customisation as allowed for within the Product Technical Statement, this Installation Manual and other Dam Buster guidance material. If any particular installation does not fall within these clear guidelines, the certifying plumber (or other relevant person) needs to ensure full compliance is still achieved in accordance with all applicable codes and standards relevant to the location of installation.

1.0 Installation Instructions for Dam Buster Rainhead

1.1 Standard Installation of the Dam Buster Rainhead

These installation instructions for the Dam Buster Rainhead to apply to standard width box gutter (i.e. 200mm, 300mm, 400mm, 500mm or 600mm). Refer to Part B for installation to non-standard width box gutter (i.e. greater than 200mm and less than 600 mm wide, and not a standard width).

IMPORTANT NOTE: Before proceeding you must always correctly size the Dam Buster Rainhead to suit the design flow rate in litres / sec for the roof catchment area. Refer to the **Dam Buster Product Technical Statement** for design and rainhead flow capacities.

YOU WILL NEED:

- *3.2mm (1/8th inch) diam 3.2mm (1/8th inch) grip sealed appropriately corrosion resistant pop rivets 4.1*
- *Hand riveter or power riveter*
- *3.2mm (1/8th inch) drill bit and small battery drill*
- *Silicone gun and 1 x tube of Roof & Gutter Silicone (colour matched)*
- *Left and right hand snips*
- *Downpipe pop to suit sizing requirement*
- *2 or 4 (depending on size of the Dam Buster Rainhead) x appropriately corrosion resistant wall fixings or screws (maximum 5.5mm in size)*
- *Spirit Level*
- *Clean rags*
- *Set Square*
- *Pencil*

NOTE – MECHANICAL FASTENERS
Dam Buster recommends only rivets be used as the mechanical fasteners (i.e. not screws) for joining box gutters and Dam Buster's devices. Rivets must always be installed such that the heads of the rivets are flush with the inner surface (water face) of the box gutter.

See Diagram A showing section of the installed Dam Buster Rainhead and box gutter for overview of installation.

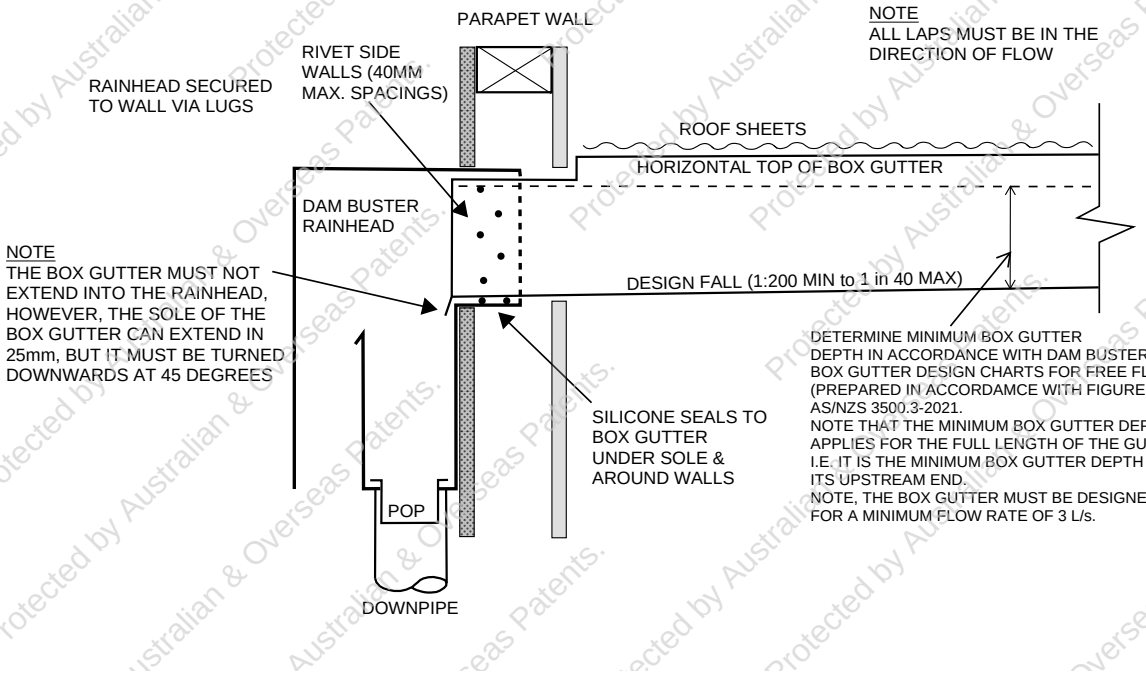
1. Where the box gutter exits the wall of the building, the end of the box gutter should either be cut flush with the outside cladding face of the building or protrude no more than 25mm from the outside cladding face of the building. If the latter, measure a maximum of 25mm and neatly cut a small "V" shape in the corners at the base of each side of the box gutter using left and right-handed snips and DO NOT bend the cut tab downwards yet.

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.1 Standard Installation of the Dam Buster Rainhead (cont.)

DIAGRAM 'A'

SECTION THROUGH INSTALLED DAM BUSTER RAINHEAD & BOX GUTTER



2. Dry test the Dam Buster Rainhead to ensure that the rear seal slides easily under the sole of the box gutter and that the Dam Buster Rainhead fits snugly to the wall of the building and the box gutter.

3. Once the downpipe size has been selected / designed neatly cut and rivet a downpipe pop into the base of the Dam Buster Rainhead to suit the downpipe size, shape, position and off-set. Use colour-matched Roof & Gutter Silicone to seal the downpipe pop.

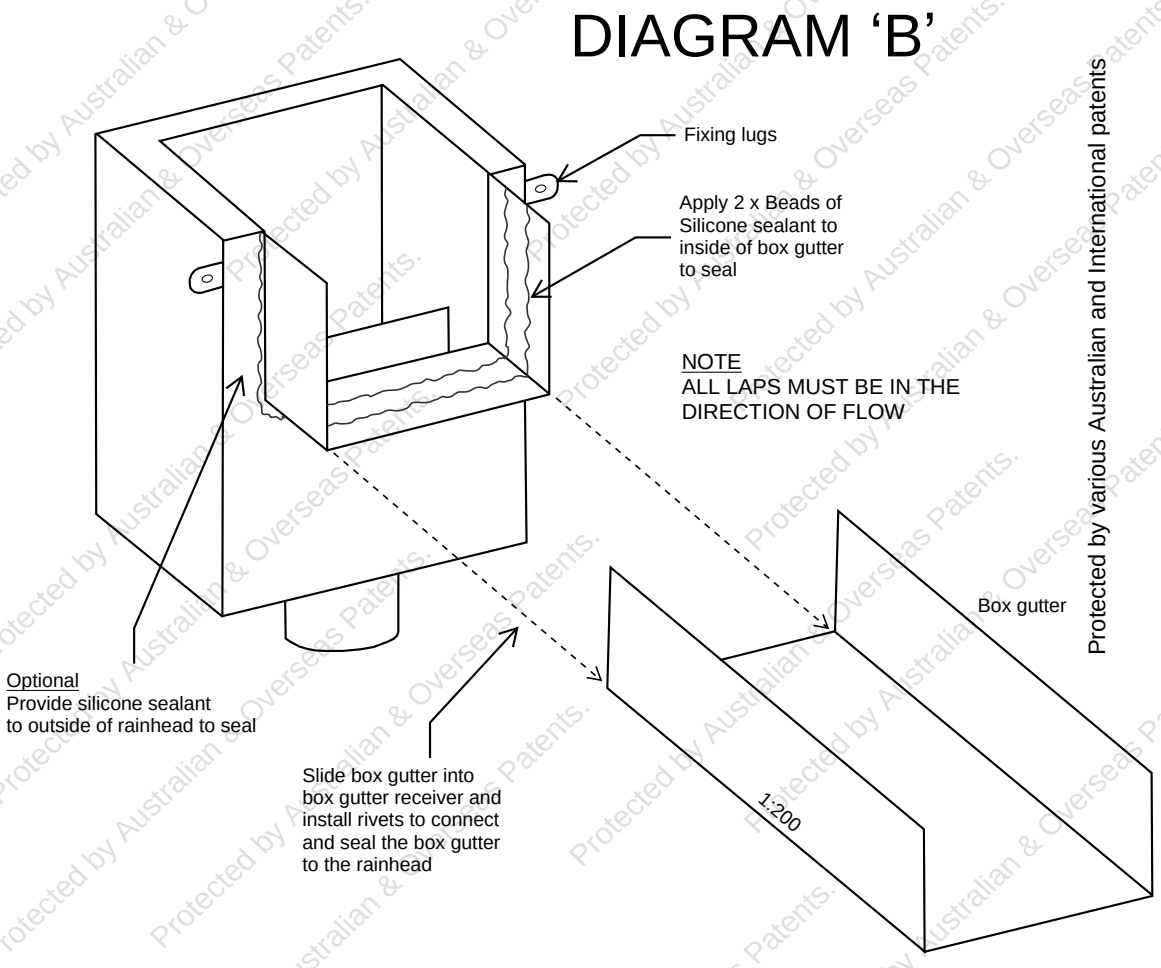
4. Carefully and thoroughly apply colour-matched Roof & Gutter Silicone to seal all of the internal seams and rivet fixings on the inside of the Dam Buster Rainhead, including the open seam on both sides which is directly beneath the main overflow weir, facing the external facade.

Note: Dam Buster Rainheads are supplied as pre-siliconed between the lap joins, however, the installing roof plumber must still apply silicone to the seams and rivets prior to installation.

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.1 Standard Installation of the Dam Buster Rainhead (cont.)

5. Apply 2 x generous beads of Roof & Gutter Silicone across the rear of the Dam Buster Rainhead on top of the base of the box gutter seal and also down the internal sides of the box gutter seal. Optionally, silicone can also be applied on the outside of the rear of the Dam Buster Rainhead and box gutter seal. The silicone will act as a seal to the area around the outside of the box gutter wall junction when the Dam Buster Rainhead is pressed against the wall of the building (much like a cover plate).
6. Refer Diagram B showing connection of Dam Buster Rainhead attachment to box gutter.
7. Carefully insert the Dam Buster Rainhead under the box gutter.
   NOTE: The box gutter fits directly into the Dam Buster Rainhead. The gutter seal receptor on the Dam Buster Rainhead is sized slightly larger to facilitate this. Do NOT attempt to fit the Dam Buster Rainhead into the box gutter.



Standard rainhead configuration (for a standard width box gutter)

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.1 Standard Installation of the Dam Buster Rainhead (cont.)

8. Drill 3.2mm (1/8th inch) diameter staggered rivet holes at 40mm staggered spacings into each of the side walls of the box gutter, also penetrating the seal on the Dam Buster Rainhead. Insert and fix sealed pop rivets having appropriate corrosion resistance at 40mm maximum centres, and staggered, on each side wall.

9. Drill and pop rivet the sole of the box gutter to fix and seal to the gutter receptor with 40mm staggered spacings. Carefully seal each rivet with Roof & Gutter silicone and wipe away any metal swarf from within the box gutter and Dam Buster Rainhead.

10. Fix the Dam Buster Rainhead to the wall via the external lugs on both sides – ensuring that the Dam Buster Rainhead is installed level with use of a spirit level. Use appropriately corrosion resistant screws or fixings and of sufficient strength to ensure adequate attachment to the building.

11. Note that the box gutter should NOT extend into the rainhead as this will impact the outflow nappe (i.e. the curve of the water shedding off the end of the box gutter chute where it drops into the rainhead), however, the sole of the box gutter can extend in 25mm if it is turned downwards by a minimum of 45 degrees, as shown in Diagram B, as this will ensure no impact on the nappe.

12. Fit and fix the downpipe into the downpipe pop with appropriately corrosion resistant rivets. Ensure downpipe is appropriately saddled along its entire length in compliance with the requirements of AS/NZS 3500.3 & SA HB39 (Vic/Tas only).

13. Advise Property Owners of the requirement of Australian Standards (AS/NZS 3500.3; Section 3.2, NOTE 3, and Paragraph M.5, Appendix M) for the regular maintenance of the roof drainage system (i.e. cleaning of any accumulated debris from the box gutter and rainhead on a regular basis). Educate Property Owner regarding the 'visual alert' of the operation of the Dam Buster Rainhead overflow indicating that there is a blockage requiring clearing.

14. Note that installation of the curve fronted rainhead is identical to that for the standard rectangular rainhead.

IMPORTANT NOTE: It is the licensed roof plumber's responsibility to certify all works associated with the installation of the box gutters and Dam Buster devices in accordance with the specific requirements of that State or Territory.

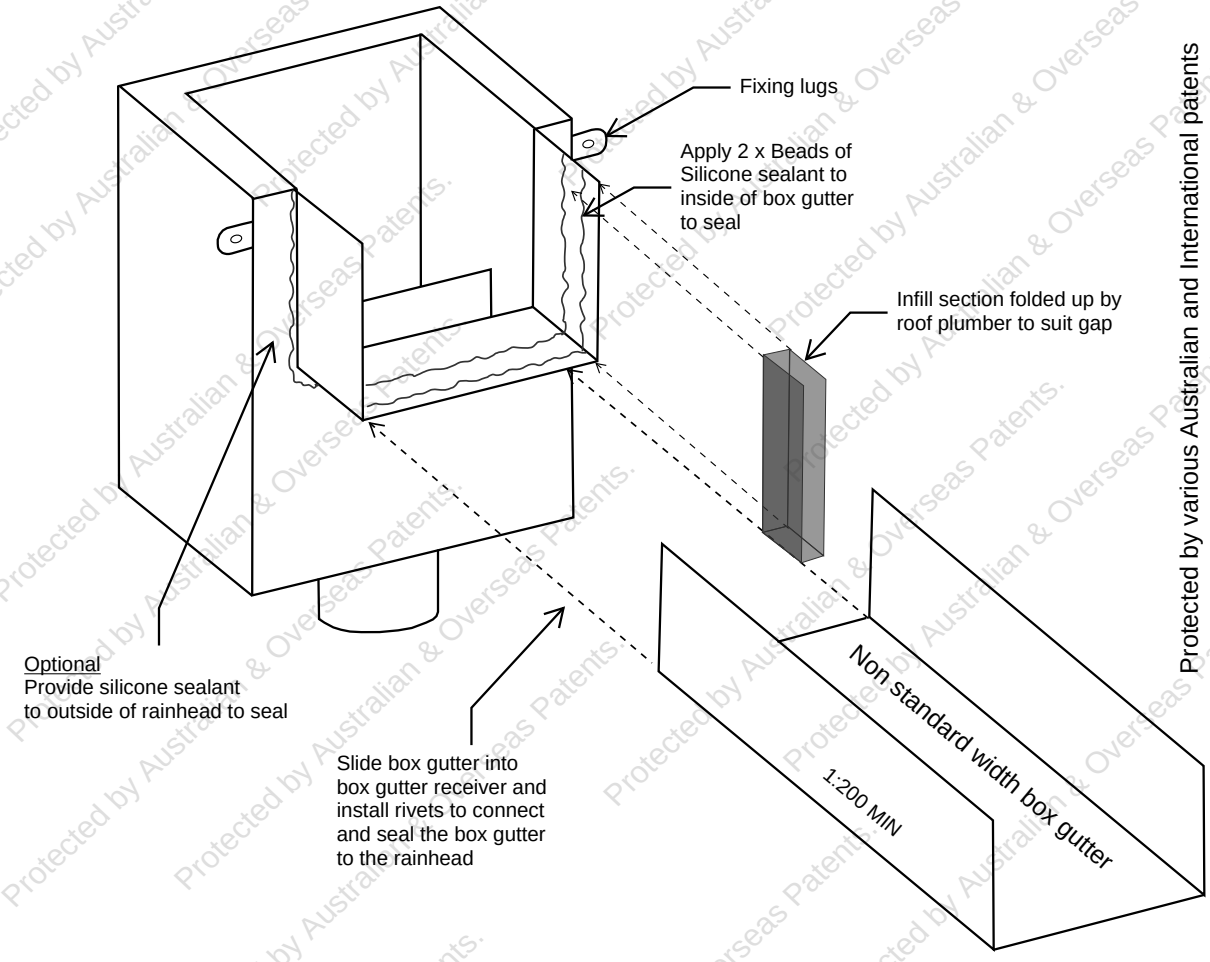
1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.2 Installation of the Dam Buster Rainhead for Non-Standard Box Gutter Widths

Below are additional installation instructions for the Dam Buster Rainhead to non-standard width box gutter (i.e. greater than 200mm and less than 600 mm wide, and not a standard width). All instructions in Part A apply to Part B unless noted otherwise.

1. Where the box gutter size does not exactly match the proprietary width of the Dam Buster Rainhead, then the roof plumber can fold up and install a filler section, noting that the box gutter receiver, as altered must comply with the following requirements as AS/NZS 3500.3. Refer to Diagram C, which shows the preferred method for installation of a non-standard width box gutter.

DIAGRAM 'C'



Preferred installation method for a non-standard width box gutter

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.3 Flat Back Rainhead

The Flat Back Rainhead is primarily intended for use with eaves gutters, however, it can also be used for box gutters, if preferred by the roof plumber. Refer to Diagram D on page 14.

NOTE – MECHANICAL FASTENERS
Dam Buster recommends only rivets be used as the mechanical fasteners (i.e. not screws) for joining box gutters and Dam Buster's devices. Rivets must always be installed such that the heads of the rivets are flush with the inner surface (water face) of the box gutter.

Eaves gutter installation

1. Refer to Diagram D on page 14.
2. When using a Flat Back Dam Buster Rainhead for an eaves gutter application, the eaves gutter profile will need to be carefully and neatly marked and scribed onto one or both sides of the sides of the rainhead. These scribed profiles can then be cut out to allow the effective drainage of the eaves gutter to pass through the side walls of the rainhead and discharge within the rainhead. The sole of the eaves gutter should be positioned at least 25mm higher than the weir overflow. We note that whilst there is reference within the NCC for the use of rainheads in eaves gutter applications, there is no reference to this within AS/NZS 3500.3 and therefore the use of rainheads does not void the requirement for a continuous overflow provision at the rear of high fronted eaves guttering and the eaves guttering must still be installed in accordance with the requirements of AS/NZS 3500.3 and any manufacturer's guidelines.

Box Gutter Installation

3. Refer to section A, instructions However, when using a Flat Back Dam Buster Rainhead, it is very important that the connection between the downstream end of the box gutter and the rainhead is adequately sealed in accordance with the requirements of AS/NZS 3500.3. The final position of the rainhead in relation to the box gutter must be determined and marked so that the flat back section of the rainhead can be carefully and neatly marked and scribed, remembering that a 25mm seal will be required. This seal can be made by cutting the flat back with a 25mm excess and then bending this at 90 degrees so that it can slide under the sole of the box gutter and on the outside of the 2 x sides walls of the box gutter. This can then be silicone sealed and riveted into position to form a compliant seal. The folding should be carried out using wide vice grips or similar to create a neat fold.

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.3 Flat Back Rainhead (cont.)

4. The connection of the box gutter to the Flat Back Rainhead is the responsibility of the Roof Plumber, however, the following requirements must be met.

Installation Requirement 1

- *The connection of the Dam Buster Rainhead flat back to the box gutter must be made with a lap join between 20mm to 25mm with the lap fully sealed (sandwiched between clean surfaces) and mechanically fixed at no more than 40mm centres in accordance with the Australian Standards.*

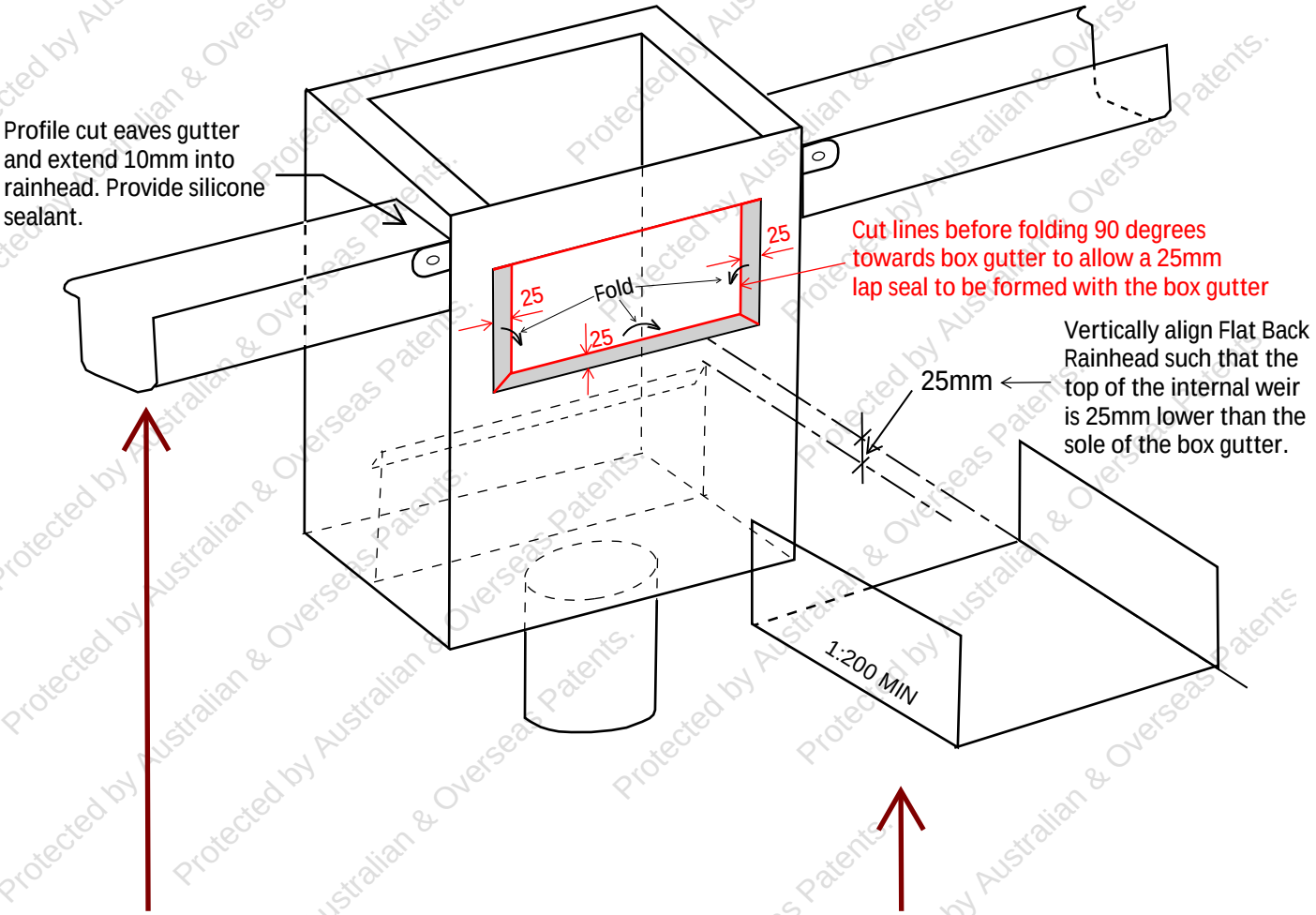
Installation Requirement 2

- *A 25mm differential in height between the sole of the box gutter and the crest of the overflow weir must be maintained. Refer to AS/NZS 3500.3:2021, Appendix H, Figure H.2 - Rainhead.*

1.0 Installation Instructions for Dam Buster Rainhead (cont.)

1.3 Flat Back Rainhead (cont.)

DIAGRAM 'D'



Eaves gutter installation OR Box gutter instalaltion

Flat Back Rainhead

Box gutter installation by Roof Plumber

Where the Flat Back Rainhead is used for box gutters, the connection of the box gutter must be made with a lap join between 20mm to 25mm with the lap fully sealed (sandwiched between clean surfaces) and mechanically fixed at no more than 40mm centres in accordance with AS/NZS 3500.3 and SA HB 39 (where applicable). Note also that the rainhead must be vertically aligned such that the top of the internal weir is 25mm below the sole of the box gutter.

2.0 Installation Instructions for Dam Buster Side Outlet* and Rainhead combination

* All versions- T Side Outlet, End Side Outlet, Corner Side Outlet & Cruciform Side Outlet.

2.1 Installation instructions are provided below for Dam Buster box gutter overflow device comprising a Dam Buster Side Outlet device and a Dam Buster Rainhead. Note that a Dam Buster Side Outlet may **only** be used in combination with a Dam Buster Rainhead or a fully compliant AS/NZS 3500.3 rainhead.

IMPORTANT NOTE: Before proceeding you must always correctly size the Dam Buster Rainhead and Side Outlet combination to suit the design flow rate in litres / sec for the roof catchment area. Refer to the **Dam Buster Product Technical Statement** for design and side outlet and rainhead combination flow capacities.

YOU WILL NEED:

- *3.2mm (1/8th inch) diam 3.2mm (1/8th inch) grip sealed appropriately corrosion resistant pop rivets 4.1*
- *Hand riveter or power riveter*
- *3.2mm (1/8th inch) drill bit and small battery drill*
- *Silicone gun and 1 x tube of Roof & Gutter Silicone (colour matched)*
- *Left and right hand snips*
- *Downpipe pop to suit sizing requirement*
- *2 or 4 (depending on size of the Dam Buster rainhead) x appropriately corrosion resistant wall fixings or screws (maximum 5.5mm in size)*
- *Spirit Level*
- *Clean rags*
- *Set Square*
- *Pencil*

NOTE – MECHANICAL FASTENERS
Dam Buster recommends only rivets be used as the mechanical fasteners (i.e. not screws) for joining box gutters and Dam Buster's devices. Rivets must always be installed such that the heads of the rivets are flush with the inner surface (water face) of the box gutter.

1. Measure the width of the box gutter(s) that will be entering the Dam Buster Side Outlet. Select the appropriate Side Outlet configuration that will adjust to suit the box gutter width. Ensure that the flow rate for the corresponding Dam Buster Rainhead is not exceeded by the combined box gutter in-flow.

Dam Buster Side Outlet configuration options:

- Dam Buster T Side Outlet (see Diagram 1)
- Dam Buster End Side Outlet (RH or LH) (see Diagram 2)
- Dam Buster Corner Side Outlet (RH or LH) (see Diagram 3)
- Dam Buster Cruciform Side Outlet (see Diagram 4)

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Dam Buster Side Outlet sizes for box gutter widths:

- SO-200 Side Outlet – adjusts to suit box gutters from **200mm to 350mm** in width. Requires R-200 or CR-200 Rainhead combination.

- SO-300 Side Outlet – adjusts to suit box gutters from **300mm to 450mm** in width. Requires R-300 or CR-300 Rainhead combination.

- SO-400 Side Outlet – adjusts to suit box gutters from **400mm to 600mm** in width. Requires R-400 or CR-400 Rainhead combination.

- ***IMPORTANT NOTE***
  The Side Outlet device MUST NOT be used outside the above noted ranges (unless a site-specific design is prepared under a Performance Solution by a suitably qualified hydraulic engineer). However, there should generally be no need to use Side Outlets for box gutter widths other than those specified above which include all allowable widths in accordance with AS/NZS 3500.3 i.e. between 200mm to 600mm.

2. Dam Buster Side Outlets can either be installed prior to a box gutter installation (preferable) or, if required, they can be retrofitted into an existing box gutter installation.

   *NOTE: If retrofitting of the Dam Buster Side Outlet is a necessity, then extra care is required in relation to the riveting and sealing of the connection between the existing box gutter and the Dam Buster Side Outlet device. Refer to **Diagram 6** for a recommended retrofitting method, which involves the usage of an additional 'stub box gutter' to assist with the installation process.*

3. The roof carpentry structure must provide adequate support for both the box gutter and the Dam Buster Side Outlet device. The Dam Buster Side Outlet has in-built gradient of 1:200 which equates to 5mm over 1m and this needs to be accommodated by the carpentry support structure through to the outside edge of the parapet wall. The support structure in contact with the box gutter must also be of a compatible material with the box gutter

   NOTE: Some small amount of adjustment may be required to the roof carpentry support structure when fitting the adjustable component of the Dam Buster Side Outlet to ensure it sits neatly and maintains the 1:200mm gradient. Therefore, dry fitting of the product prior to final installation is highly recommended.

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

4. The downstream section of the Dam Buster Side Outlet should be installed first. This is the portion that passes through the parapet wall and connects with the Dam Buster Rainhead, and comprises a 'short, deep box gutter' commencing at the open-ended sump. Depending on the Dam Buster Side Outlet configuration selected, there are gussets which need to be siliconed between the laps and then riveted. Note, the standard length of the 'short, deep box gutter' (beyond the open-ended sump) is 400mm. If necessary (for wide parapet walls) this can be extended with an additional box gutter section (of the same size) up to a maximum total length of 600mm. If the short, deep box gutter section connecting to the rainhead is required to be longer, obtain advice from a suitably qualified hydraulic engineer.

5. The upstream section of the Dam Buster Side Outlet can then be installed. This is the portion which sits wholly within the open-ended sump portion of the device. It is recommended that the upstream section is dry fitted and marked in position with a pencil onto the downstream section of the device to ensure a neat and tidy fit. Silicone is then applied to the lapped portion of the downstream section of the device and the upstream section can then be fitted and riveted using the pre-drilled staggered rivet formation.

6. The chute lid component of the Dam Buster Side Outlet can now be fitted into the parapet wall to prevent vermin entry. This is in the form of a U-shaped piece of sheet metal with pre-drilled holes for fixing. This should be lifted-up to fit neatly and tightly within the parapet wall section and cut and folded to provide a seal with any flashings or parapet cappings.

7. The Dam Buster Rainhead can now be fitted (or alternatively left to a later stage depending on the construction timeline). See Installation Instructions for Dam Buster Rainhead for further details.

8. Once the rainhead is ready to install, apply 2 x Roof & Gutter silicone beads on both the base and walls of the box gutter receiving seal component of the Dam Buster Side Outlet. The box gutter can then be lowered into position on top of this seal, with the end of the box gutter flush with the step (drop down) edge. There is no need to over-hang the box gutter into the sump space of the Dam Buster Side Outlet. It should finish flush with the step.

9. A staggered pattern of sealed rivets at 40mm maximum intervals needs to be drilled and fixed into the base and side walls of the box gutter.

10. All exposed rivet heads to be neatly and thoroughly covered by Roof & Gutter silicone – either colour-matched if required or otherwise aluminium coloured.

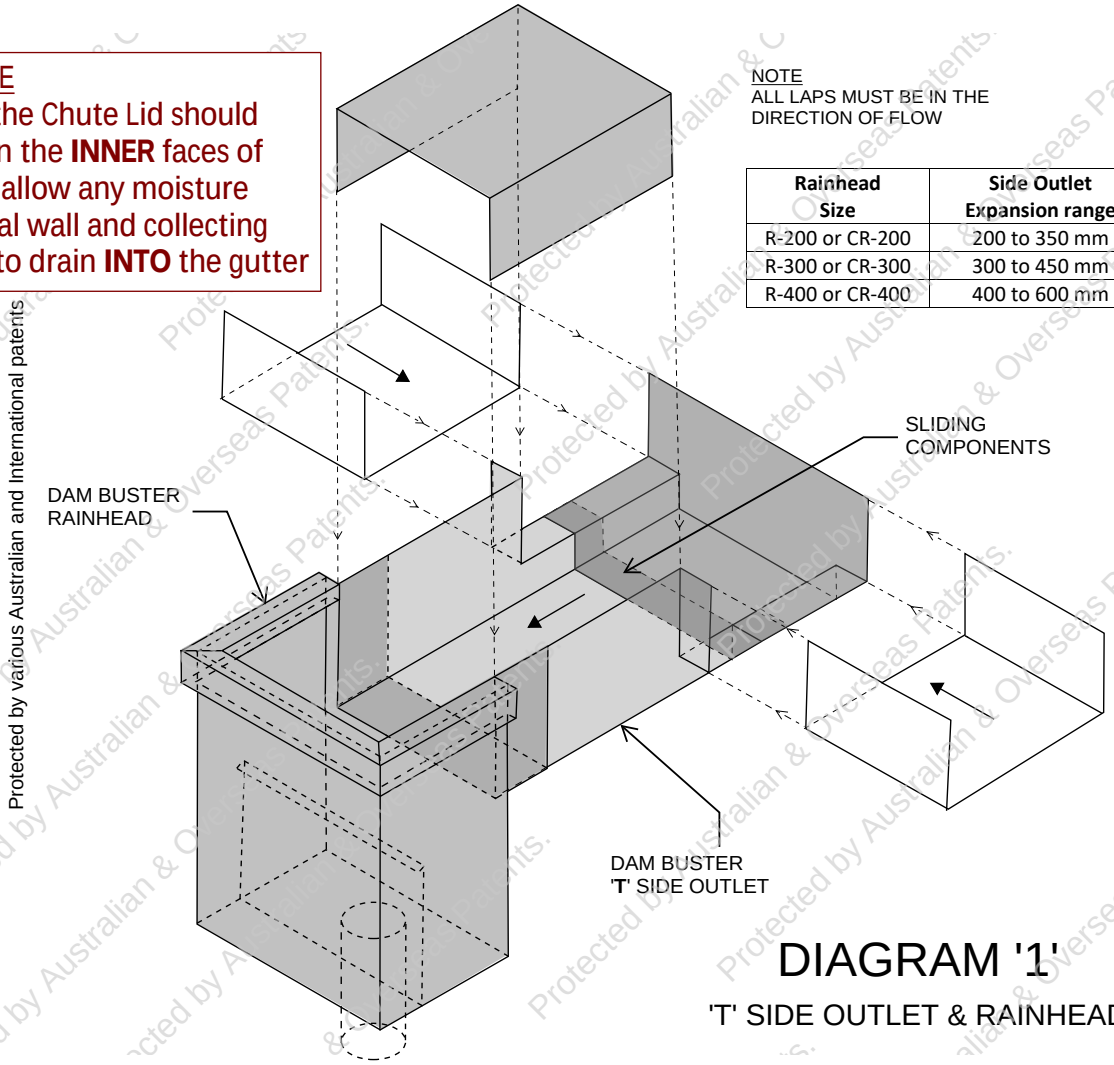
2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

11. If the depth of the box gutter(s) do not match the depth of the Side Outlet, it will be necessary to **either** trim the top of Side Outlet wall (if the Side Outlet is deeper than the box gutter) **or** add a flashing to the rear wall of the Side Outlet (if the box gutter(s) are deeper than the Side Outlet). Refer to Diagram 5 for details.

12. Advise Property Owners of the requirement of Australian Standards (AS/NZS 3500.3; Section 3.2, NOTE 3 and Paragraph M.5, Appendix M) for the regular maintenance of the roof drainage system (i.e. cleaning of any accumulated debris from the box gutter and rainhead on a regular basis). Educate Property Owner regarding the 'visual alert' of the operation of the Dam Buster Rainhead overflow indicating that there is a blockage requiring clearing.

NOTE: It is the licensed roof plumber's responsibility to certify all works associated with the installation of the box gutters and Dam Buster devices in accordance with the specific requirements of that State or Territory.

IMPORTANT NOTE
For all products, the Chute Lid should be installed within the **INNER** faces of the box gutter to allow any moisture within the external wall and collecting on the Chute Lid to drain **INTO** the gutter



Rainhead Size	Side Outlet Expansion range
R-200 or CR-200	200 to 350 mm
R-300 or CR-300	300 to 450 mm
R-400 or CR-400	400 to 600 mm

DIAGRAM '1'
'T' SIDE OUTLET & RAINHEAD

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Rainhead Size	Side Outlet Expansion range
R-200 or CR-200	200 to 350 mm
R-300 or CR-300	300 to 450 mm
R-400 or CR-400	400 to 600 mm

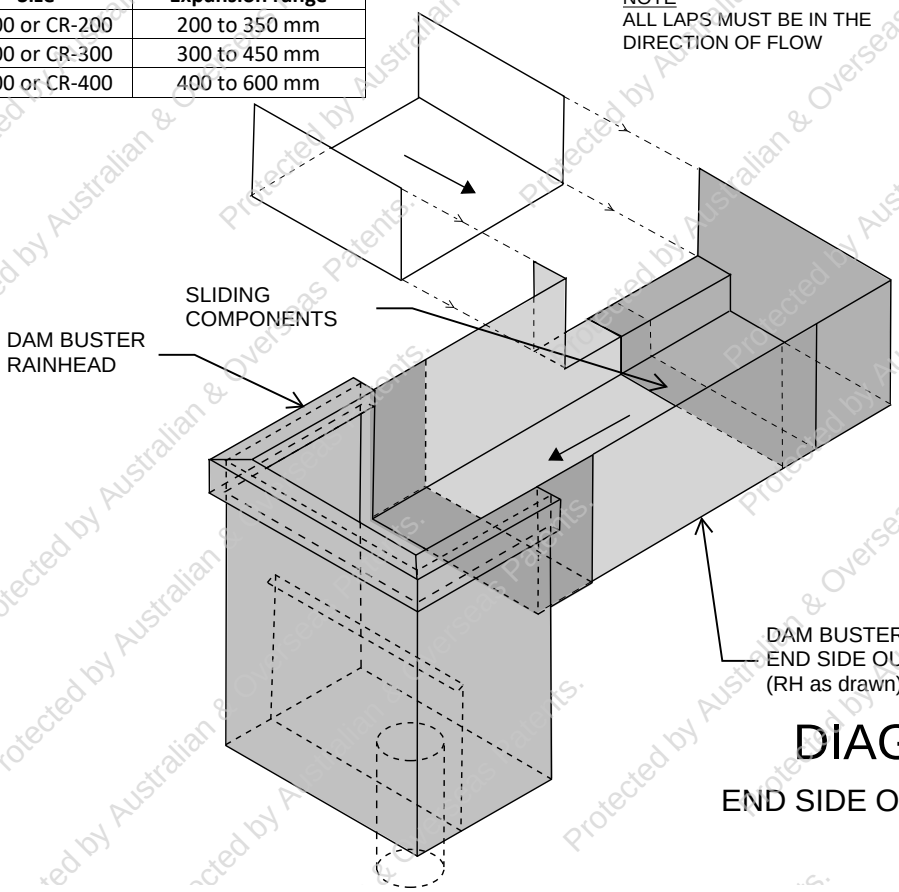


DIAGRAM '2'

END SIDE OUTLET & RAINHEAD

Is the device LH (Left Hand) or RH (Right Hand)?

The 'hand' is determined by viewing along the direction of flow.

For a RH device, the water 'turns' right at the device

For a LH device, the water 'turns' left at the device

Note – a RH version is shown in Diagram '2'.

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Rainhead Size	Side Outlet Expansion range
R-200 or CR-200	200 to 350 mm
R-300 or CR-300	300 to 450 mm
R-400 or CR-400	400 to 600 mm

Rainhead Size	End box gutter size
R-200 or CR-200	200 mm
R-300 or CR-300	300 mm
R-400 or CR-400	400 mm

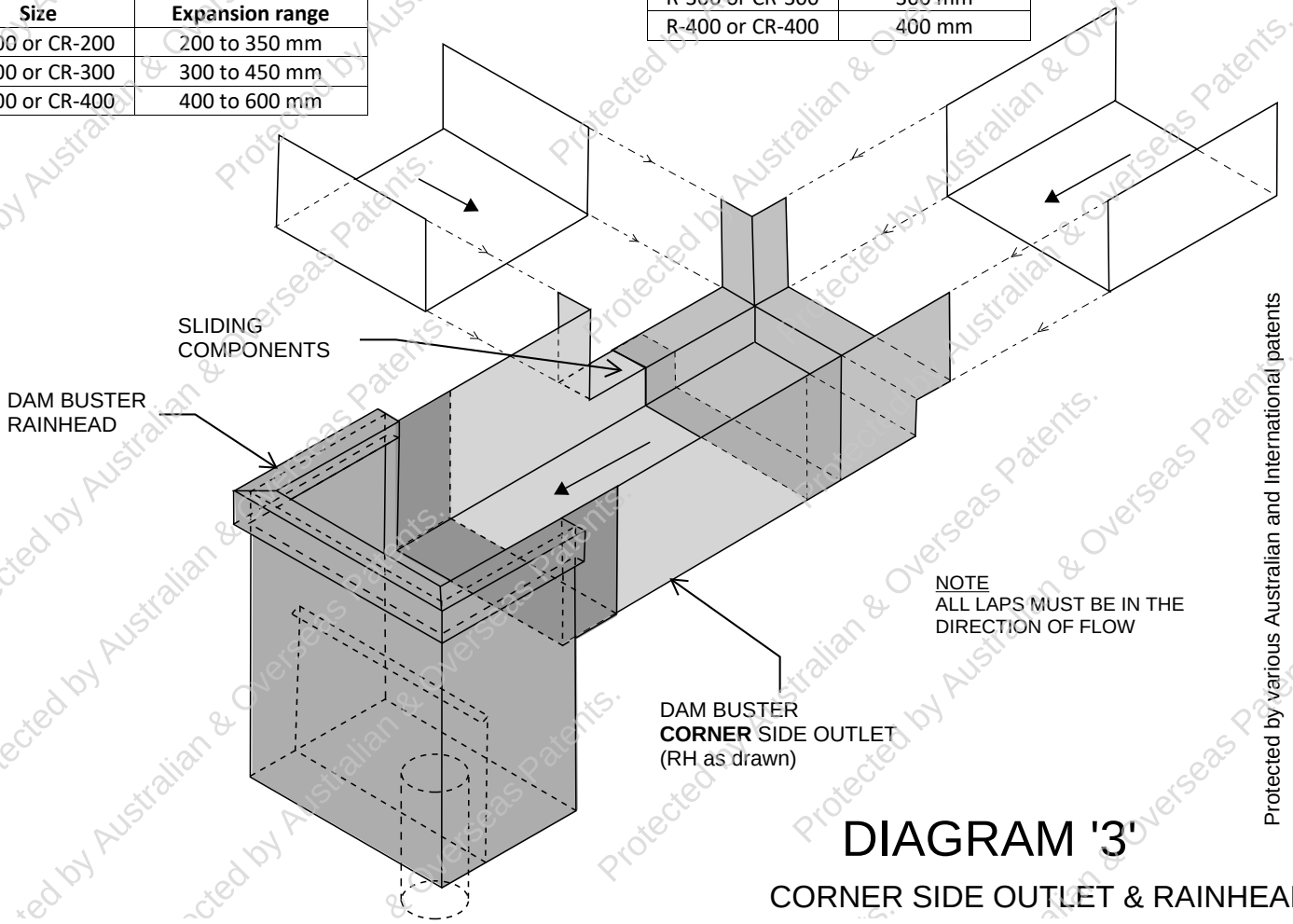


DIAGRAM '3'

CORNER SIDE OUTLET & RAINHEAD

Is the device LH (Left Hand) or RH (Right Hand)?

The 'hand' is determined by viewing along the direction of flow.

For a RH device, the water 'turns' right at the device

For a LH device, the water 'turns' left at the device.

Note – a RH version is shown in Diagram '3'.

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Rainhead Size	Side Outlet Expansion range
R-200 or CR-200	200 to 350 mm
R-300 or CR-300	300 to 450 mm
R-400 or CR-400	400 to 600 mm

Rainhead Size	End box gutter size
R-200 or CR-200	200 mm
R-300 or CR-300	300 mm
R-400 or CR-400	400 mm

NOTE
ALL LAPS MUST BE IN THE DIRECTION OF FLOW

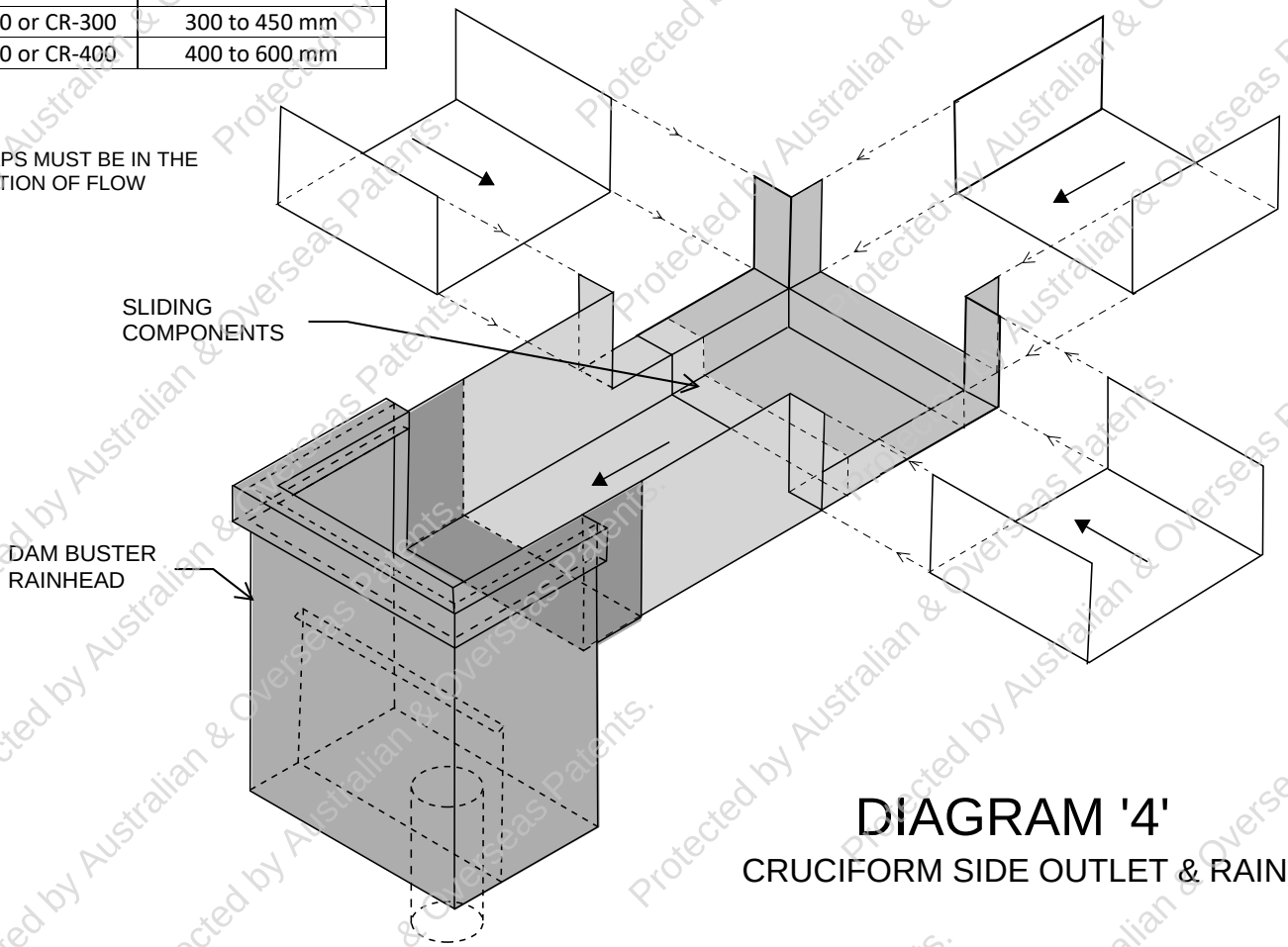
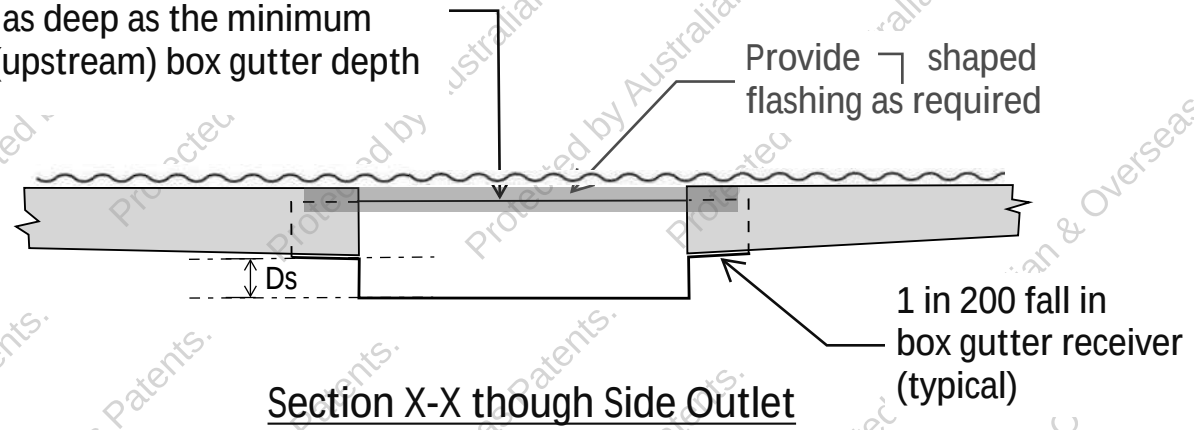


DIAGRAM '4'
CRUCIFORM SIDE OUTLET & RAINHEAD

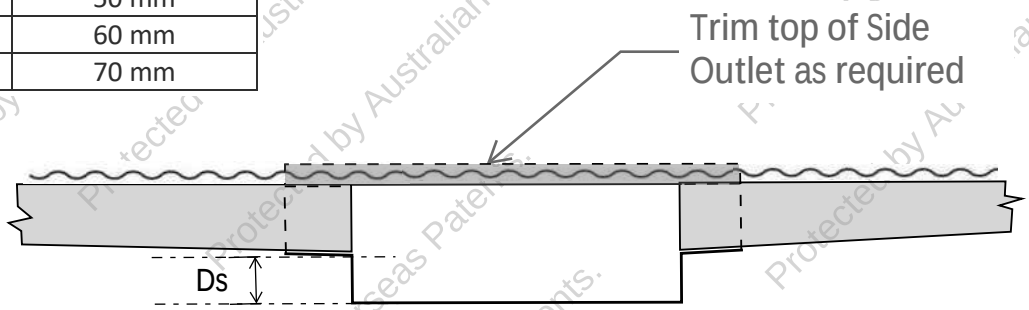
2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Note- the Side Outlet depth has been pre-engineered such that it is at least as deep as the minimum design (upstream) box gutter depth



Section X-X though Side Outlet
Box gutter(s) deeper than Side Outlet

Side Outlet Width	Side Outlet Depth 'Ds'
200 mm	50 mm
300 mm	60 mm
400 mm	70 mm



Section X-X though Side Outlet
Side Outlet deeper than Box gutter(s)

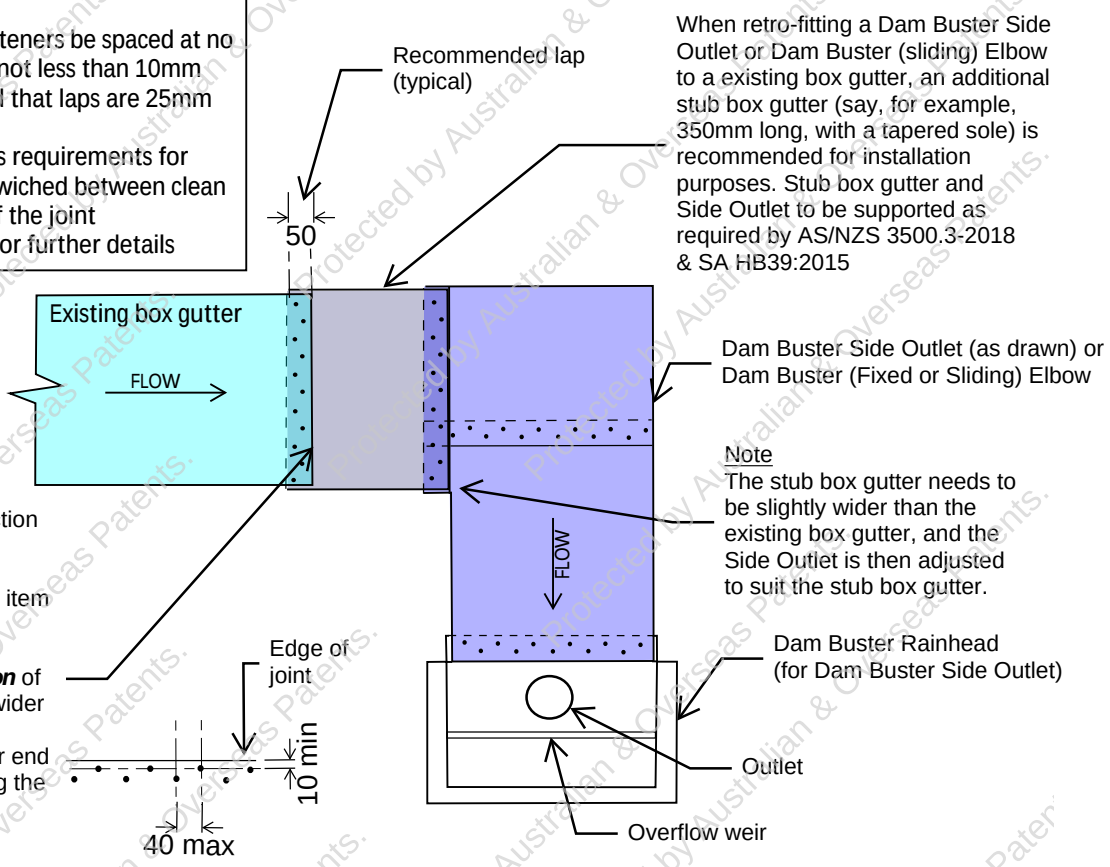
DIAGRAM '5'

CONNECTION OF BOX GUTTER(S) TO SIDE OUTLET

2.0 Installation Instructions for Dam Buster Side Outlet and Rainhead combination (cont.)

Notes regarding requirements of AS/NZS 3500.3

1. Cl 4.5.4 *Box gutters* requires lap joints to be installed in accordance with Cl 4.5.3 (b)
2. Cl 4.7.2.3 *Laps* require that fasteners be spaced at no more than 40mm centres, and not less than 10mm from the edges of the joint, and that laps are 25mm minimum wide
3. Clause 4.7.2.2 *Sealant* specifies requirements for sealants, which are to be sandwiched between clean surfaces of the components of the joint
4. Refer to AS/NZS 3500.3-2018 for further details



Retro-fitting the Dam Buster Side Outlet and the Dam Buster Elbow

Plan View (NTS)

DIAGRAM '6'

RETROFITTING A DAM BUSTER SIDE OUTLET OR DAM BUSTER ELBOW

3.0 Installation Instructions for Dam Buster Sumps

3.1 Installation instructions are provided below for the Dam Buster Sump.

IMPORTANT NOTE: Before proceeding you must always correctly size the Dam Buster Sump to suit the design flow rate in litres / sec for the roof catchment area. Refer to the **Dam Buster Product Technical Statement** for design and sump flow capacities.

YOU WILL NEED:

- *3.2mm (1/8th inch) diam 3.2mm (1/8th inch) grip sealed appropriately corrosion resistant pop rivets 4.1*
- *Hand riveter or power riveter*
- *3.2mm (1/8th inch) drill bit and small battery drill*
- *Silicone gun and 1 x tube of Roof & Gutter Silicone (colour matched)*
- *Left and right hand snips*
- *Downpipe pop to suit sizing requirement*
- *Spirit Level*
- *Clean rags*
- *Set Square*
- *Pencil*

NOTE – MECHANICAL FASTENERS
Dam Buster recommends only rivets be used as the mechanical fasteners (i.e. not screws) for joining box gutters and Dam Buster's devices. Rivets must always be installed such that the heads of the rivets are flush with the inner surface (water face) of the box gutter.

See Diagrams V, W, X, Y & Z showing installation of Dam Buster Sumps and box gutter.

- Diagrams V, W & X – Dam Buster Sumps
- Diagram Y – Dam Buster Back-to-Back Sumps
- Diagram Z – Dam Buster Continuous Sump

Note that the continuous sump arrangement has provision of an expansion joint (where necessary). The arrangement requires the supply of a separate box gutter receiver for each Dam Buster Sump in the 'internal' box gutter system. Note also, that the expansion joint is automatically located at a 'high point' (i.e. 'upstream' end of each box gutter), as required by SA HB39.

1. Assemble the Dam Buster Sump components if not already assembled. Note, pre-assembly in the factory is recommended, unless the plumber has received appropriate training for assembly on site from the fabricator / supplier.

3.0 Installation Instructions for Dam Buster Sump (cont.)

2. If not pre-assembled, apply Roof & Gutter silicone between all lap joins. Install sealed rivets into all pre-cut rivet holes. Apply Roof & Gutter silicone over the top of all lap joins, seams and rivets.

3. Measure and neatly cut holes for the downpipe pops in the base of the 2 x chambers of the Dam Buster Sump to suit the downpipe size, shape, position and off-set.

4. Install downpipe pops. Rivet and seal using Roof & Gutter silicone.

5. Cut and install 90mm metal downpipe pop to connect overflow blockage indicator in the side wall of the Dam Buster Sump overflow chamber (the centreline of this pipe should be located at the level of the sole of the box gutter). This should then be connected to a PVC pipe which discharges to a visually obvious location.

6. The Dam Buster Sump should then be installed into the roof structure prior to the box gutter being installed and with the appropriate downpipe and overflow pop outlets already installed into the Dam Buster Sump.

7. The outlet pops should then be carefully sealed to the downpipe and overflow pipe to create a watertight seal using Roof & Gutter silicone. The holistic and thorough sealing of the Dam Buster Sump to the downpipe is essential as this location will otherwise present as an internal ingress point if the downpipe blocks downstream.

8. The Dam Buster Sump needs to be well supported by the carpentry roof structure in the same manner in which box gutters need to be supported so that it is stable and unaffected by movement.

9. The box gutter can now be installed on top of the gutter receiver component on the Dam Buster Sump. Care should be taken to apply 2 x large beads of silicone across the base and up the walls of the gutter receiver component to achieve a holistic seal between the box gutter and the Dam Buster Sump. There is no requirement to overhang the box gutter into the Dam Buster Sump and therefore the box gutter should finish flush with the internal end of the gutter receiver component of the Dam Buster Sump.

3.0 Installation Instructions for Dam Buster Sump (cont.)

10. Staggered rivets spaced at maximum 40mm intervals should be installed to secure the box gutter to the gutter receiver component of the Dam Buster Sump. Apply Roof & Gutter silicone over the top of all rivets to seal.

11. Flash around the Dam Buster Sump if required and/or trim to suit box gutter heights, ensuring that the Dam Buster Sump fits tightly underneath the roof sheeting. Extra flashing installation may be required to achieve this.

12. For the Back-to-Back Sump arrangement (Diagram Y) the installation of a link between the box gutters is required. The rear walls of both sumps are cut down by 60mm, and a flashing (supplied by the roof plumber) is installed over the rear walls. Profile cut plates, supplied with each Dam Buster Sump, are then installed on both inner faces of the vertical walls of the sumps. Install rivets in the pre-drilled holes in the profile cut plates, and then apply Roof & Gutter silicone as required to ensure seal is obtained.

13. For the Continuous sump arrangement (as per Diagram Z), the downstream gutter receiver is used as the stop end for the upstream end of the downstream box gutter, which abuts the Dam Buster Sump. The end wall of the Dam Buster Sump should then be cut down by 60mm and a 60mm section of the total width of the Dam Buster Sump downstream gutter receiver is folded over into the sump, sealed and riveted into position, using the profile cut plates supplied with each sump. Install rivets in the pre-drilled holes in the profile cut plates, and then apply Roof & Gutter silicone as required to ensure seal is obtained.

14. Advise Property Owners of the requirement of Australian Standards (AS/NZS 3500.3; Section 3.2, NOTE 3 and Paragraph M.5, Appendix M) for the regular maintenance of the roof drainage system (i.e. cleaning of any accumulated debris from the box gutter and rainhead on a regular basis). Educate Property Owner regarding the 'visual alert' of the operation of the Dam Buster Sump overflow indicating that there is a blockage requiring urgent clearing.

NOTE: It is the licensed roof plumber's responsibility to certify all works associated with the installation of the box gutters and Dam Buster devices in accordance with the specific requirements of that State or Territory.

3.0 Installation Instructions for Dam Buster Sump (cont.)

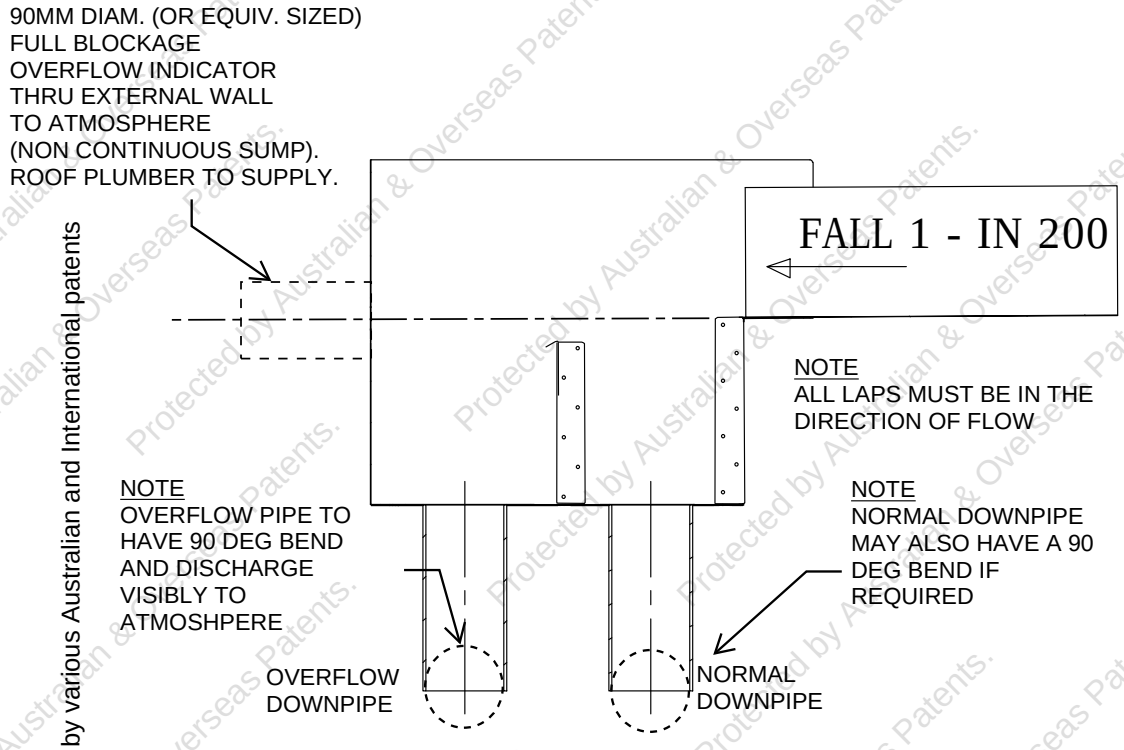


DIAGRAM 'V'

SECTION THROUGH DAM BUSTER SUMP

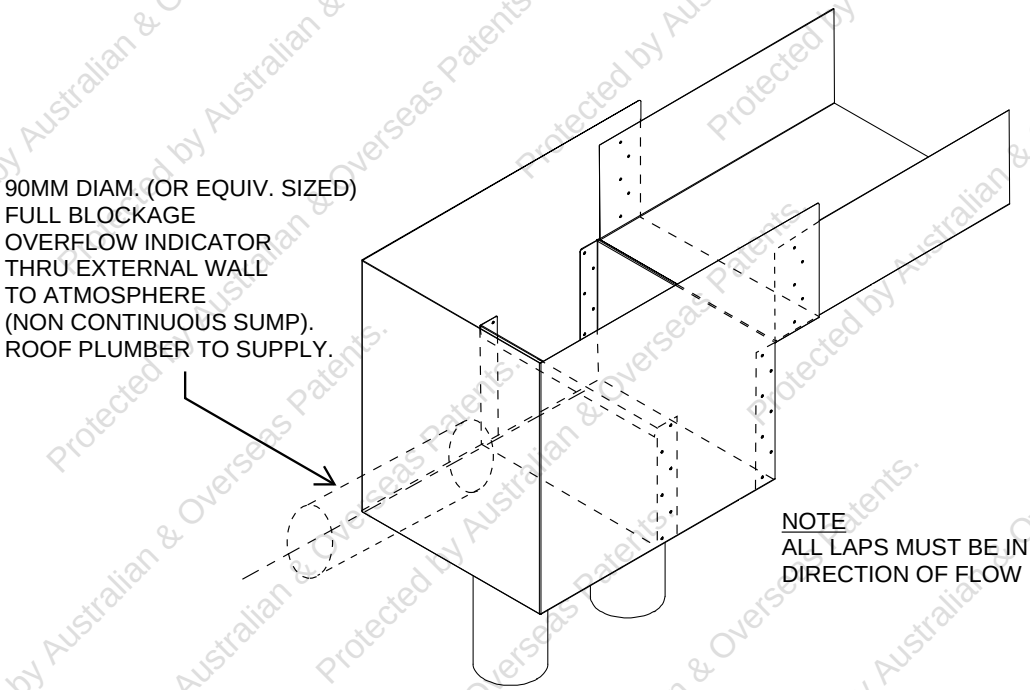


DIAGRAM 'W'

ATTACHMENT OF BOX GUTTER TO SUMP

3.0 Installation Instructions for Dam Buster Sump (cont.)

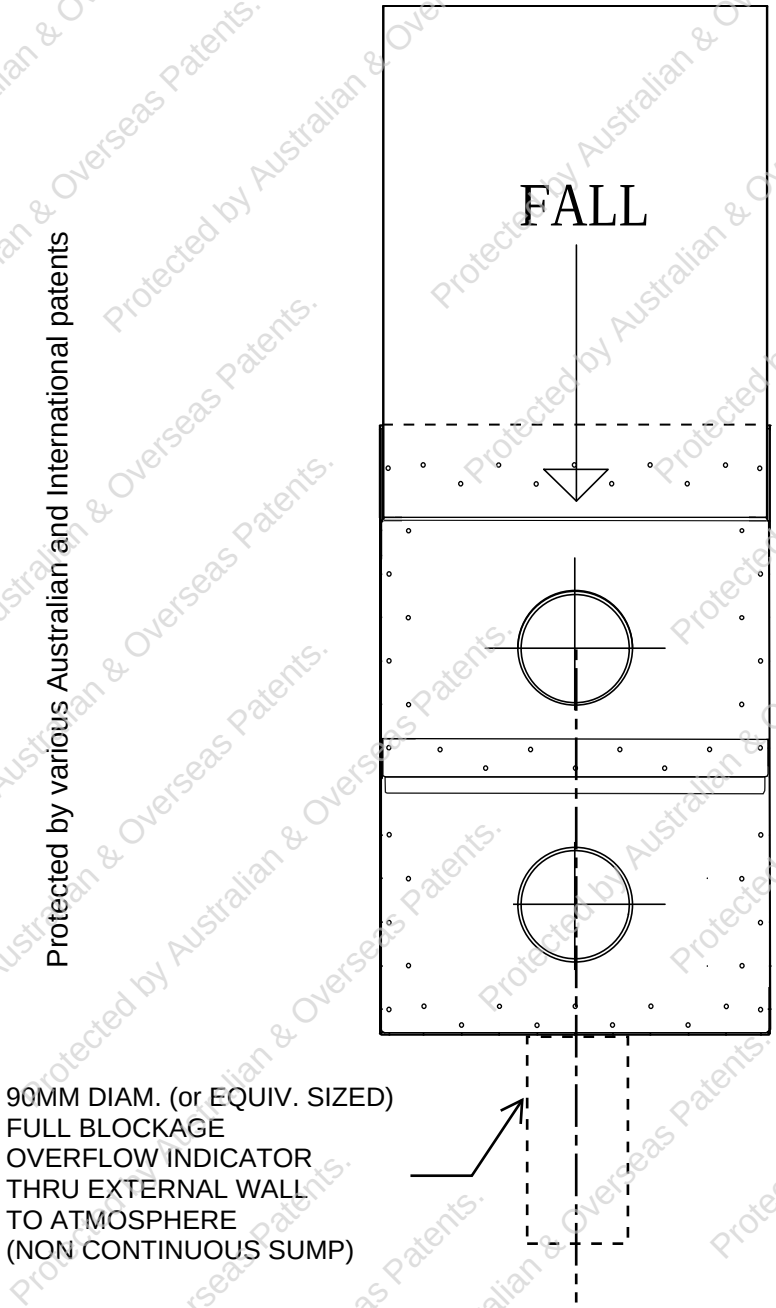
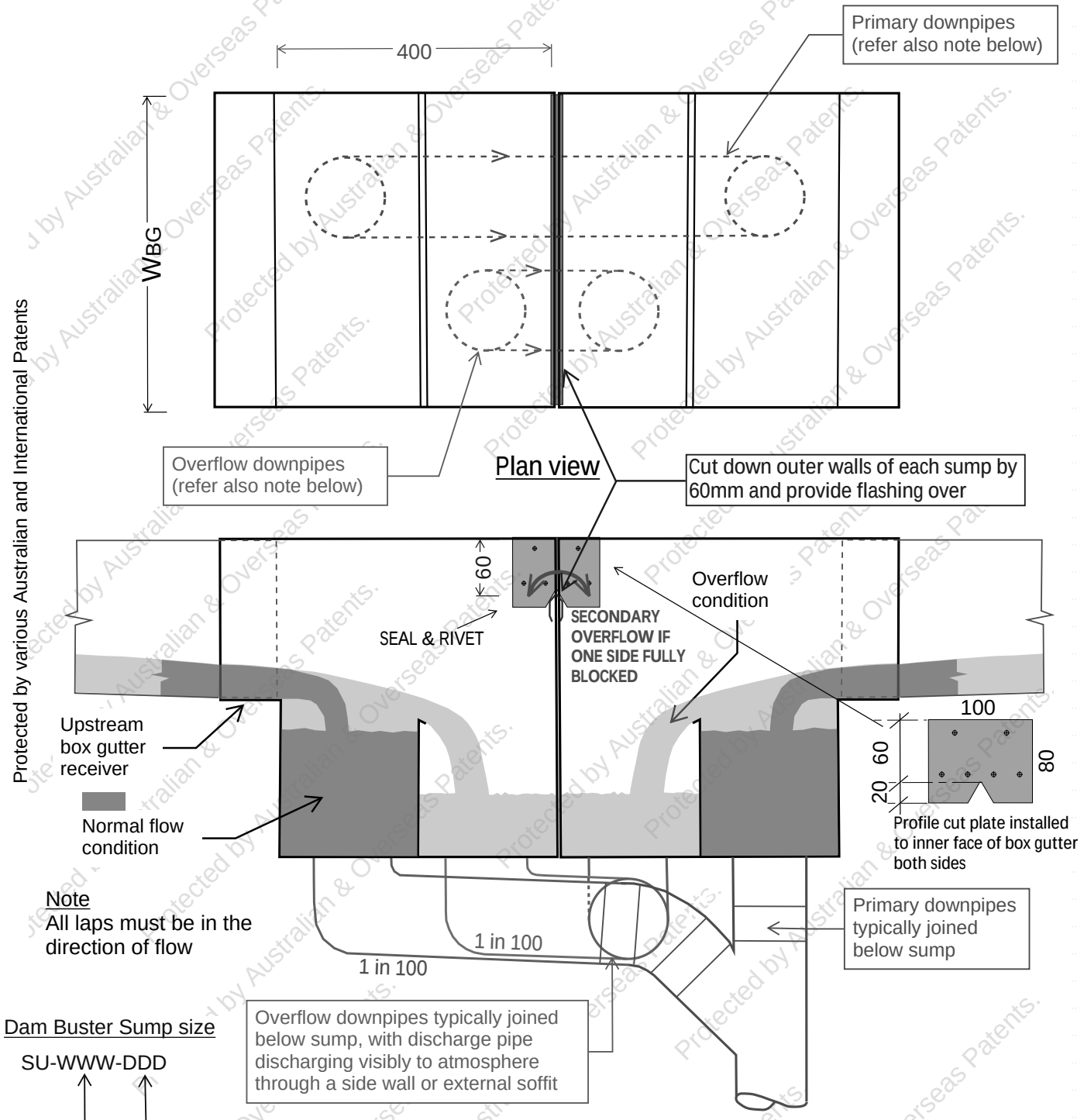


DIAGRAM 'X'
PLAN VIEW OF SUMP & BOX GUTTER

3.0 Installation Instructions for Dam Buster Sump (cont.)



SD014 - Typical Dam Buster Back-to-Back Sump detail (NTS)

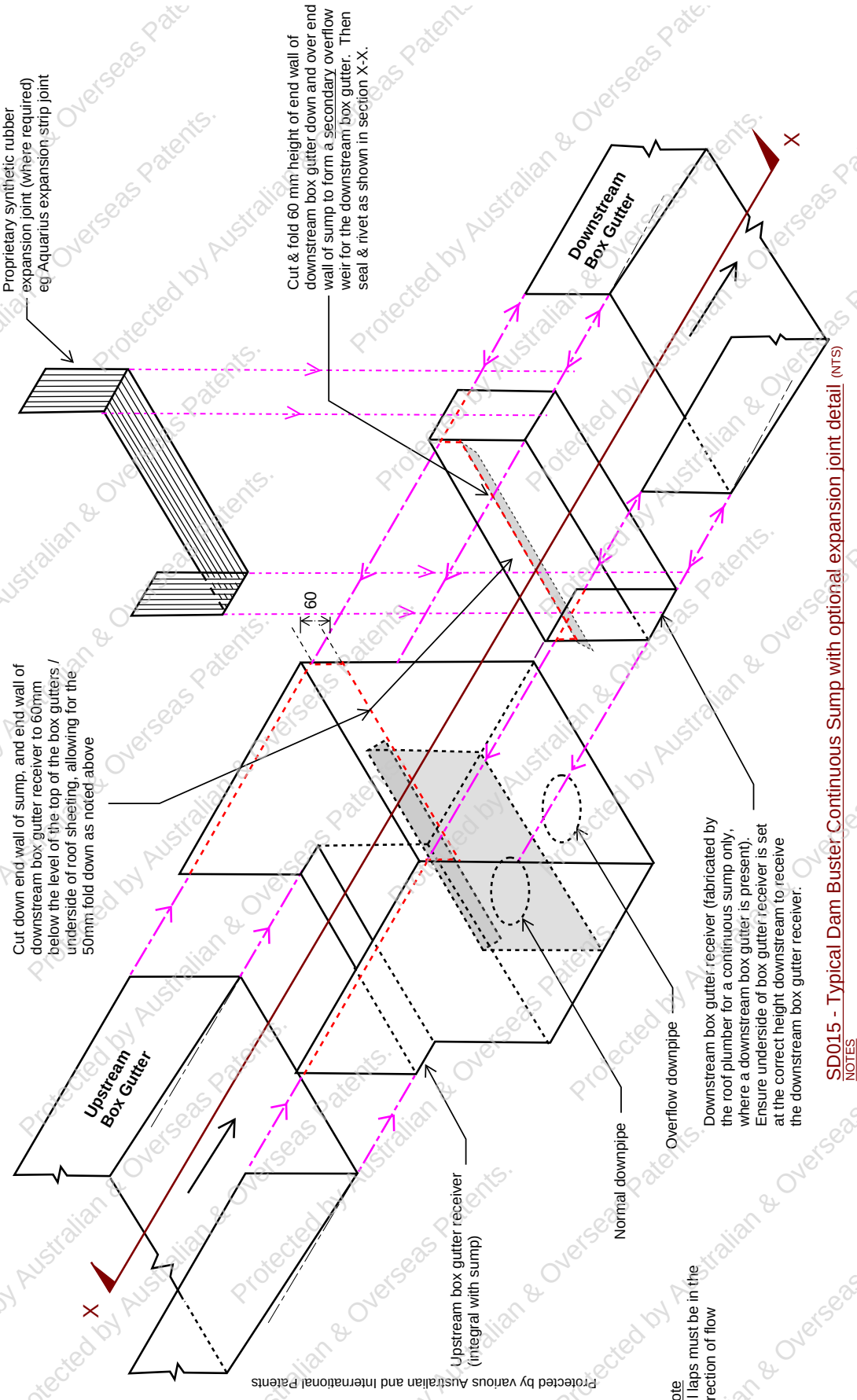
NOTES

1. Refer to the current Dam Buster P/L technical manual for installation details
2. The hydraulic capacity of the Dam Buster Back-to-Back Sump is double that of a single Dam Buster Sump, however, the aerial overflow pipe must be sized for the total design flow in both box gutters / sumps.

DIAGRAM 'Y'

BACK-TO-BACK SUMP

3.0 Installation Instructions for Dam Buster Sump (cont.)



SD015 - Typical Dam Buster Continuous Sump with optional expansion joint detail (NTS)

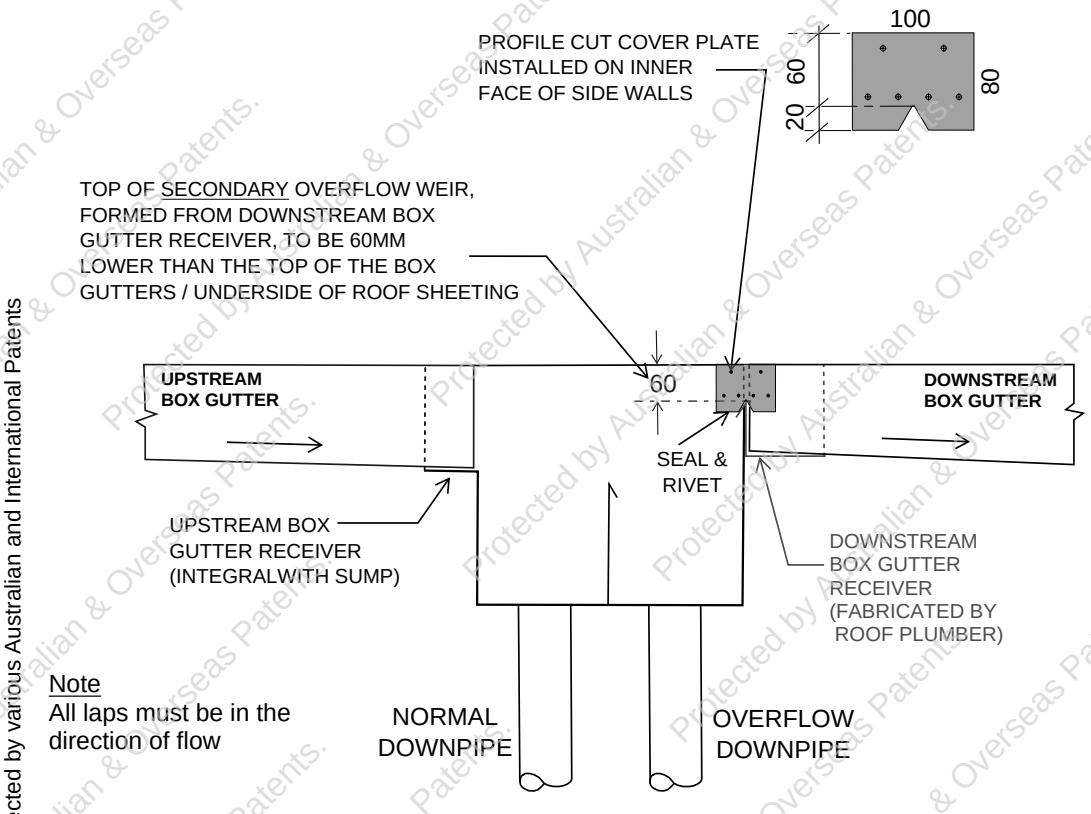
NOTES
1. Refer to the current Dam Buster P/L technical manual for installation details
2. Refer to detail SD0015A for Continuous Sump, WITHOUT an expansion joint
3. Refer to detail SD0015B for Continuous Sump, WITH an expansion joint

DIAGRAM 'Z'

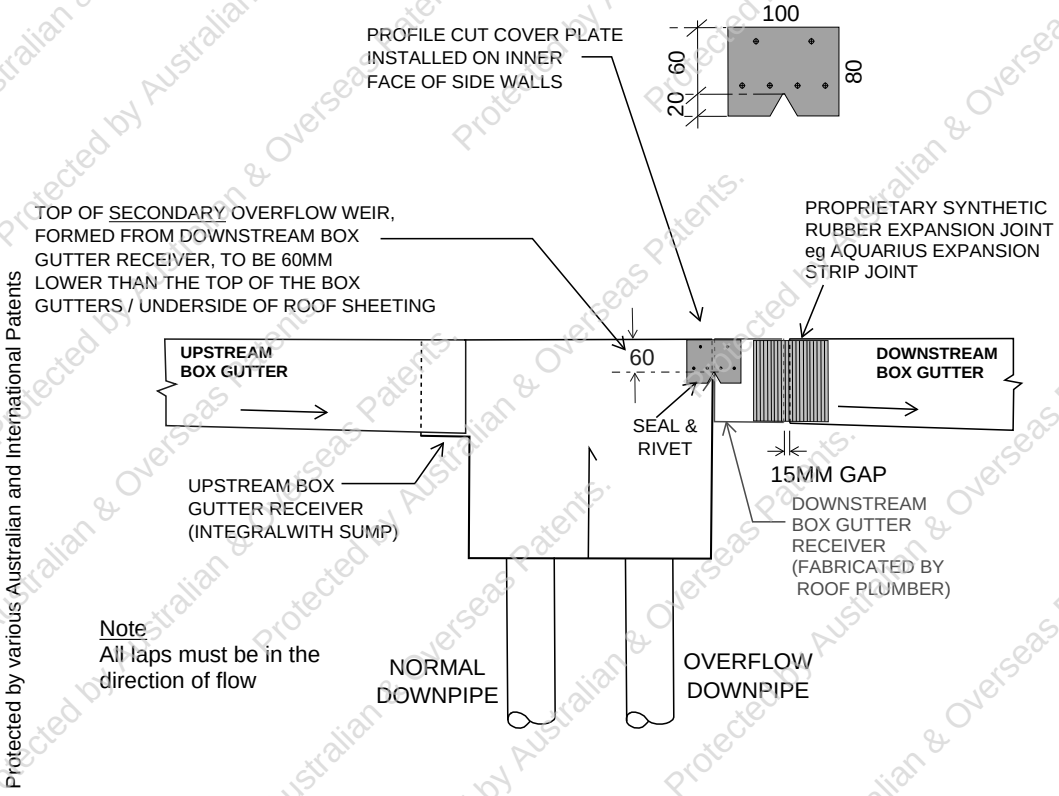
CONTINUOUS SUMP ARRANGMENT

DAM BUSTER

3.0 Installation Instructions for Dam Buster Sump (cont.)



Section X-X, as installed
(NO expansion joint)



Section X-X, as installed
(WITH expansion joint)

4.0 Installation Instructions for Dam Buster Upstream devices

4.1 Dam Buster Elbow

4.1 Installation instructions are provided below for Dam Buster Elbow, which facilitates a 90 degree change in direction of a box gutter.

IMPORTANT NOTE: Before proceeding you must always correctly size the Dam Buster Elbow to suit the design flow rate in litres / sec for the roof catchment area. Refer to the **Dam Buster Product Technical Statement** for design and Elbow flow capacities.

YOU WILL NEED:

- *3.2mm (1/8th inch) diam 3.2mm (1/8th inch) grip sealed appropriately corrosion resistant pop rivets 4.1*
- *Hand riveter or power riveter*
- *3.2mm (1/8th inch) drill bit and small battery drill*
- *Silicone gun and 1 x tube of Roof & Gutter Silicone (colour matched)*
- *Left and rigt hand snips*
- *Downpipe pop to suit sizing requirement*
- *2 or 4 (depending on size of the Dam Buster rainhead) x appropriately corrosion resistant wall fixings or screws (maximum 5.5mm in size)*
- *Spirit Level*
- *Clean rags*
- *Set Square*
- *Pencil*

NOTE – MECHANICAL FASTENERS
Dam Buster recommends only rivets be used as the mechanical fasteners (i.e. not screws) for joining box gutters and Dam Buster's devices. Rivets must always be installed such that the heads of the rivets are flush with the inner surface (water face) of the box gutter.

1. Measure the width of the box gutter that will be entering the Dam Buster Elbow. Select the appropriate Elbow to suit the box gutter width.

Dam Buster Elbow configuration options:

- Dam Buster **Fixed** Elbow (RH or LH) (see Diagram D)
- Dam Buster **Sliding** Elbow (RH or LH) (see Diagram E)

Notes

- The **Fixed** Elbow is suitable for NEW installations where the width of the box gutter does not change
- The **Sliding** Elbow is suitable for NEW installations where the Upstream gutter is not as wide as the downstream gutter OR

4.0 Installation Instructions for Dam Buster Elbow (cont)

4.1 Dam Buster Elbow (cont.)

- The Sliding Elbow is suitable for **RETROFITTING** in relation to an existing roof. Additionally, when retrofitting, an additional short 'stub tapered box gutter' is recommended to assist with ease of installation, noting that all box gutters must be lapped in the direction of fall i.e. the Upstream box gutter must be fitting into downstream box gutter. Refer to diagram D.

Dam Buster Fixed Elbow sizes for box gutter widths:

- ELB-200 Elbow
- ELB-300 Elbow
- ELB-400 Elbow
- ELB-500 Elbow
- ELB-600 Elbow

Dam Buster Sliding Elbow sizes for box gutter widths:

- ELB-200 Elbow–for box gutters width **200mm** only. Note, the sliding version in this case allows for minor adjustment only.
- ELB-300 Elbow – adjusts to suit upstream box gutters from **300mm to 200mm** in width.
- ELB-400 Elbow – adjusts to suit upstream box gutters from **400mm to 300mm** in width. .
- ELB-500 Elbow – adjusts to suit upstream box gutters from **500mm to 300mm** in width.
- ELB-600 Elbow – adjusts to suit upstream box gutters from **600mm to 400mm** in width.
- ***IMPORTANT NOTES***

  1) All Elbows are supplied as two-piece / Sliding by default. 'Fixed' Elbows can be supplied for special larger volume orders (over 20 units).
  2) The Dam Buster Elbow must not be used outside the above ranges.
  3) The Dam Buster Elbow can be used with a narrower width box gutter upstream compared to the downstream width.

2. The roof carpentry structure must provide adequate support for both the box gutter and the Dam Buster Elbow. The Dam Buster Elbow has in-built gradient of 1:200 which equates to 5mm over 1m and this needs to be accommodated by the carpentry support structure through to the outside edge of the parapet wall.

   NOTE: Some small amount of adjustment may be required to the roof carpentry support structure when fitting the adjustable component of the Dam Buster Sliding Elbow to ensure it sits neatly and maintains the 1:200mm gradient. Therefore, dry fitting of the product prior to final installation is highly recommended.

4.0 Installation Instructions for Dam Buster Elbow (cont)

4.1 Dam Buster Elbow (cont.)

3. New Installations – Fixed or Sliding Elbow
   The downstream box gutter should be installed first, followed by the Dam Buster Elbow. The upstream section of the Dam Buster Elbow can then be installed. This is the portion which sits wholly within the drop-down sump space of the device. It is recommended that the upstream section is dry fitted and marked in position with a pencil onto the downstream section of the device to ensure a neat and tidy fit. Silicone is then applied to the lapped portion of the downstream section of the device and the upstream section can then be fitted and riveted using the pre-drilled staggered rivet formation.

4. Apply 2 x Roof & Gutter silicone beads on both the base and walls of the box gutter receiving seal component of the Dam Buster Elbow to form a silicone 'sandwich' between the metal components. The box gutter can then be lowered into position on top of this seal with the end of the box gutter flush with the step (drop down) edge. Do not over-hang the box gutter into the sump space of the Dam Buster Elbow. It should finish flush with the step.

5. A staggered pattern of rivets at 40mm maximum intervals needs to be drilled and fixed into the base and side walls of the box gutter.

6. All exposed rivet heads to be neatly and thoroughly covered by Roof & Gutter silicone – either colour-matched if required or otherwise aluminium coloured.

5. Retrofitting installations – Sliding Elbow Only

   Dam Buster Elbows can either be installed prior to a box gutter installation (preferable) or, if required, they can be retrofitted into an existing box gutter installation.

   NOTE: If retrofitting of the Dam Buster Elbow is a necessity, then extra care is required in relation to the riveting and sealing of the connection between the existing box gutter and the Dam Buster Elbow. Refer to ***Diagram 6*** *for a recommended retrofitting method, which involves the usage of an additional 'stub box gutter' to assist with the installation process.*

6. Trimming the Dam Buster Elbow
   The depth of the Dam Buster Elbow must be determined by the depth of the Upstream ('Upper') box gutter, at its downstream end (i.e. at the Elbow). This depth must be determined using the **Dam Buster Product Technical Statement** and this design value sets the depth for the upstream end of the downstream (or 'Lower') box gutter.

4.0 Installation Instructions for Dam Buster Elbow (cont)

4.1 Dam Buster Elbow (cont.)

7. Fixings – Dam Buster Fixed Elbow & Dam Buster Sliding Elbow

   Apply 2 x Roof & Gutter silicone beads on both the base and walls of the box gutter receiving seal component of the Dam Buster Elbow. The box gutter can then be lowered into position on top of this seal with the end of the box gutter flush with the step (drop down) edge. No need to over-hang the box gutter into the sump space of the Dam Buster Side Outlet. It should finish flush with the step.

   A staggered pattern of rivets at 40mm maximum intervals needs to be drilled a and fixed into the base and side walls of the box gutter.

   All exposed rivet heads to be neatly and thoroughly covered by Roof & Gutter silicone – either colour-matched if required or otherwise aluminium coloured.

8. Advise Property Owners of the requirement of Australian Standards (AS/NZS 3500.3; Section 3.2. NOTE 3, and Paragraph M.5, Appendix M) for the regular maintenance of the roof drainage system (i.e. cleaning of any accumulated debris from the box gutter and rainhead on a regular basis).

   NOTE: It is the licensed roof plumber's responsibility to certify all works associated with the installation of the box gutters and Dam Buster devices in accordance with the specific requirements of that State or Territory.

4.2 Dam Buster Junctions

The Dam Buster Tee Junction and Dam Buster Corner Junction are installed is a similar manner to the Dam Buster Elbows.

4.0 Installation Instructions for Dam Buster Elbow (cont.)

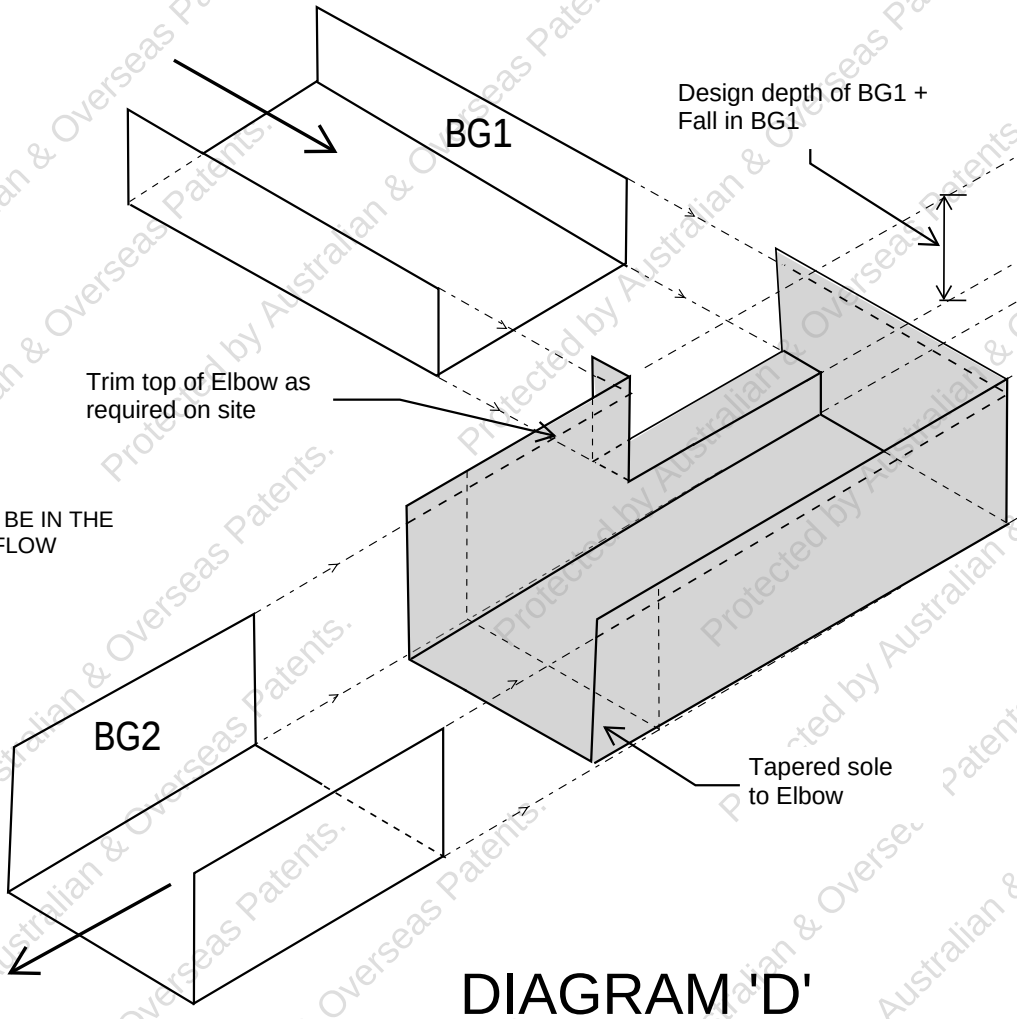


DIAGRAM 'D'

DAM BUSTER FIXED ELBOW

4.0 Installation Instructions for Dam Buster Elbow (cont)

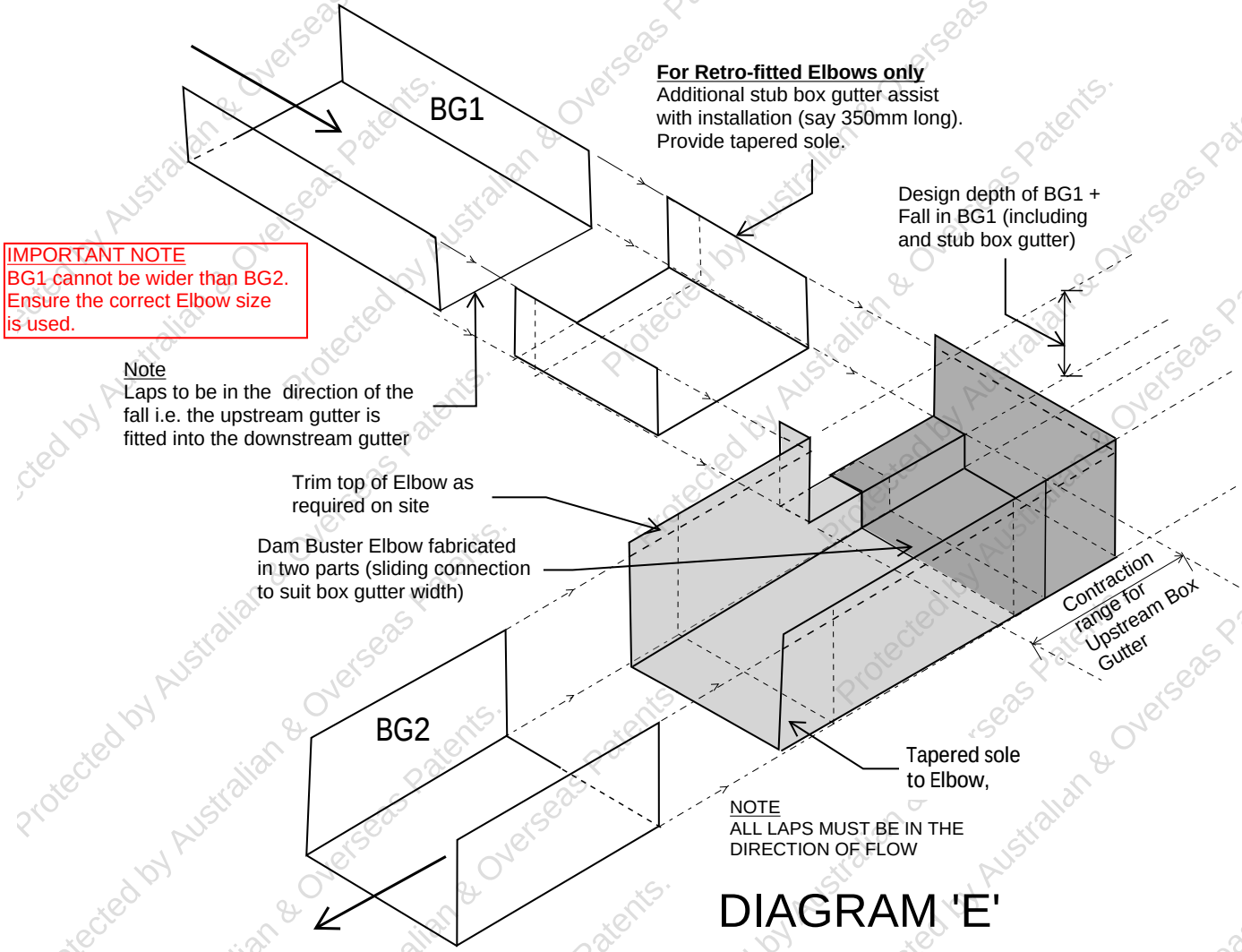


DIAGRAM 'E'

DAM BUSTER ADJUSTABLE ELBOW