



# Lonsdale PlasGard Design Guide

## Introduction

This Design Guide has been produced to assist specifiers and designers by illustrating typical installation details for sloped and vertical patent glazing. It is not exhaustive, but it does illustrate good practice for most applications and all details are in accordance with BS5516 for the design and installation of sloped and vertical patent glazing.

Users of this guide must exercise all reasonable care to ensure that the details and products of Lonsdale Metal Company Limited are suitable for the intended purpose. If in doubt, ask us. Having decided to specify Lonsdale Patent Glazing, to save you valuable drafting time, CAD drawings of typical installation details are available on disk or from our website : [www.roofglazing.co.uk](http://www.roofglazing.co.uk)

If you require assistance please contact our Technical Department.  
Lonsdale Metal Company Limited,  
Millmead Industrial Centre, Mill Mead Road, London. N17 9QU  
Telephone : 020 8801 4221                      Facsimile: 020 8801 1287

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## Contents

	Page		Page
Introduction	1	Drawings & CAD Code Index	7
Guide to Selection of Glazing Bars	2	PlasGard CAD drawings	8 to 25
Cleaning and Maintenance	3	GlazaTherm CAD drawings	26 to 31
Recommended further reading	3	Research and Development	32
Maximum span between supports	4		
Technical Summary	5		
Typical Specification	6		

PRINT OUT THIS DESIGN GUIDE FOR REFERENCE IF YOU WISH.  
CLICK THE **Pages** TAB TO SEE THUMBNAILS OF ALL THE PAGES IN THE PUBLICATION.  
TO PRINT OUT INDIVIDUAL PAGES, CLICK **File, Print** THEN CHECK **Current page**  
OR SELECT **Pages** RANGE AND CLICK **OK**. TO PRINT DRAWINGS TO THE SCALE INDICATED  
YOUR PRINT DRIVER MUST BE CAPABLE OF BEING SET AT 100%. LOOK IN YOUR PRINTER'S  
**Properties** FOR SETTINGS. CONTACT OUR TECHNICAL DEPARTMENT FOR FURTHER ADVICE.

# Guide to the Selection of Glazing Bars

## Scope

The data given indicates the maximum unsupported spans for the range of Lonsdale PlasGard Glazing Bars when subjected to the three combined loading conditions of 800, 1200 and 1800 N/ m<sup>2</sup>. They are broadly defined in Table 1 alongside typical site locations for these loadings.

Tables 2 and 3 respectively (page 4) give the spans for PLM17 and PLM20 bars carrying single and double glazing; they cover different double pitch roof angles and vertical glazing.

## Standards

The data has been calculated using the following Standards :

BS6399:Part 3:1988 British Standard loading for buildings

Code of practice for imposed loads.

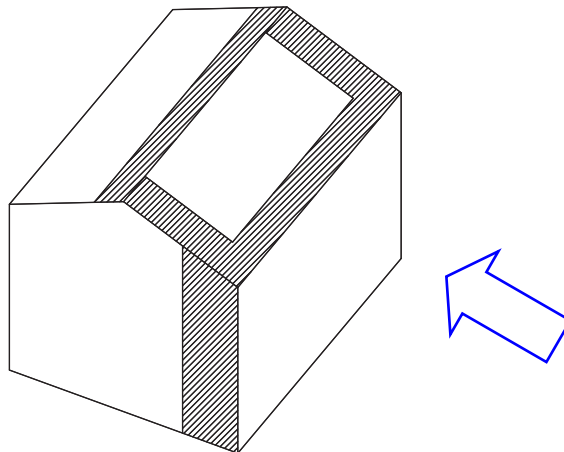
BS5516:1991 Code of practice for the design and installation of patent glazing.

BSCP3:Chapter V: Part 2:1972 Code of basic data for the design of buildings - wind loads.

## Loadings

Combinations of wind and snow loadings, together with the self-weight of bars and glass, have been considered in determining the maximum bar spans. Surface and local wind pressure coefficients (the latter relating to the higher loaded areas on the roof edges and wall corners - see the shaded area of fig 1), are both taken into consideration. Likewise, the effects of uniform and asymmetric snow loading are also included.

Fig1 Local high load areas (shaded) on the roof and wall glazing



## Location and Site Conditions

Table 1

Typical location	Maximum eaves height	Basic wind speed	Dynamic wind pressure	Basic snow loading	Combined wind & snow loading
	m	m/s	N/m <sup>2</sup>	N/m <sup>2</sup>	N/m <sup>2</sup>
City centre	4.0	44	400	400	800
Outskirts of large city	5.0	46	650	550	1200
Open country	6.0	50	1250	550	1800

# Guide to the Selection of Glazing Bars - continued

## Limitations

Tables 2 and 3 (page 4) are restricted to :

- Glazed walls and double pitched roofs of rectangular clad buildings of height / width ratios up to 6 : 1 and length / width ratios up to 4 :1.
- Two edge support of glass on bars spaced at 600mm.
- Single glazing using 6mm polished or 7mm wired cast glass.
- Hermetically sealed double glazed units, with 6mm thick float, toughened or laminated glass in any combination.

## Failure Conditions

The glazing bar spans given will not fail due to either excessive deflection or stressing of the components, in accordance with the above standards.

## Technical Support

Care should be taken in applying the above data to different site locations, conditions, building size or roof types (including canopies ). In such instances, Lonsdale Metal Company will be pleased to give further advice, upon request.

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## Cleaning and Maintenance

Recommended procedures can be found on our website [www.roofglazing.co.uk](http://www.roofglazing.co.uk) and in BS5516 - Code of practice for the design & installation of sloping and vertical patent glazing. In addition, if materials are coated with an architectural finish e.g. polyester powder paint, advice should be sought from the manufacturers / applicator of the process.

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## Recommended further reading

BS5516 - Code of practice for the design & installation of sloping and vertical patent glazing  
BS6399:Part 3 - Loading for buildings - Code of practice for imposed loads  
BS CP3 Chapter V Part 2 - Code of basic data for the design of buildings - Wind loads  
NBS Specification H10 Patent Glazing

# Guide to the Selection of Glazing Bars - continued

## Maximum span between supports (metres)

NB: The overall bar length may exceed these values in order to provide an overhang at the eaves and/or ridge.

### Single Glazed Bars

Table 2

Combined basic wind & snow loading N/m <sup>2</sup>	Glazing Bar	Angle of Glazing relevant to the horizontal					
		15°	22.5°	30°	45°	60°	Vertical
800	PLM17	2.33	2.42	2.40	2.59	2.59	2.44
	PLM20	3.68	3.93	3.92	3.98	3.98	3.87
1200	PLM17	1.75	1.92	1.91	2.20	2.13	1.94
	PLM20	3.19	3.44	3.43	3.68	3.62	3.45
1800	PLM17	1.20	1.31	1.30	1.49	1.48	1.38

### Double Glazed Bars

Table 3

Combined basic wind & snow loading N/m <sup>2</sup>	Glazing Bar	Angle of Glazing relevant to the horizontal					
		15°	22.5°	30°	45°	60°	Vertical
800	PLM17	-	-	-	-	-	-
	PLM20	3.01	2.98	2.98	3.04	3.07	3.08
1200	PLM17	-	-	-	-	-	-
	PLM20	2.61	2.83	2.82	2.84	2.82	2.74
1800	PLM17	-	-	-	-	-	-
	PLM20	2.13	2.29	2.28	2.45	2.42	2.31

Note: For PLM15 and PLM 15R refer sales office

# Technical Summary

## Patent Glazing Bars

### Specification

Glazing Bars, Cappings, Beads and Fittings are extruded aluminium alloy 6063-T6 to BS1474. Fasteners provided are either stainless steel to BS304515 Grade A2 or mild steel bright zinc plated. Gaskets are extruded Thermo Plastic Rubber quality 98625 to BS4255:Part1:1986 Grade C.

### Performance

All systems are designed to conform with the requirements of BS5516 when installed within the manufacturers recommendations. A guide to maximum spans is given on page 4 of the Design Guide and should be referred to prior to planning an installation.

### Fixing

Fixing to timber is directly through the channels at the top of the glazing bars with two No. 10 x 1.5 inch bright zinc plated wood screws and a sliding shoe with wood screws at the bottom end. Fixing to metal is with M8 Single Hole Fixing Shoes positively fixed at the top and sliding at the bottom end. Dissimilar metals should be isolated to avoid bi-metallic corrosion

### Appearance

Materials are supplied Mill Finished as standard. A range of architectural finishes is available including polyester powder coating to BS6496 in standard RAL or BS colour ranges.

### Ventilation

May be achieved either through GlazaTherm, our top hung roof ventilator, or by casement vents in vertical applications. Various factory fitted opening mechanisms are available including manual, pole or cord operated, electrical, thermostatic or smoke activated controls.

### Infill

All popular specifications can be accommodated including 6 / 7mm Single Glazing, 24mm and 28mm Double Glazed Sealed Units or 10mm,16mm or 25mm Polycarbonate Sheeting. Other infills should be discussed with our technical department. Double Glazed combinations should feature a suitable "step" to the bottom edge to avoid thermal breaking.

### Building Regulations

Please visit our website [www.roofglazing.co.uk](http://www.roofglazing.co.uk) for guidance and compliance with the Regulations relating to fire, non-fragility, thermal and air-tightness performance.

# Typical Specification

See [www.roofglazing.co.uk](http://www.roofglazing.co.uk) for Quick Specifications which cover most popular typical applications or contact our Technical Support for advice. We recommend you consider the National Building Specification H10 Patent Glazing. If you do not have access to a copy they can be contacted at:-

NBS Services,  
Mansion House Chambers,  
The Close, Newcastle upon Tyne NE1 3RE  
Tel : 0191 232 9594  
Fax : 0191 232 5714

## Typical Specification for Patent Glazing Bars

NB: <i>Italics</i> show where you must insert the detail relevant to your project	
Patent Glazing:	<i>To entrance canopy north elevation</i>
Drawing Reference:	<i>Drawing Numbers 123, 124, 125</i>
Supporting Structure:	<i>Timber at ridge, hip, intermediate and eaves.</i>
Patent Glazing System:	To BS5516, and as specified in this section.
Manufacture & Reference:	Lonsdale Metal Company Limited, London N17 9QU Telephone: 020 8801 4221 Facsimile : 020 8801 1287 Reference <i>PLASGARD PLM17</i>
Type:	<i>Inverted 60mm wide inverted "T" bar with continuous screw on capping and gasketry.</i>
Glazing Bar: Material Finish Colour Minimum film thickness Spacing: Slop: Bottom overhang lap:	Aluminium alloy 6063-T6 to BS1474 <i>Polyester Powder Paint to BS6496</i> <i>White M4A0001</i> <i>40 microns</i> <i>Nominally 600mm glazing bar c/c</i> <i>30 degrees</i> <i>75mm</i>
Pane/infilling material(s):	<i>16mm clear triple wall polycarbonate, blown free or swarf and taped both ends with breather tape.</i>
Incorporated components:	<i>U section sheet closures to bottom end.</i>

Please note : Whilst we are pleased to assist, the above example is given for guidance only. Responsibility remains with Specifiers to exercise all reasonable care ensuring our products are suitable for their requirements and correctly specified.

# Drawings and CAD Code Index

## PlasGard

Drawing number CAD code	Description	Page
PLM15	PLM15 profile	8
	PLM15/R profile	8
PLM17	PLM17 profile ( to special order )	9
PLA20	PLM20 profile	9
PLAMFS	Metal fixing shoe ( also fits PLM17 )	9
PLA11MY	Top fixing to metal	10
PLA11TY	Top fixing to timber	10
PLA12MY	Eaves fixing to metal	11
PLA12TY	Eaves fixing to timber	11
PLA13MY	Valley gutter aluminium or steel	12
PLA13TY	Valley gutter detail lead lined to timber	13
PLA14X	Parapet to brickwork	14
22Y	Glass jointing	14
PLA18MY	Hip detail to metal	15
PLA18TY	Hip detail to timber	16
PLA19MY	Ridge detail to metal	17
PLA19TY	Ridge detail to timber	18
PLA21MY	Intermediate roof detail to metal	19
PLA21TY	Intermediate roof detail to timber	19
PLA23MY	Tiered roof detail to metal	20
PLA23TY	Tiered roof detail to timber	21
PLA24MY	Vertical head fixing to steel	22
PLA24TY	Vertical head fixing to timber	22
PLA25MY	Vertical cill to metal	23
PLA25TY	Vertical cill to timber	23
PLA26X	Vertical jamb to brickwork	24
PLA27X	Internal corner to vertical	24
PLA28X	External corner to vertical	24
PLA29Y	Vertical intermediate detail	25
PLA31X	Verge	25
GLAZ1PG*	Top & bottom detail two edge support patent glazing	28
GLAZ2PGCW*	Side rail into typical patent glazing or sloped curtain wall	29
GLAZ3CW*	Bottom detail into typical curtain wall transom	30
GLAZ4CW*	Head detail into typical curtain wall transom	31
GLAZ5PG*	Vent top detail with glass above	31

\*GlazaTherm – For 24 – 28mm Double Glazed Units or 25mm polycarbonate

# PlasGard

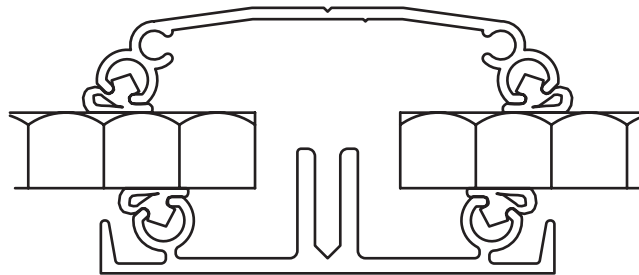
PlasGard offers a range of glazing bars and accessories to suit solid and multi-wall polycarbonates and plastics. Approved by major sheet manufacturers, PlasGard incorporates the essential design features recommended for two edge support glazing. PlasGard also offers an economical "capped" bar alternative to SkyGard for single or double glazing with glass.

- Screw down aluminium cappings to safely clamp sheeting.
- Quick and easy to use.
- Economy without sacrifice to quality or performance.
- Gaskets chemically compatible with polycarbonate.

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## PLM15 Profile

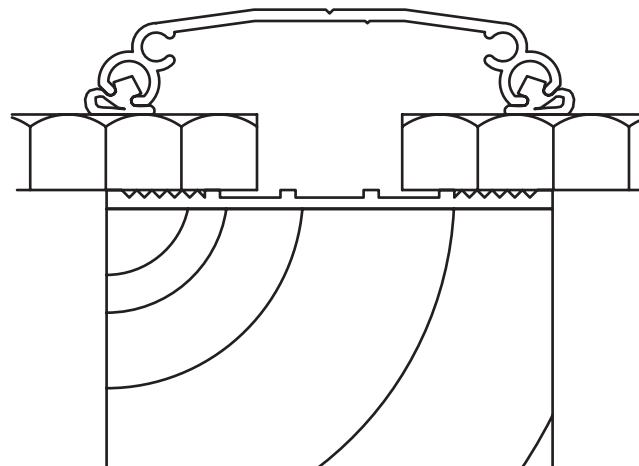
CAD Code PLM15



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## PLM15R Profile

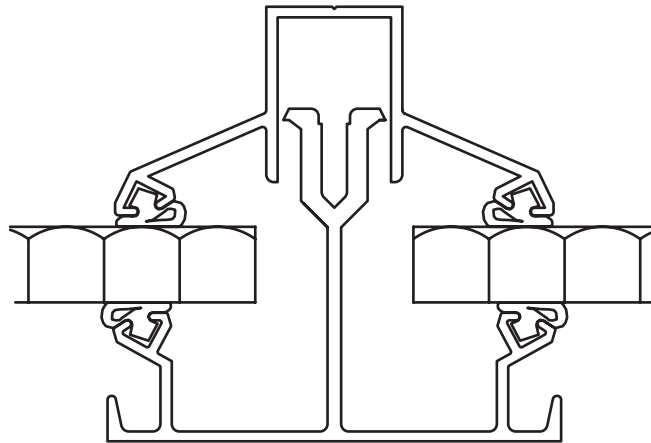
CAD Code PLM15R





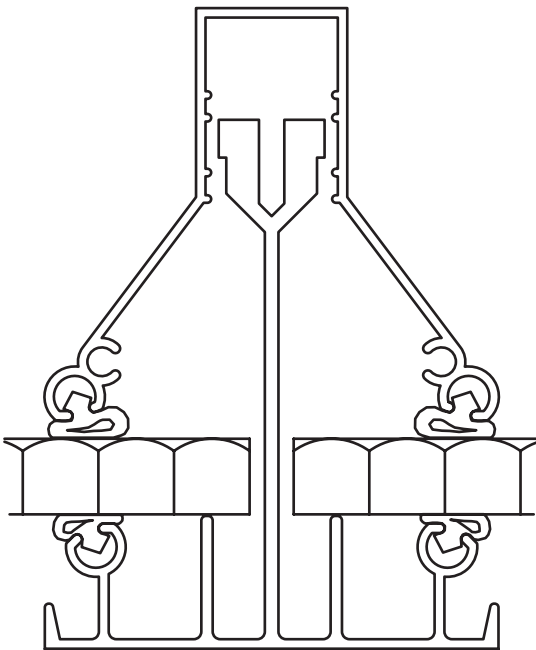
PLM17 Profile – TO SPECIAL ORDER

CAD Code PLM17



PLM20 Profile

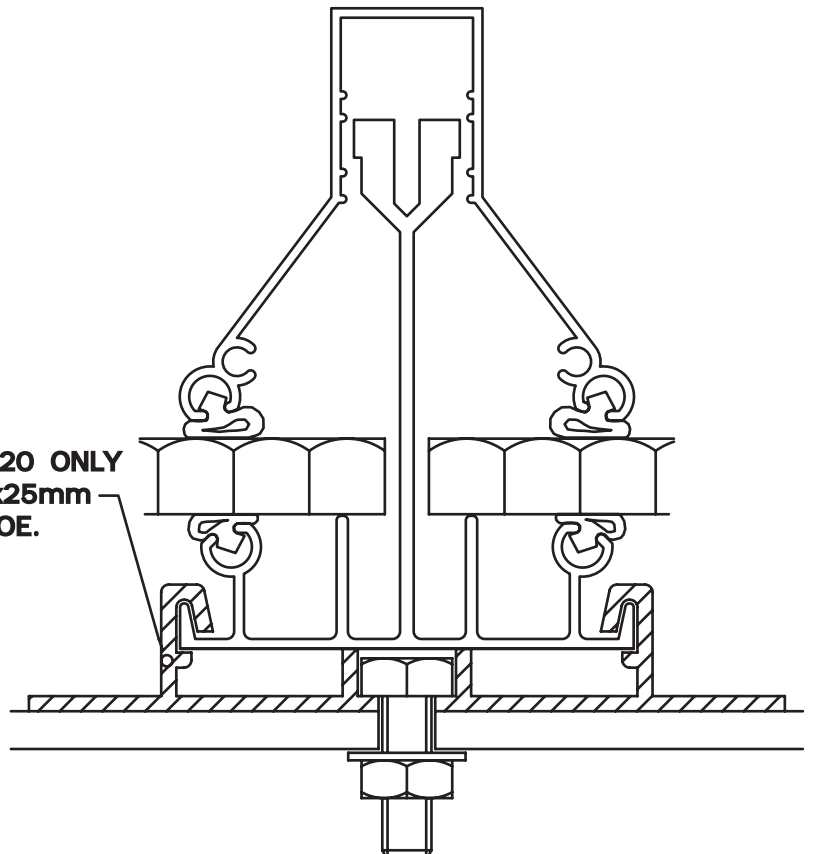
CAD Code PLA20



Metal fixing shoe

Shown with PLM20 profile  
Shoe also fits PLM17 profile  
CAD Code PLAMSF

**WHEN FIXING TO RHS  
STEEL, SUITABLE TEK  
SCREWS MAY BE USED.**

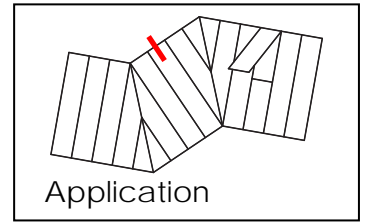
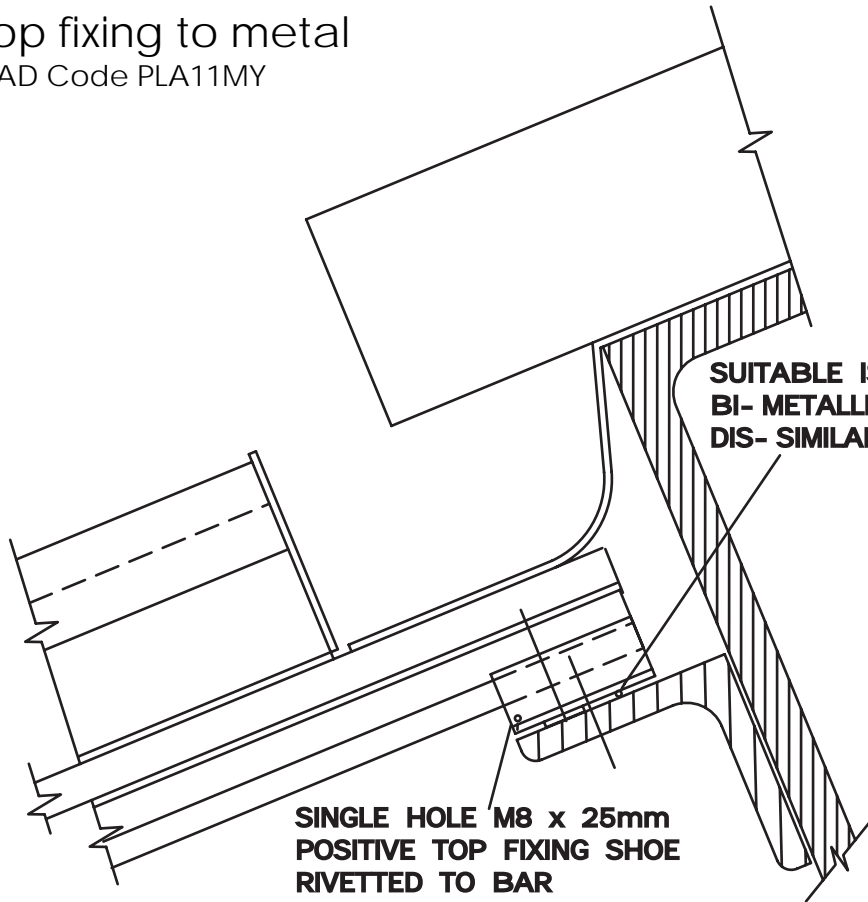


**FOR PLM17 AND 20 ONLY  
SINGLE HOLE M8x25mm  
METAL FIXING SHOE.**

# PlasGard

## Top fixing to metal

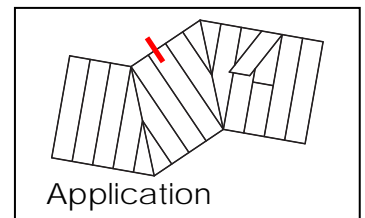
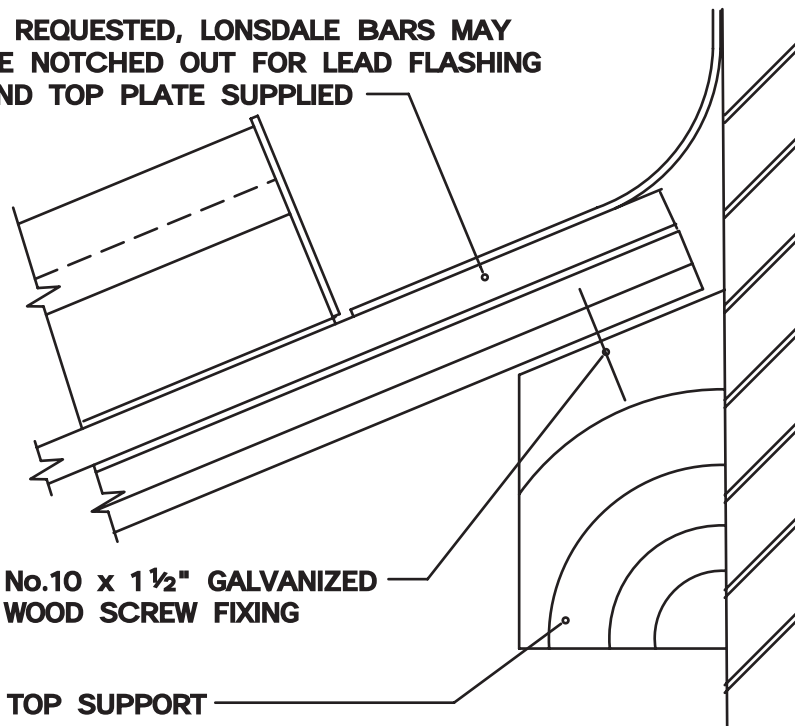
CAD Code PLA11MY



## Top fixing to timber

CAD Code PLA11TY

**IF REQUESTED, LONSDALE BARS MAY BE NOTCHED OUT FOR LEAD FLASHING AND TOP PLATE SUPPLIED**

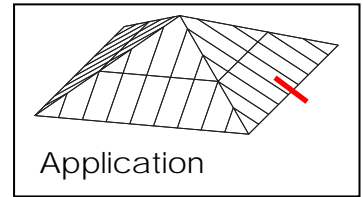


Scale of views 1-2

# PlasGard

## Eaves fixing to metal

CAD Code PLA12MY

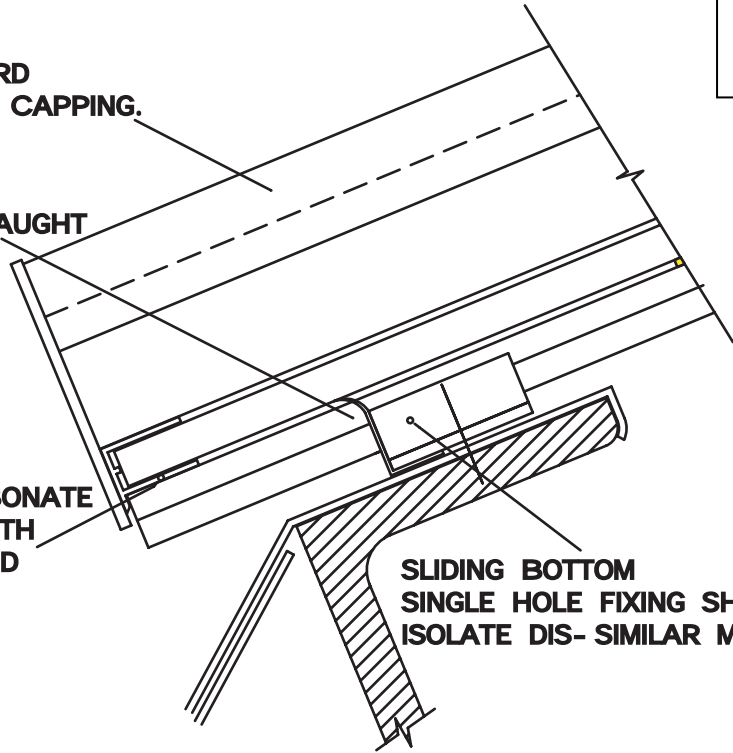


**LONSDALE PLASGARD  
GLAZING BAR AND CAPPING.**

**BLACK PVC- U DRAUGHT  
EXCLUDER**

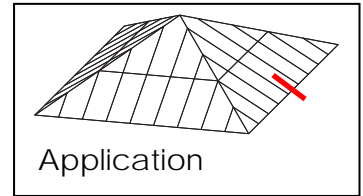
**ENDS OF POLYCARBONATE  
PANELS FINISHED WITH  
BREATHER TAPE AND  
SHEET CLOSURE.**

**SLIDING BOTTOM  
SINGLE HOLE FIXING SHOE.  
ISOLATE DIS- SIMILAR METALS.**



## Eaves fixing to timber

CAD Code PLA12TY



**LONSDALE PLASGARD  
GLAZING BAR AND CAPPING**

**GASKET**

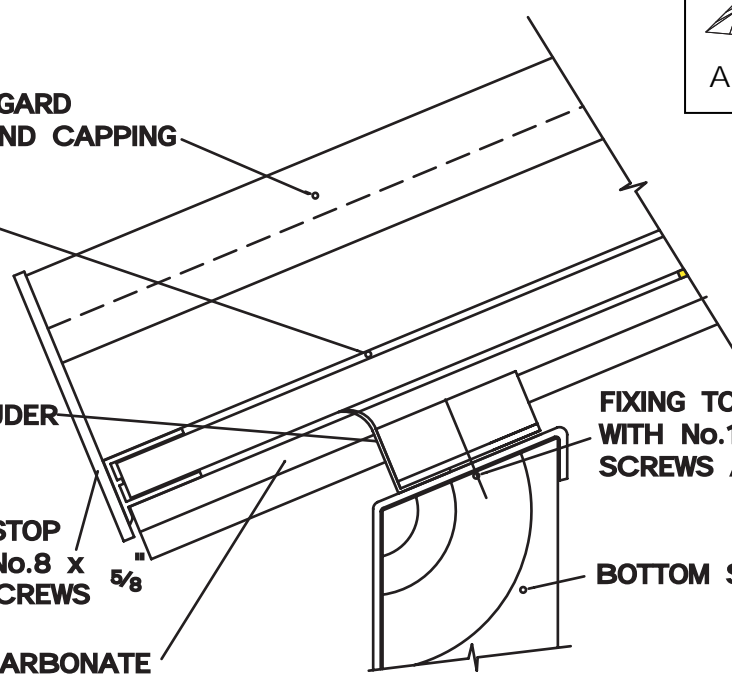
**BLACK PVC- U  
DRAUGHT EXCLUDER**

**LONSDALE END STOP  
SECURED WITH No.8 x  
5/8" SELF TAPPING SCREWS**

**ENDS OF POLYCARBONATE  
PANELS FINISHED WITH  
BREATHER TAPE AND  
SHEET CLOSURE**

**FIXING TO TIMBER  
WITH No.10 x 1 1/2" WOOD  
SCREWS AT 82 C/CTS**

**BOTTOM SUPPORT**

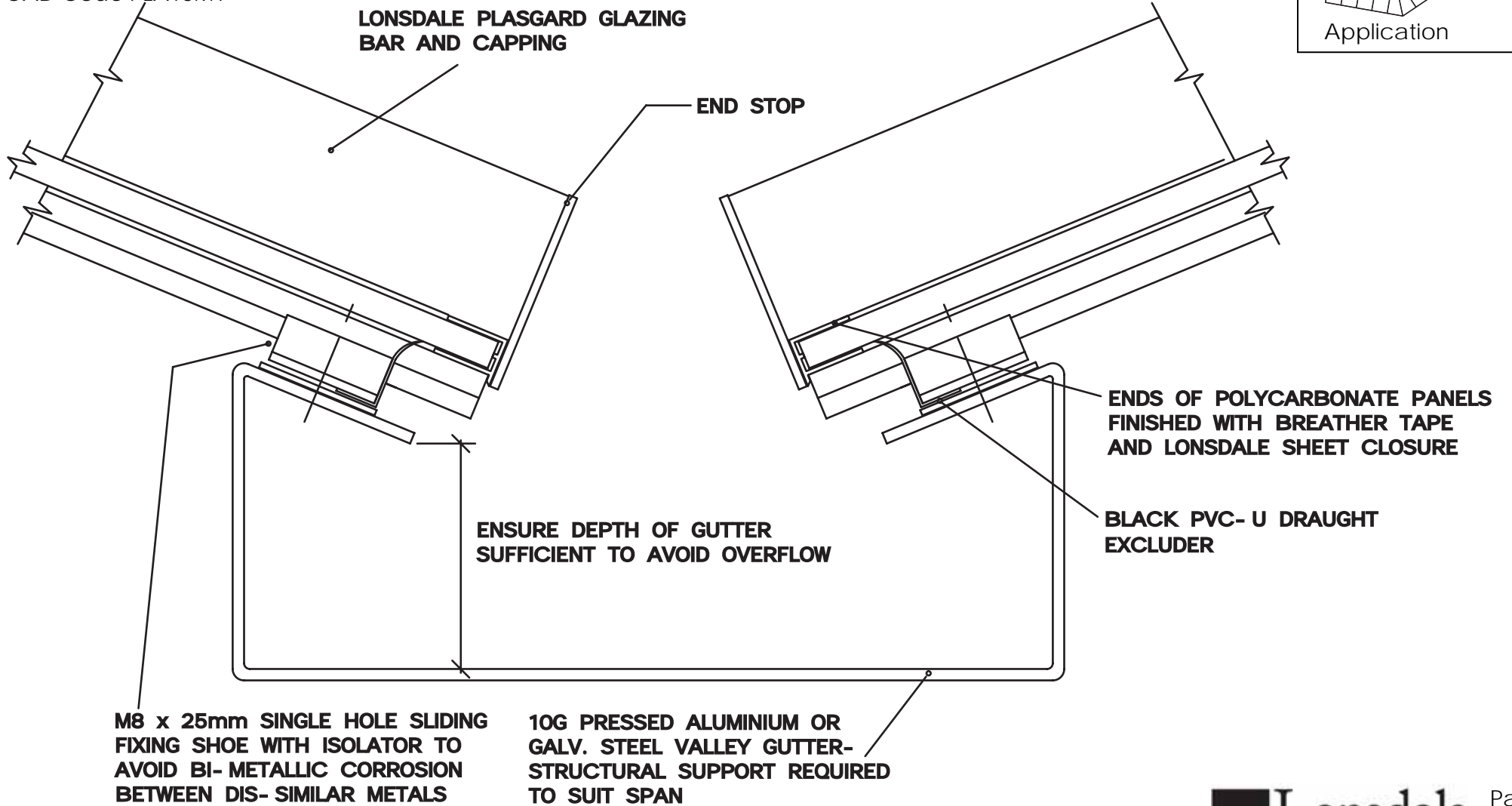
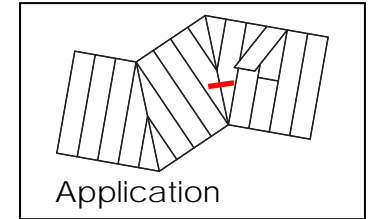


Scale of views 1-2

# PlasGard

## Valley gutter aluminium or steel

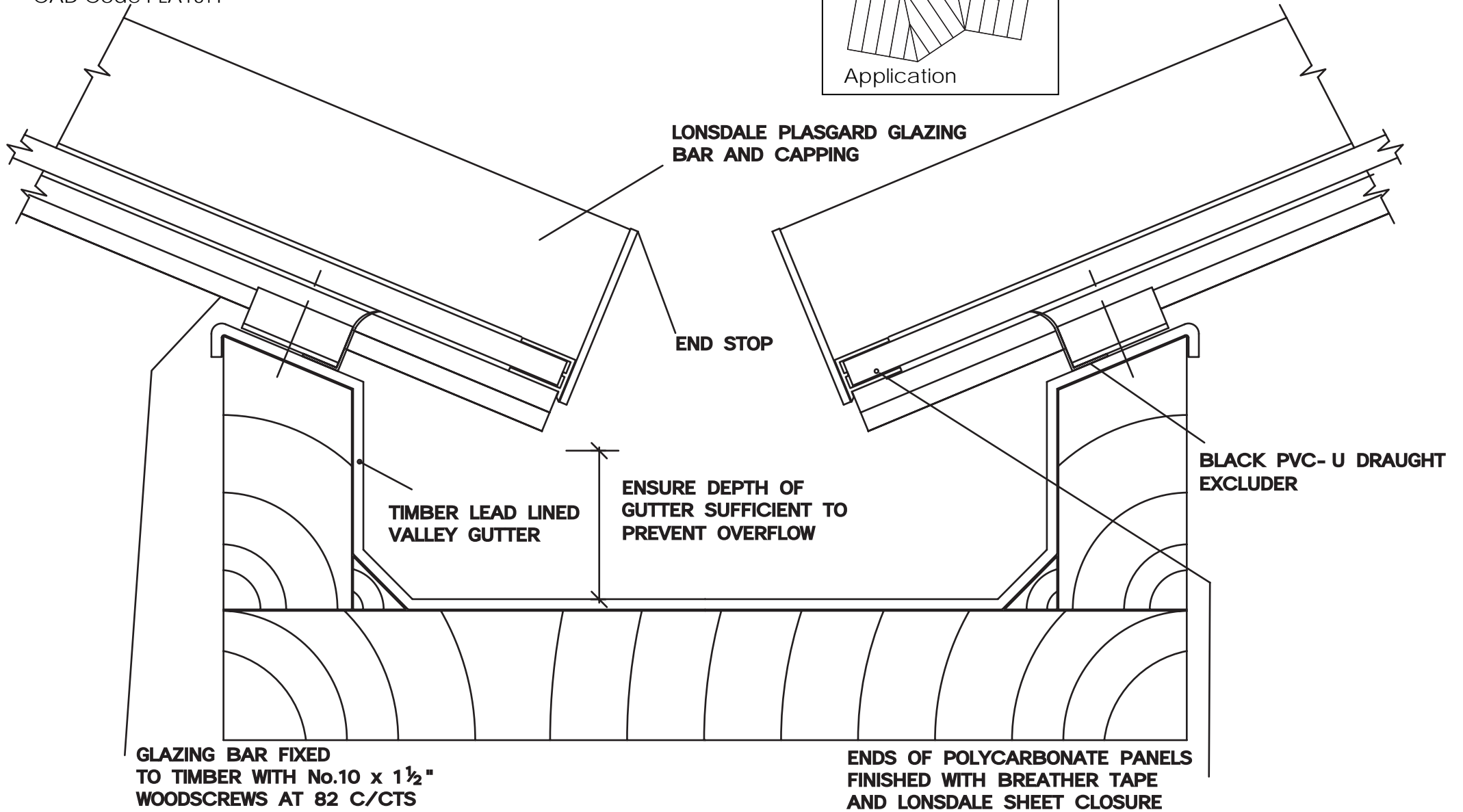
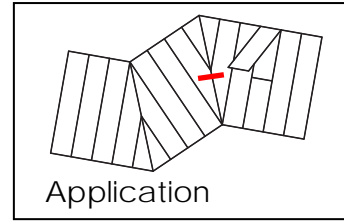
CAD Code PLA13MY



Scale of view 1: 2

# PlasGard - Valley gutter detail lead lined to timber

CAD Code PLA13TY

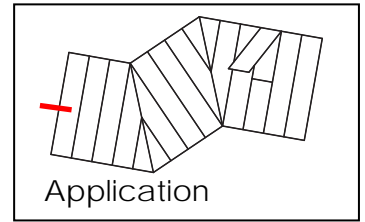
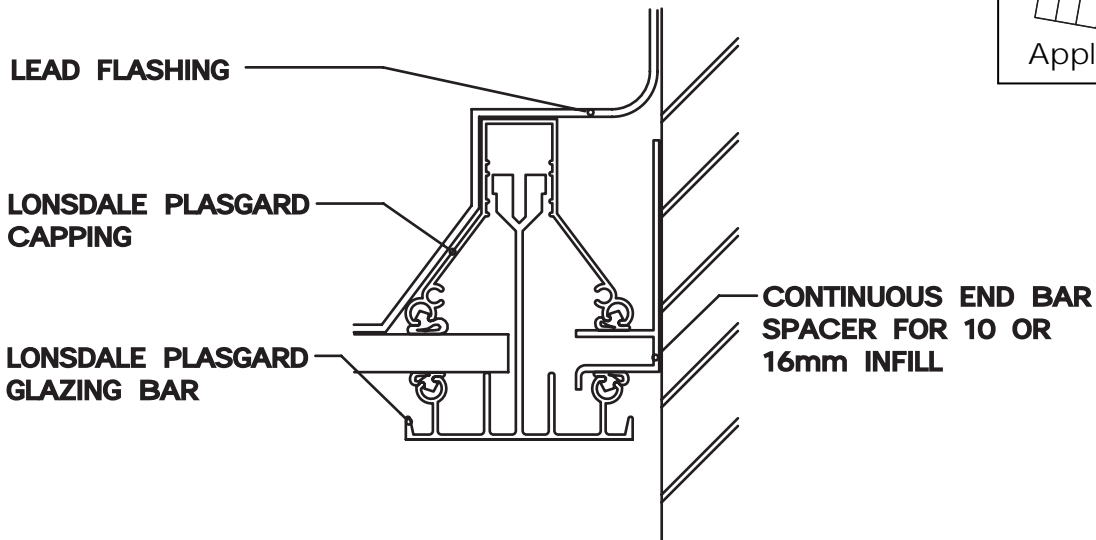


Scale of view 1: 2

# PlasGard

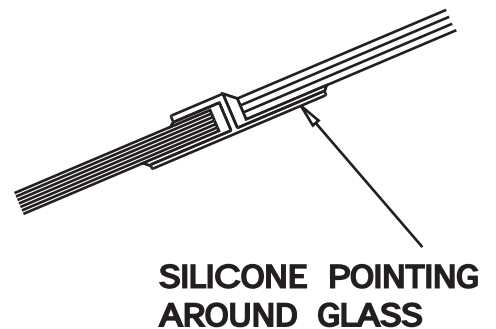
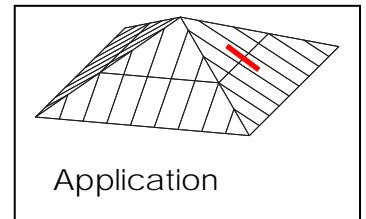
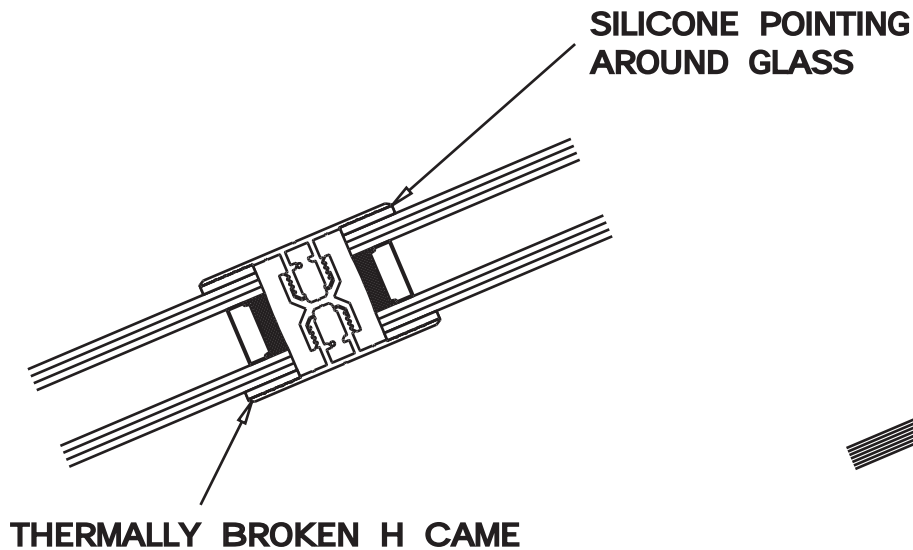
## Parapet to brickwork

CAD Code PLA14X



## Glass jointing – single glazing

CAD Code 22Y

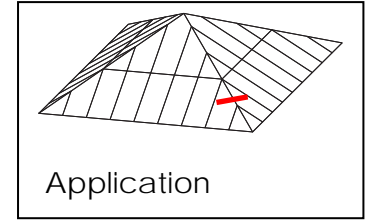


Scale of views 1-2

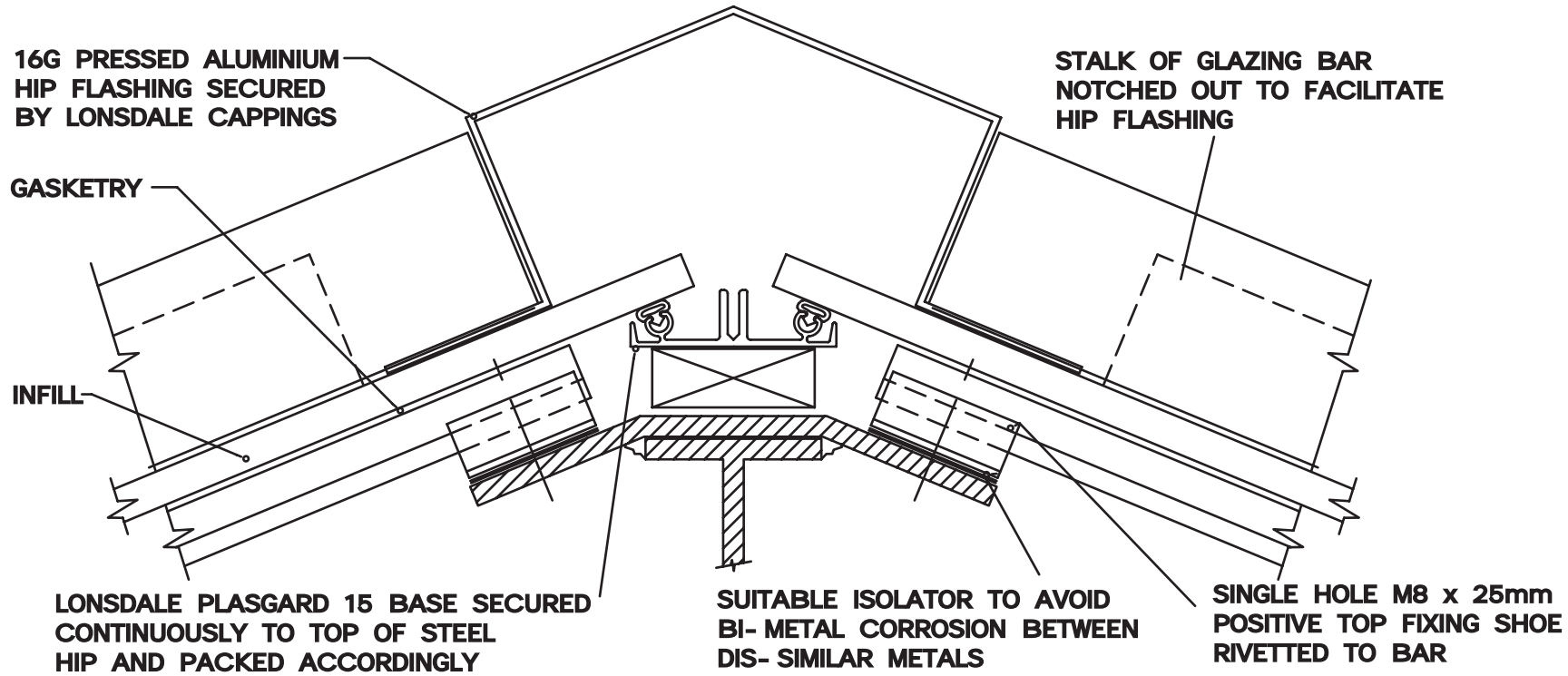
PlasGard

Hip detail to metal

CAD Code PLA18MY



Application

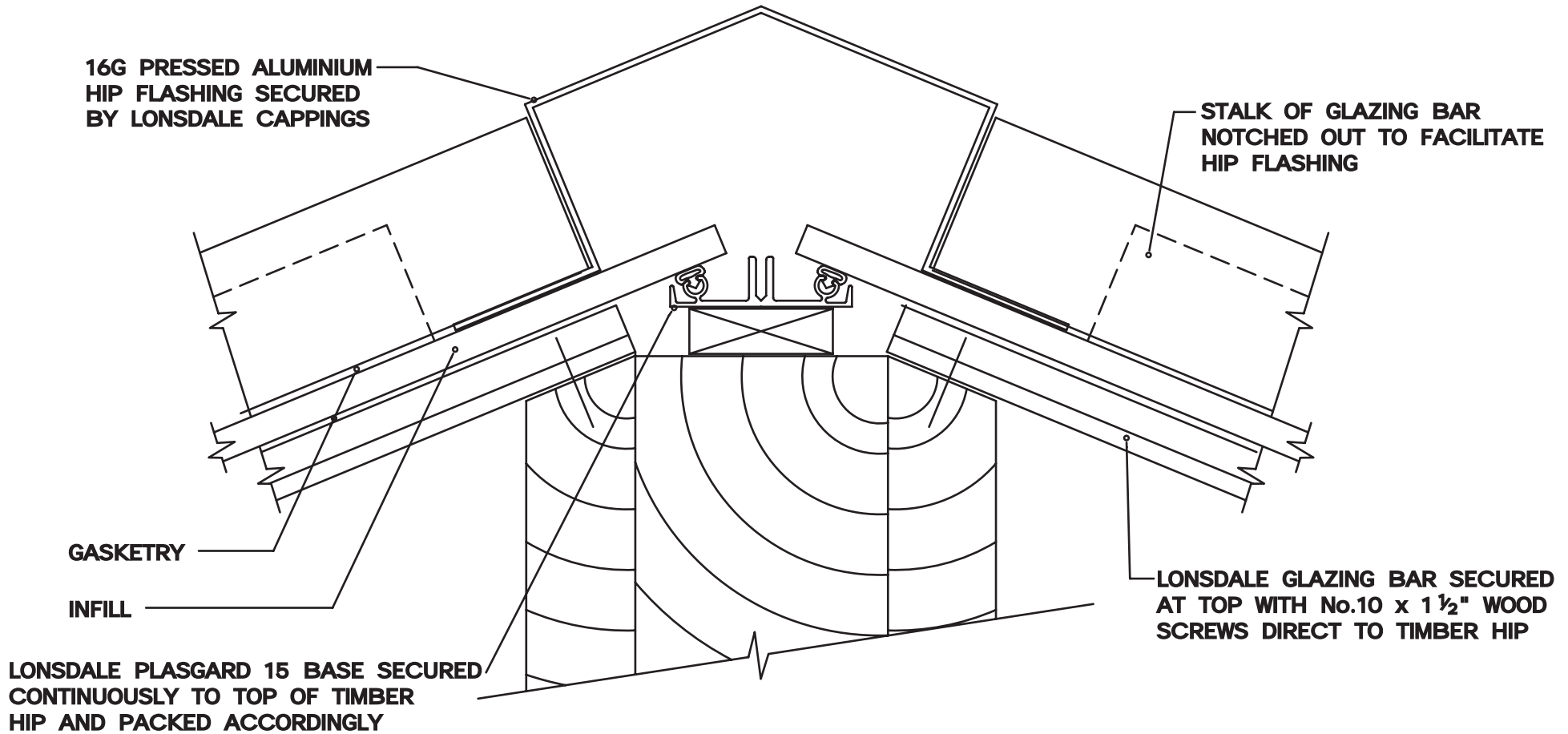
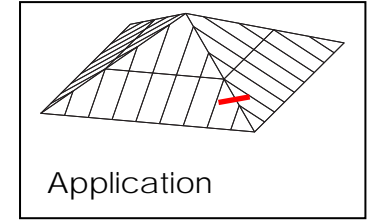


Scale of view 1: 2

PlasGard

Hip detail to timber

CAD Code PLA18TY



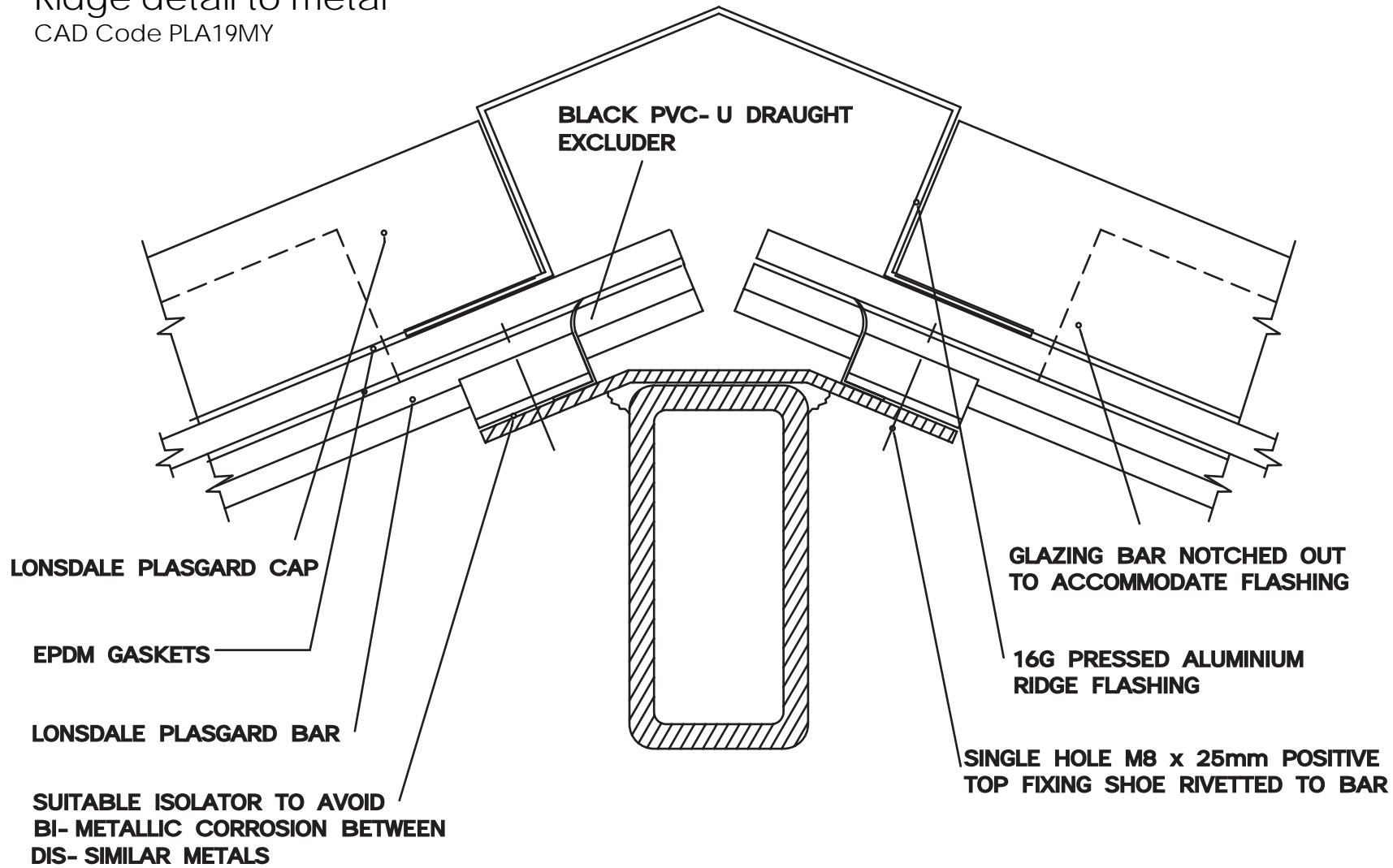
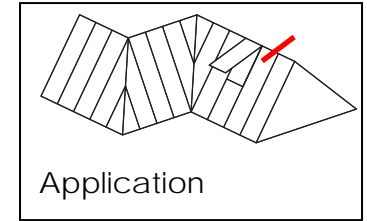
Scale of view 1: 2



# PlasGard

## Ridge detail to metal

CAD Code PLA19MY

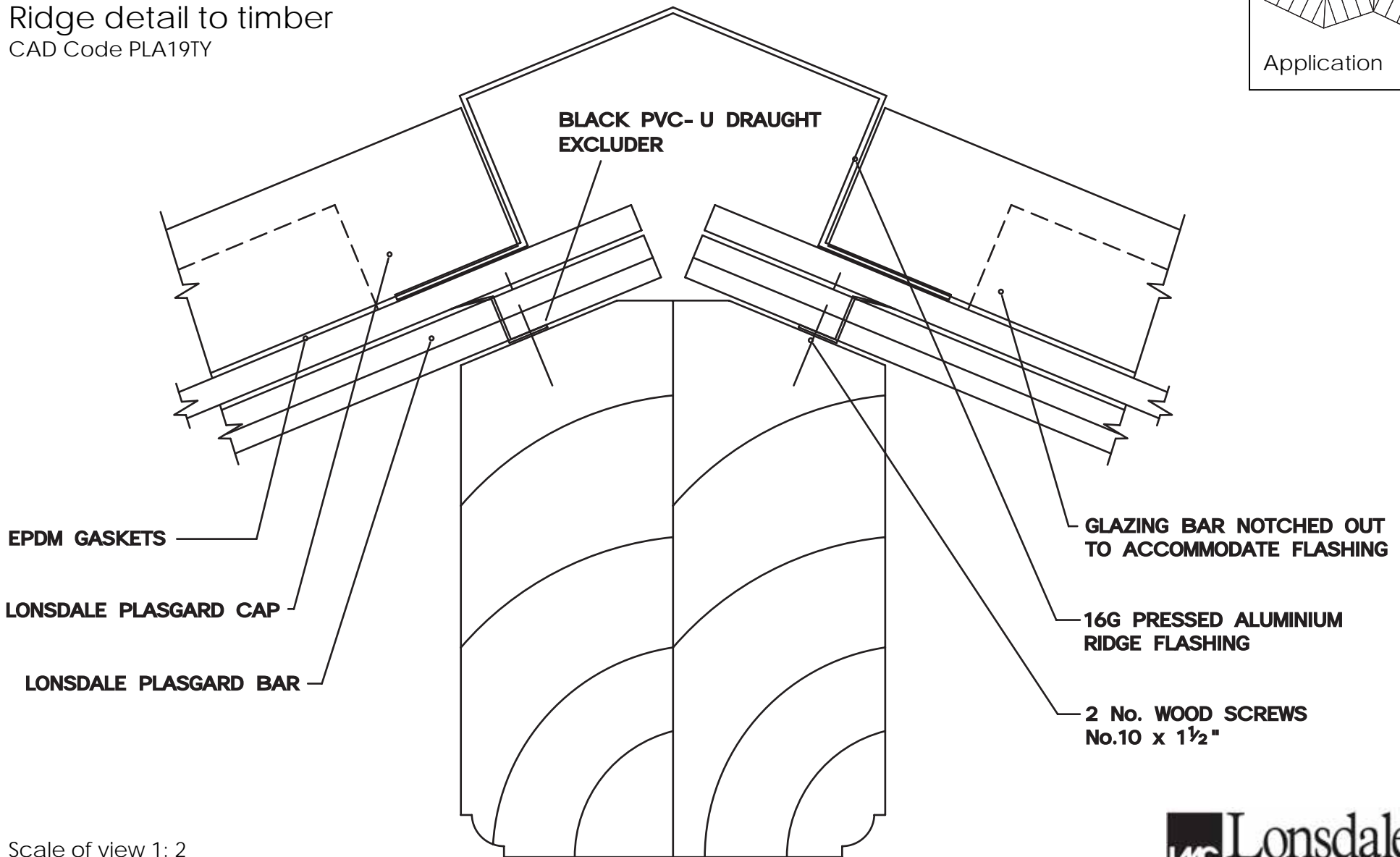
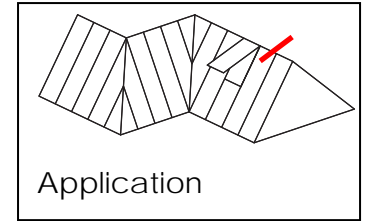


Scale of view 1: 2

# PlasGard

## Ridge detail to timber

CAD Code PLA19TY

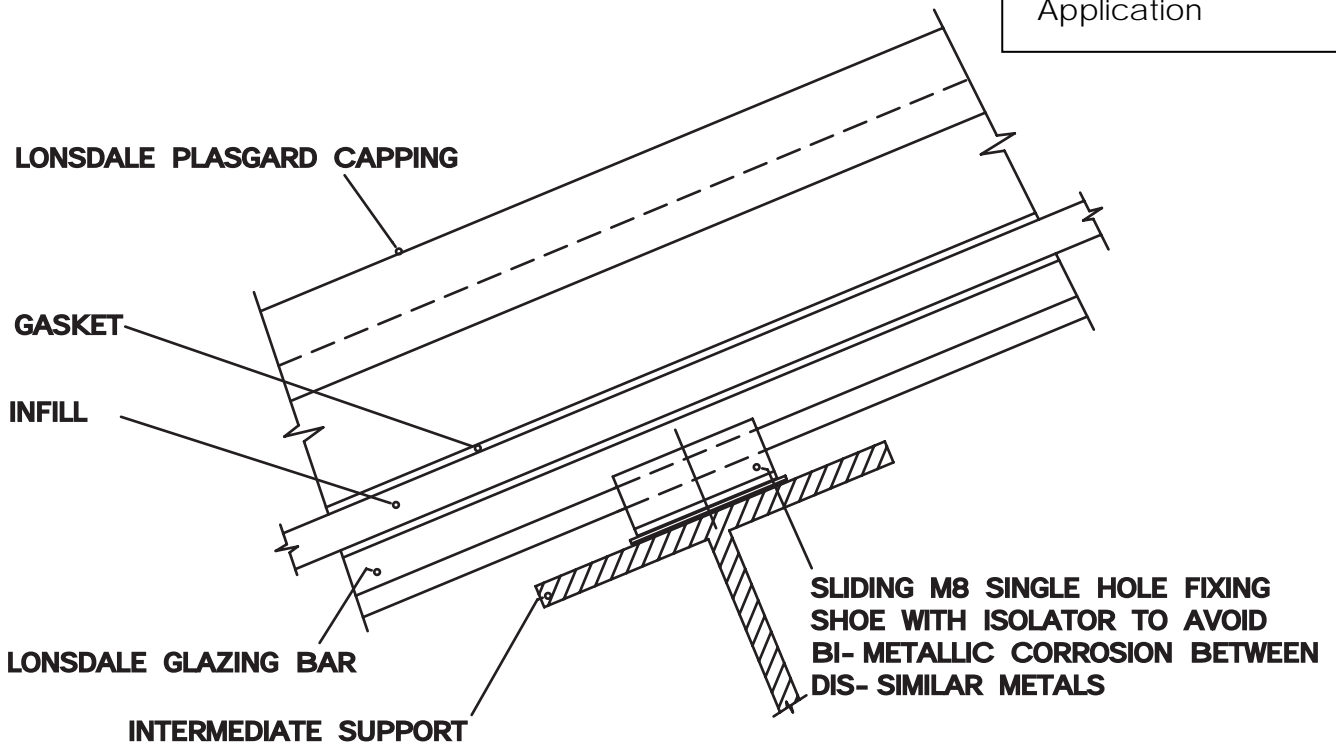
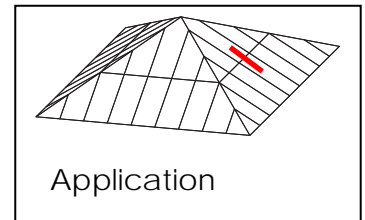


Scale of view 1: 2

# PlasGard

## Intermediate roof detail to metal

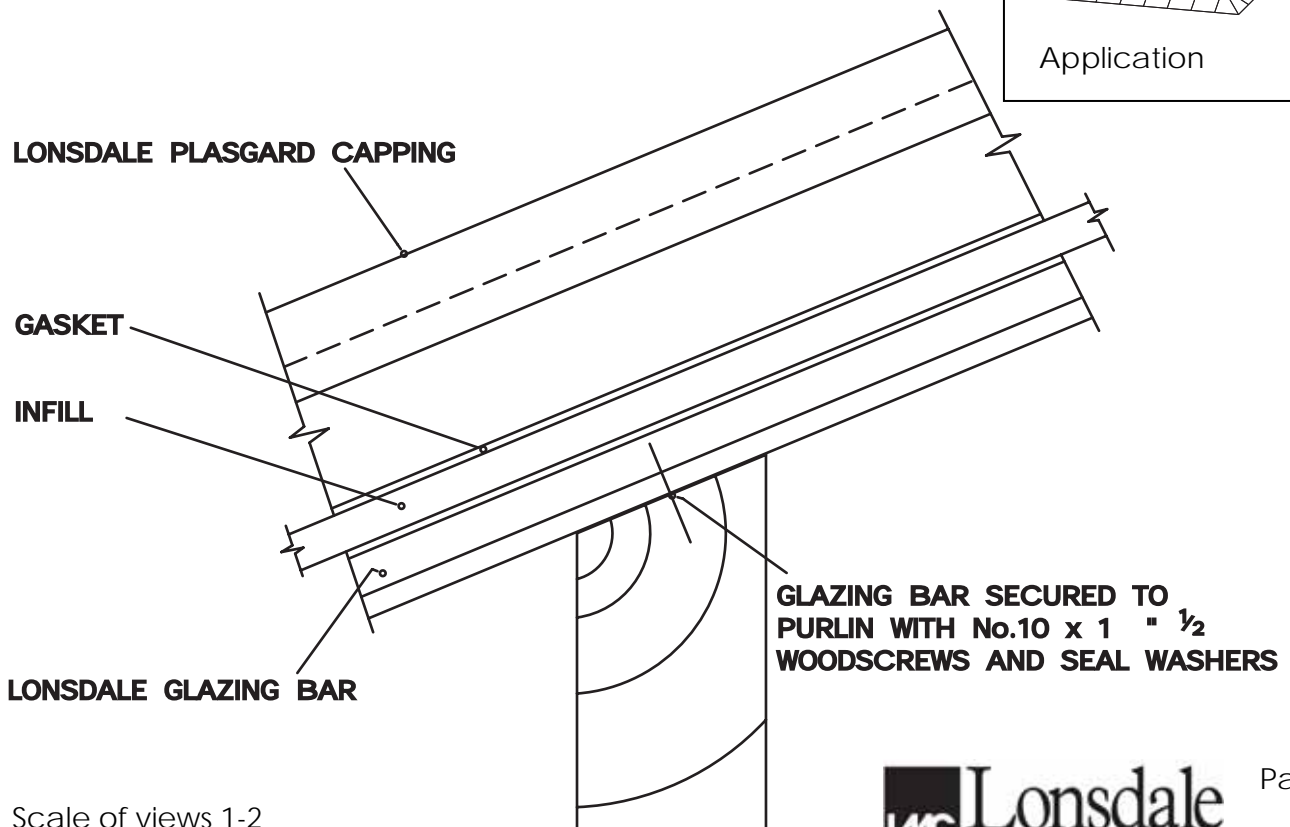
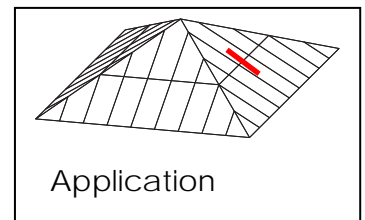
CAD Code PLA21MY



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## Intermediate roof detail to timber

CAD Code PLA21TY

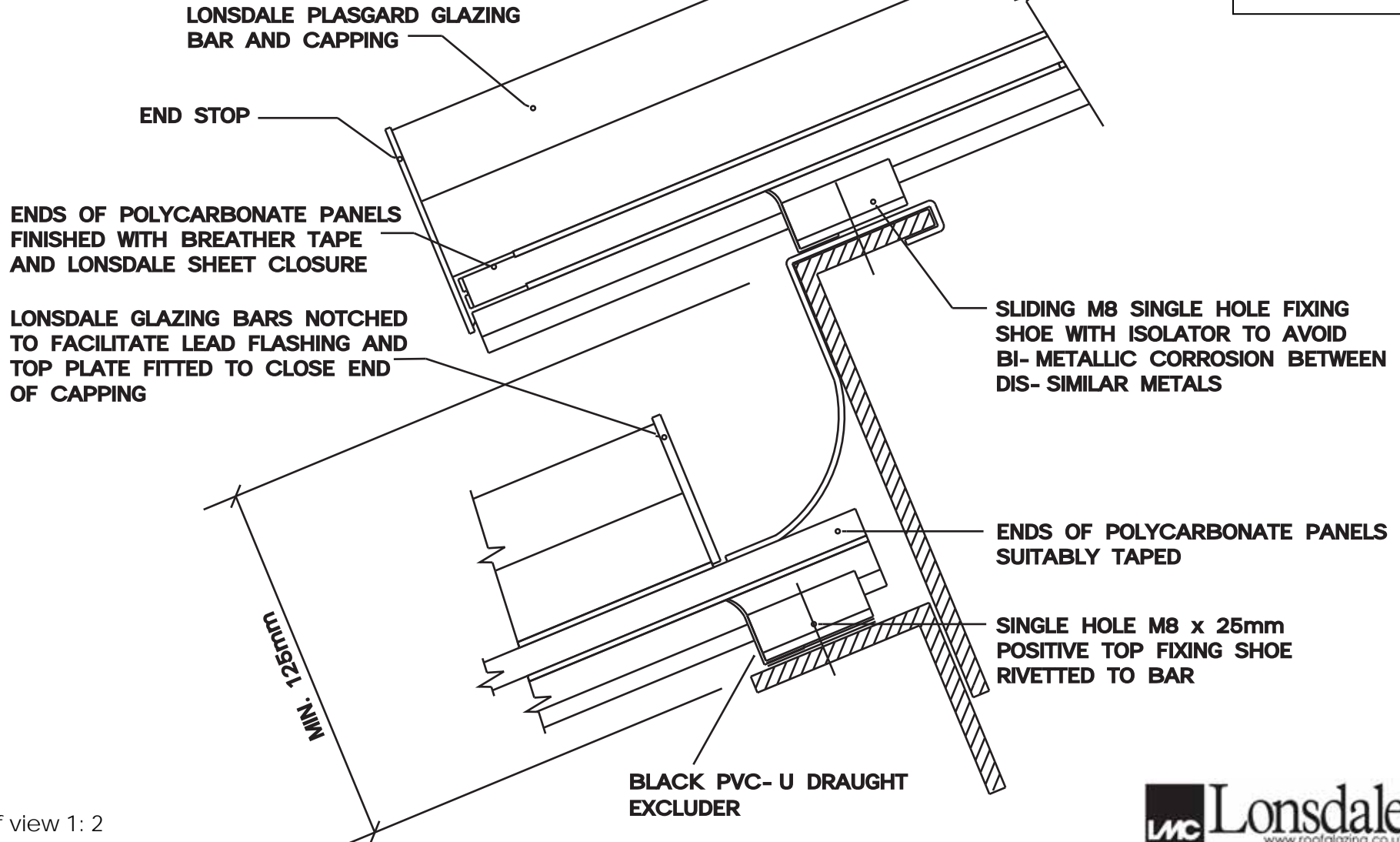
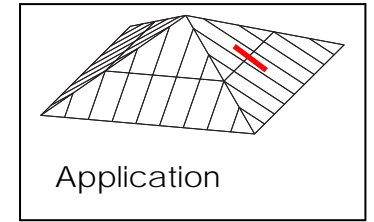


Scale of views 1-2

# PlasGard

## Tiered roof detail to metal

CAD Code PLA23MY

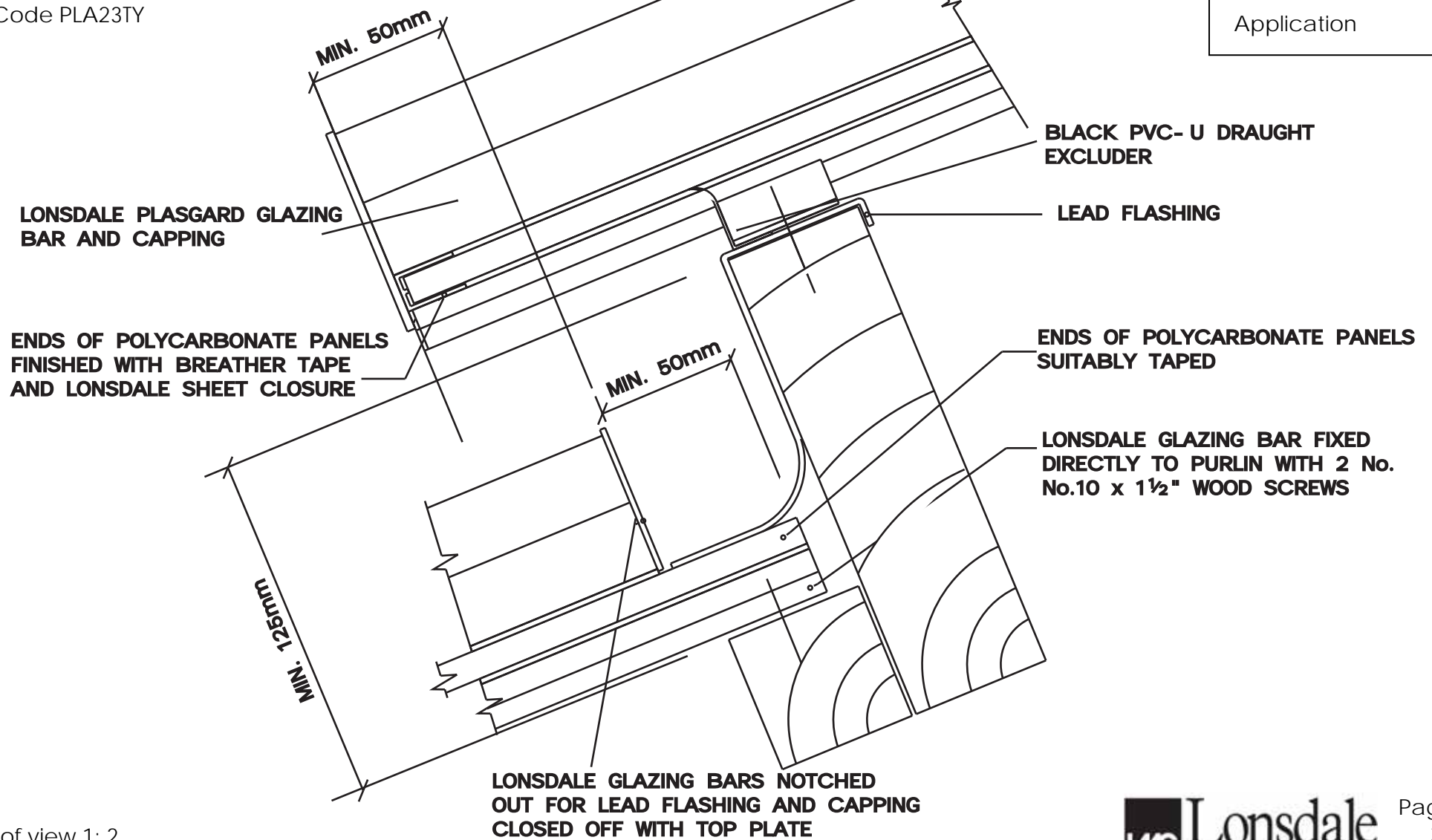
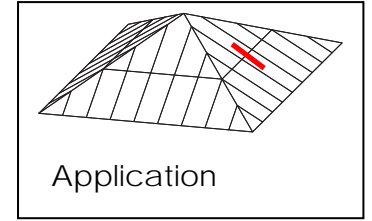


Scale of view 1: 2

# PlasGard

## Tiered roof detail to timber

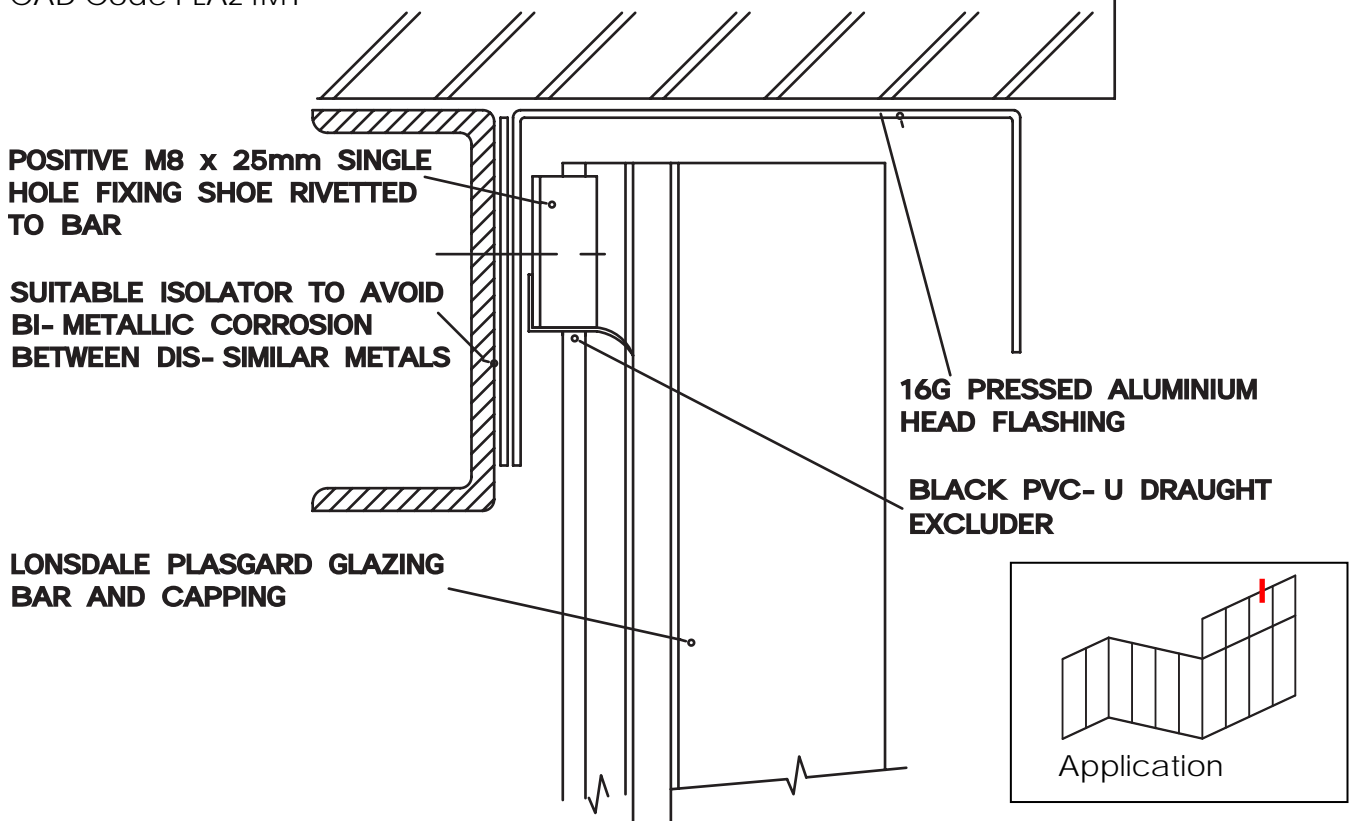
CAD Code PLA23TY



Scale of view 1: 2

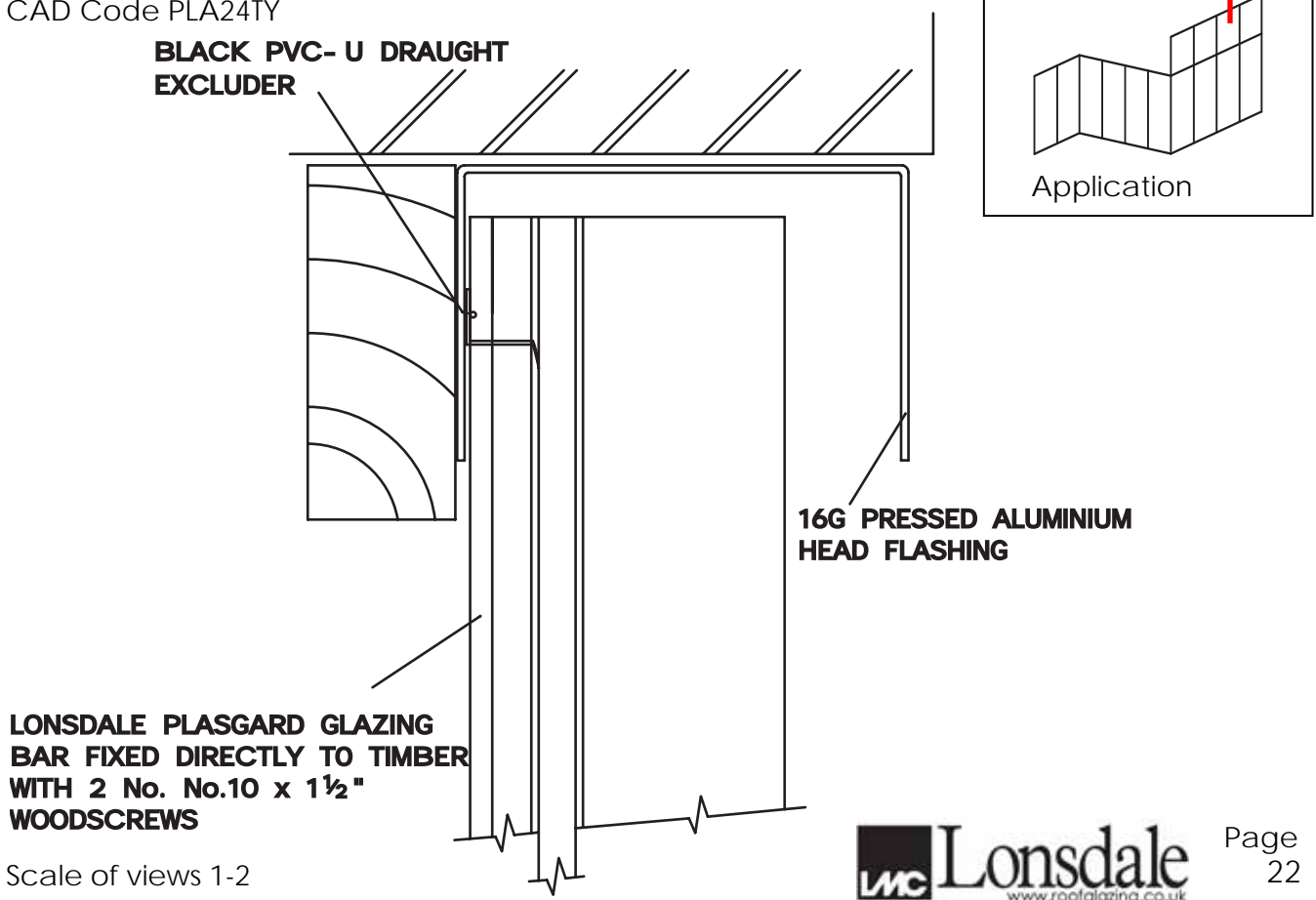
### Vertical head fixing to steel

CAD Code PLA24MY



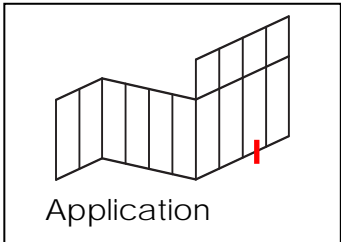
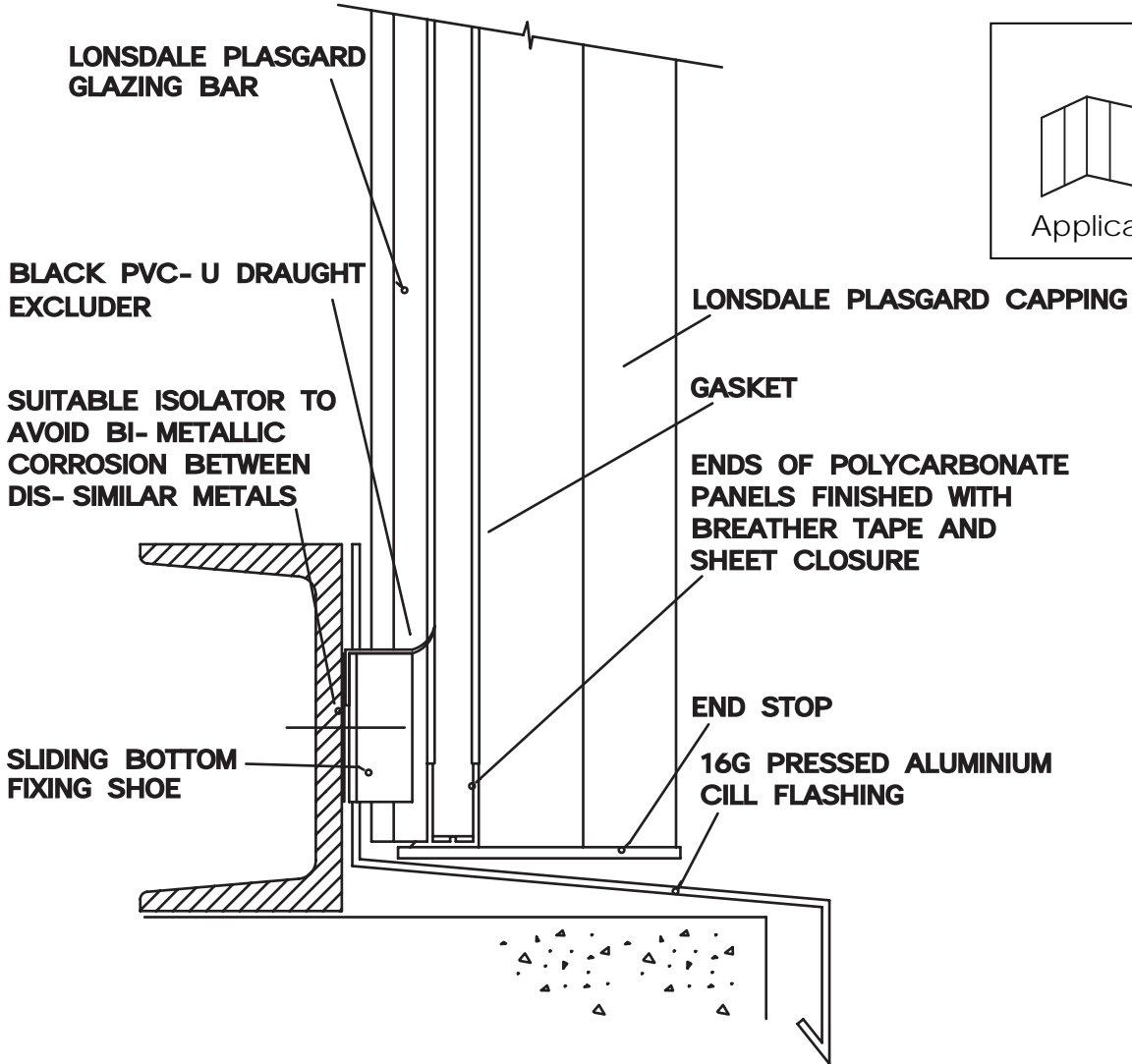
### Vertical head fixing to timber

CAD Code PLA24TY

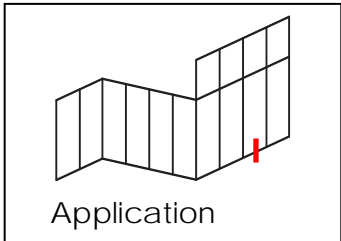
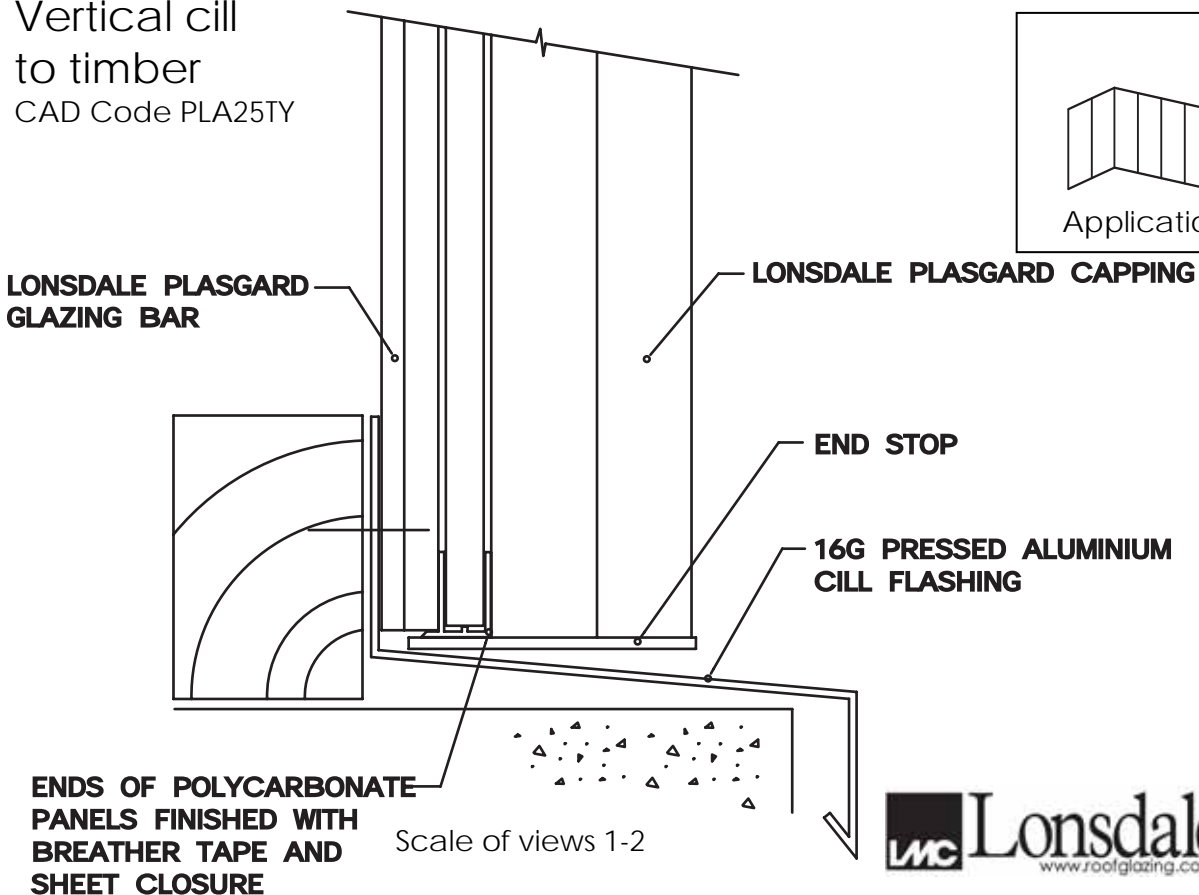


Scale of views 1-2

PlasGard - Vertical cill to metal CAD Code PLA25MY

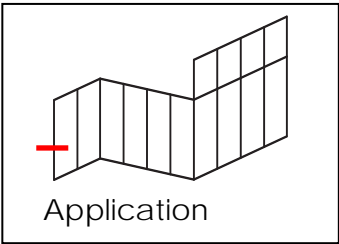
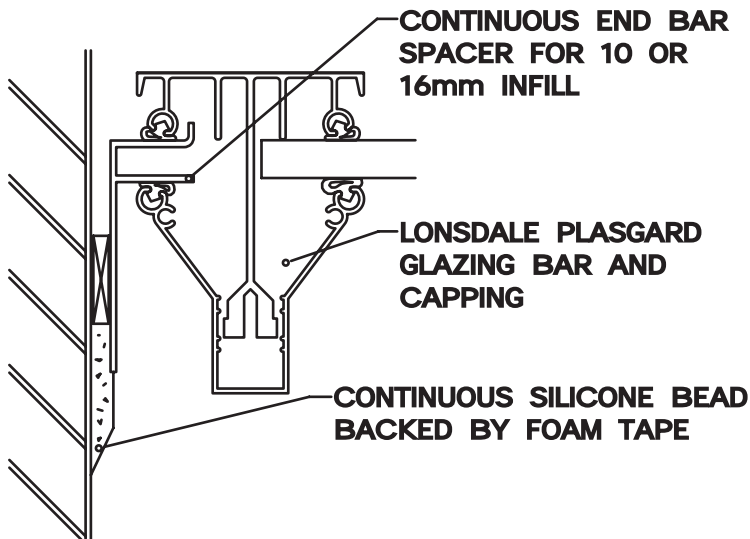


Vertical cill to timber  
CAD Code PLA25TY



Scale of views 1-2

PlasGard – Vertical jab to brickwork CAD Code PLA26X



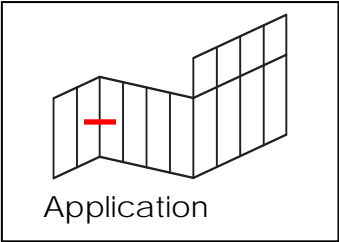
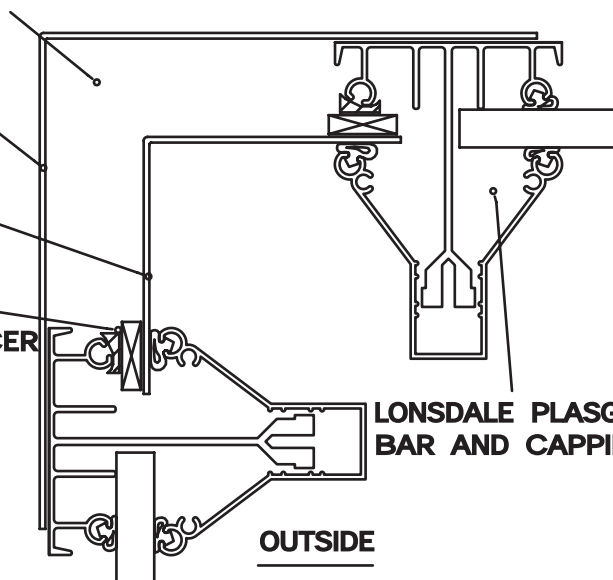
PlasGard – Internal corner to vertical CAD Code PLA27X

OPTIONAL INSULATION MAY BE PLACED IN THIS VOID

14G PRESSED ALUMINIUM CORNER FLASHING

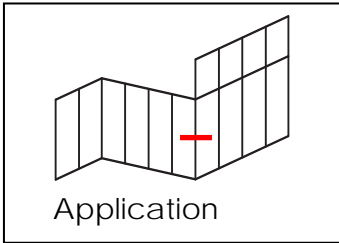
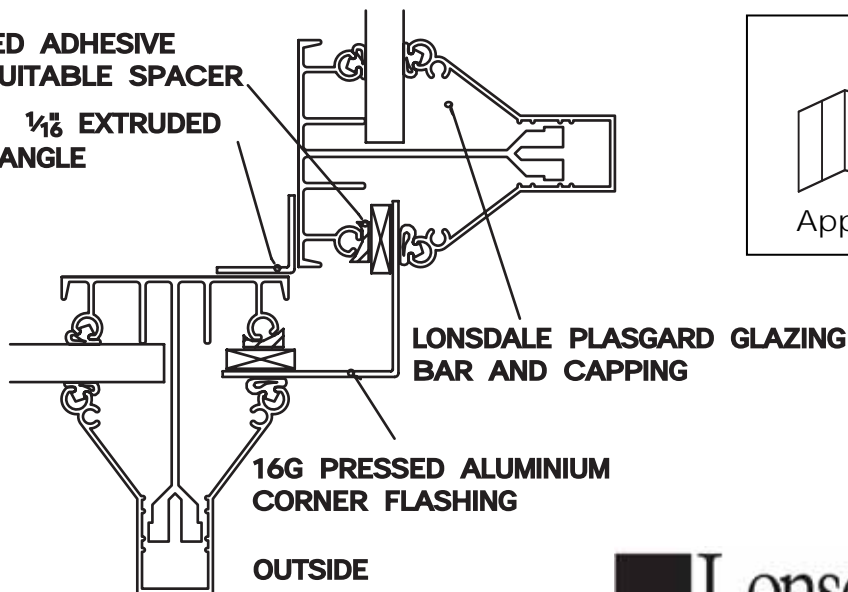
16G PRESSED ALUMINIUM CORNER FLASHING

DOUBLE SIDED ADHESIVE TAPE AND SUITABLE SPACER



PlasGard – External corner to vertical CAD Code PLA28X

DOUBLE SIDED ADHESIVE TAPE AND SUITABLE SPACER  
 $\frac{3}{4}$ " x  $\frac{3}{4}$ " x  $\frac{1}{16}$ " EXTRUDED ALUMINIUM ANGLE

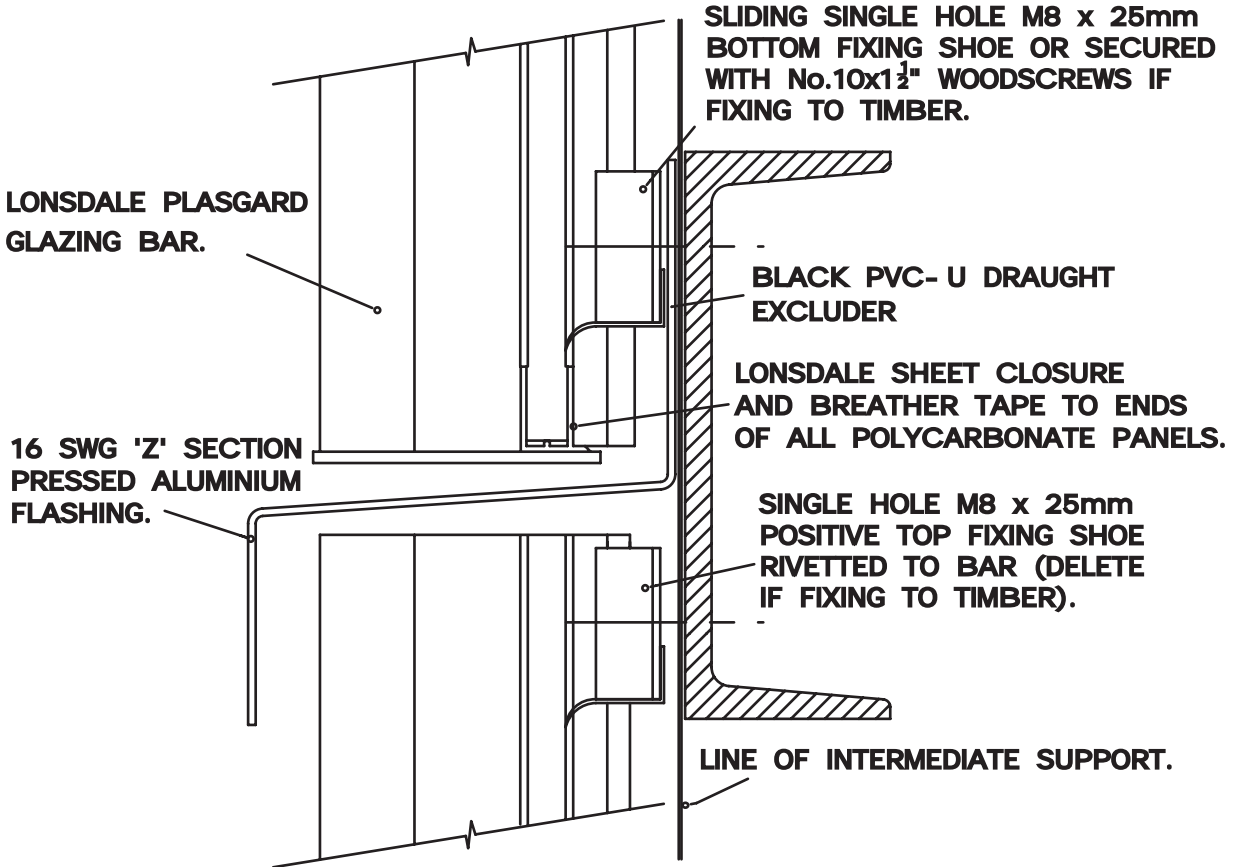
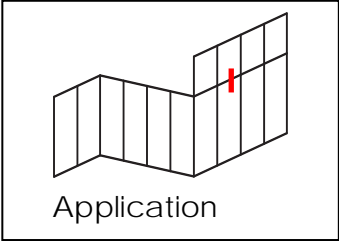


Scale of views 1-2



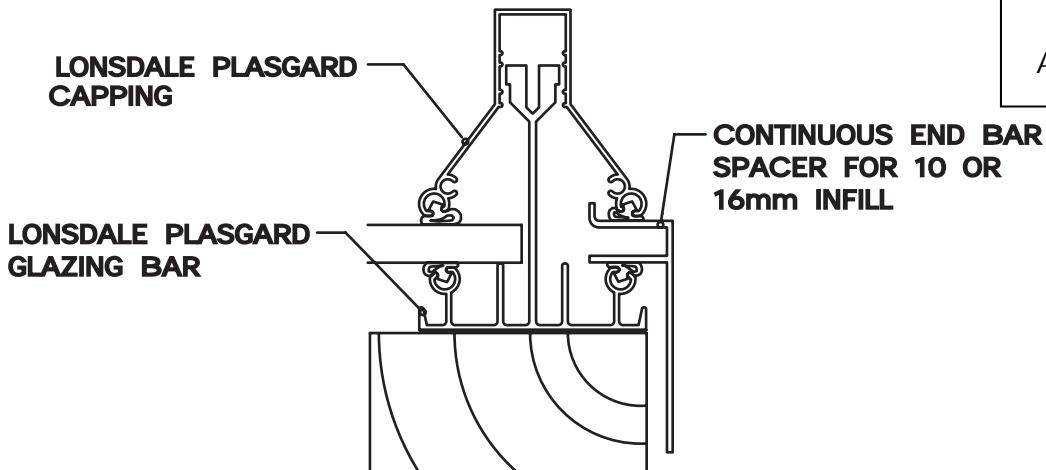
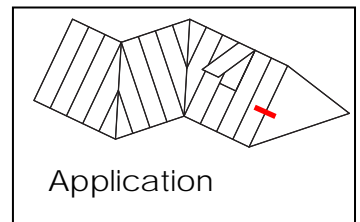
Vertical intermediate detail

CAD Code PLA29Y



Verge

CAD Code PLA31X



Scale of views 1-2

# GlazaTherm

## Sizing matrix

Approximate Geometric Free Air Area m<sup>2</sup>

Based upon open actuator stroke lengths 300mm and 550mm

Length L mm*	Width W mm**						
	600	700	800	900	1000	1100	1200
600	0.28	0.31	0.34	0.37	0.40	0.43	0.46
	0.50	0.56	0.61	0.67	0.72	0.78	0.83
700	0.31	0.34	0.37	0.40	0.43	0.46	0.49
	0.56	0.62	0.67	0.73	0.78	0.84	0.89
800	0.34	0.37	0.40	0.43	0.46	0.49	0.52
	0.61	0.67	0.72	0.78	0.83	0.89	0.94
900	0.37	0.40	0.43	0.46	0.49	0.52	0.55
	0.67	0.73	0.78	0.84	0.89	0.95	1.00
1000	0.40	0.43	0.46	0.49	0.52	0.55	0.58
	0.72	0.78	0.83	0.89	0.94	1.00	1.05
1100	0.43	0.46	0.49	0.52	0.55	0.58	0.61
	0.78	0.84	0.89	0.95	1.00	1.06	1.11
1200	0.46	0.49	0.52	0.55	0.58	0.61	0.64
	0.83	0.89	0.94	1.00	1.05	1.11	1.16
1500	0.55	0.58	0.61	0.64	0.67	0.70	0.73
	1.00	1.06	1.11	1.17	1.22	1.28	1.33
1800	0.64	0.67	0.70	0.73	0.76	0.79	0.82
	1.16	1.22	1.27	1.33	1.38	1.44	1.49
2000	0.70	0.73	0.76	0.79	0.82	0.85	0.88
	1.27	1.33	1.38	1.44	1.49	1.55	1.60
2400	0.82	0.85	0.88				
	1.49	1.55	1.60				

\* Dimension L mm = overall fixed frame length – see drawings on page 28.

\*\*Dimension W mm = overall fixed frame width – see drawings on pages 29.

Side hung vents are restricted to 1.20m<sup>2</sup> (Width x Length) with a maximum overall fixed frame length of 1800mm.

**IF THE SIZE REQUIRED IS OUTSIDE THE BOUNDRIES OF THE ABOVE MATRIX PLEASE CONTACT OUR SALES OFFICE.**

Please note : Whilst we are pleased to assist, the above example is given for guidance only. Responsibility remains with Specifiers to exercise all reasonable care ensuring our products are suitable for their requirements and correctly specified.

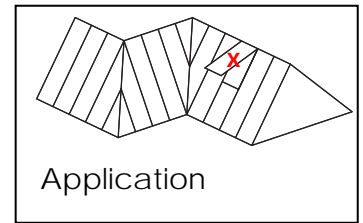
## GlazaTherm Drawings and CAD Code Index

Drawing number CAD code	Description	Page
GLAZ1PG	Top & bottom detail two edge support patent glazing	28
GLAZ2PGCW	Side rail into typical patent glazing or sloped curtain wall	29
GLAZ3CW	Bottom detail into typical curtain wall transom	30
GLAZ4CW	Head detail into typical curtain wall transom	31
GLAZ5PG	Vent top detail with glass above	31

GlazaTherm – suitable for 24 – 28mm Double Glazed Units or 25mm polycarbonate

# GlazaTherm ordering information

## Top hung roof ventilator



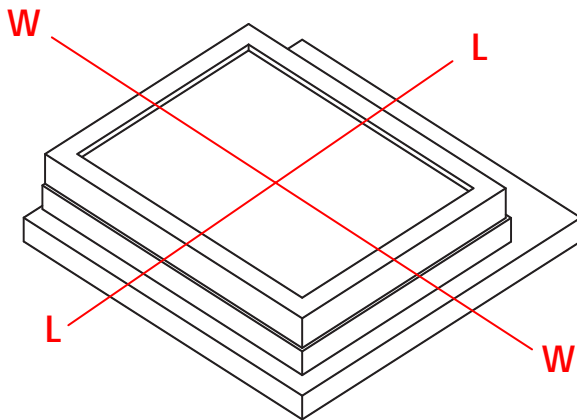
When ordering GlazaTherm to fit other manufacturers glazing bars or sloped 4-edge support systems, please specify fixed frame width and length. See notes below.

- GlazaTherm inserts between most patent glazing bars, sloped curtain walling and conservatory roof systems currently available.
- Suitable for single glazing, sealed double glazed units and Polycarbonate sheeting.
- Standard size 610mm x 915mm. Please contact our Sales Office for details of non-standard sizes.
- Manufactured from extruded aluminium alloy 6063-T6 sections supplied mill finish as standard and thermally broken with polyamides extrusions.
- Polyester powder paint finishes available in a wide range of colours.
- Various factory-fitted opening mechanisms, including pole, cord, thermostatic, electric and smoke actuators.
- Complies with BS5516 when used within manufacturers recommendations.

Dimensions required when ordering please state:

0/A Fixed Frame Length (Dimension L - refer drawings on page 28)

0/A Fixed Frame Width (Dimension W - refer drawings on page 29)



## Sectional views

**L-L** = 0/A Fixed Frame Length - Dimension L

**W-W** = 0/A Fixed Frame Width - Dimension W

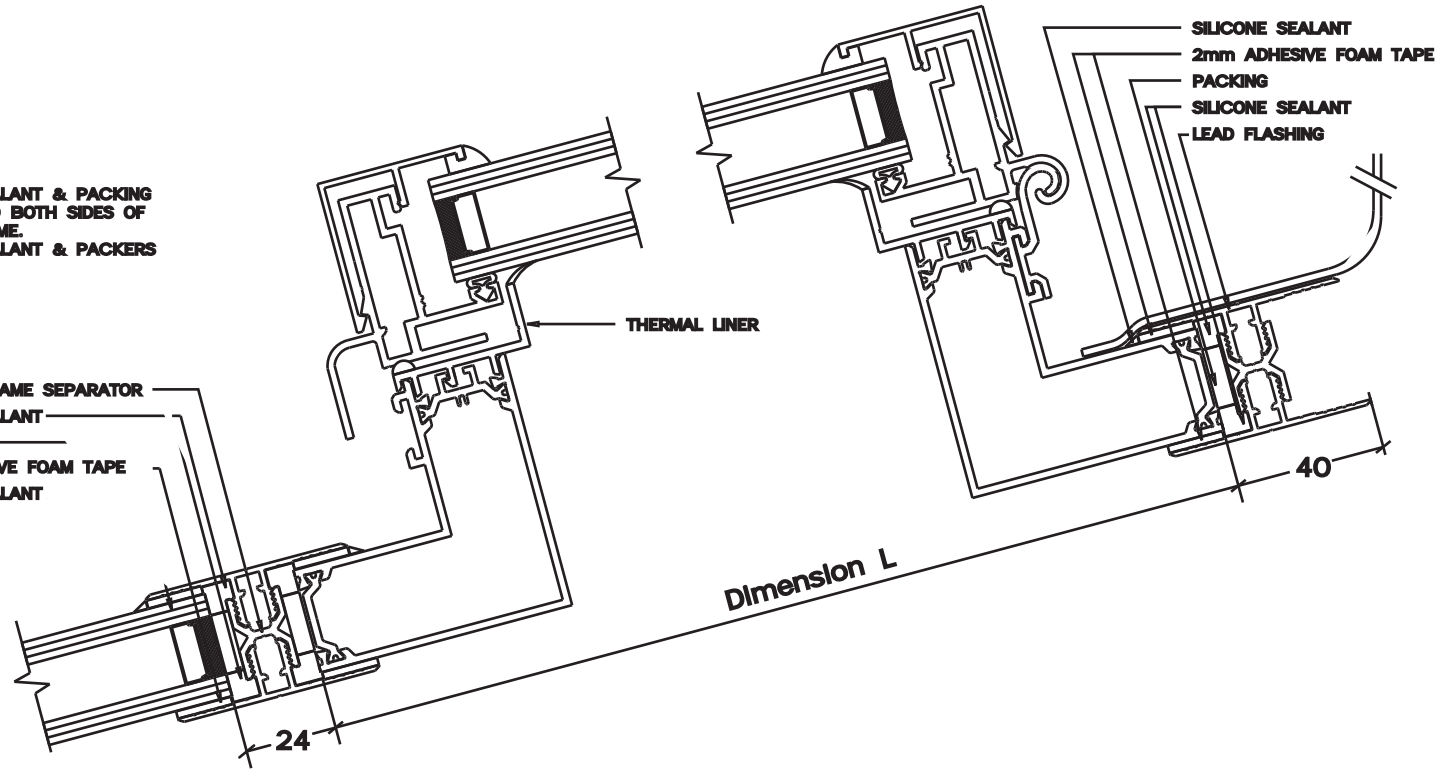
# GlazaTherm

## Top and bottom detail two edge support Patent Glazing

CAD Code GLAZ1PG

SILICONE SEALANT & PACKING REPEATED TO BOTH SIDES OF LOWER H CAME. SILICONE SEALANT & PACKERS BY OTHERS.

PLASTIC H CAME SEPARATOR  
SILICONE SEALANT  
PACKING  
2mm ADHESIVE FOAM TAPE  
SILICONE SEALANT

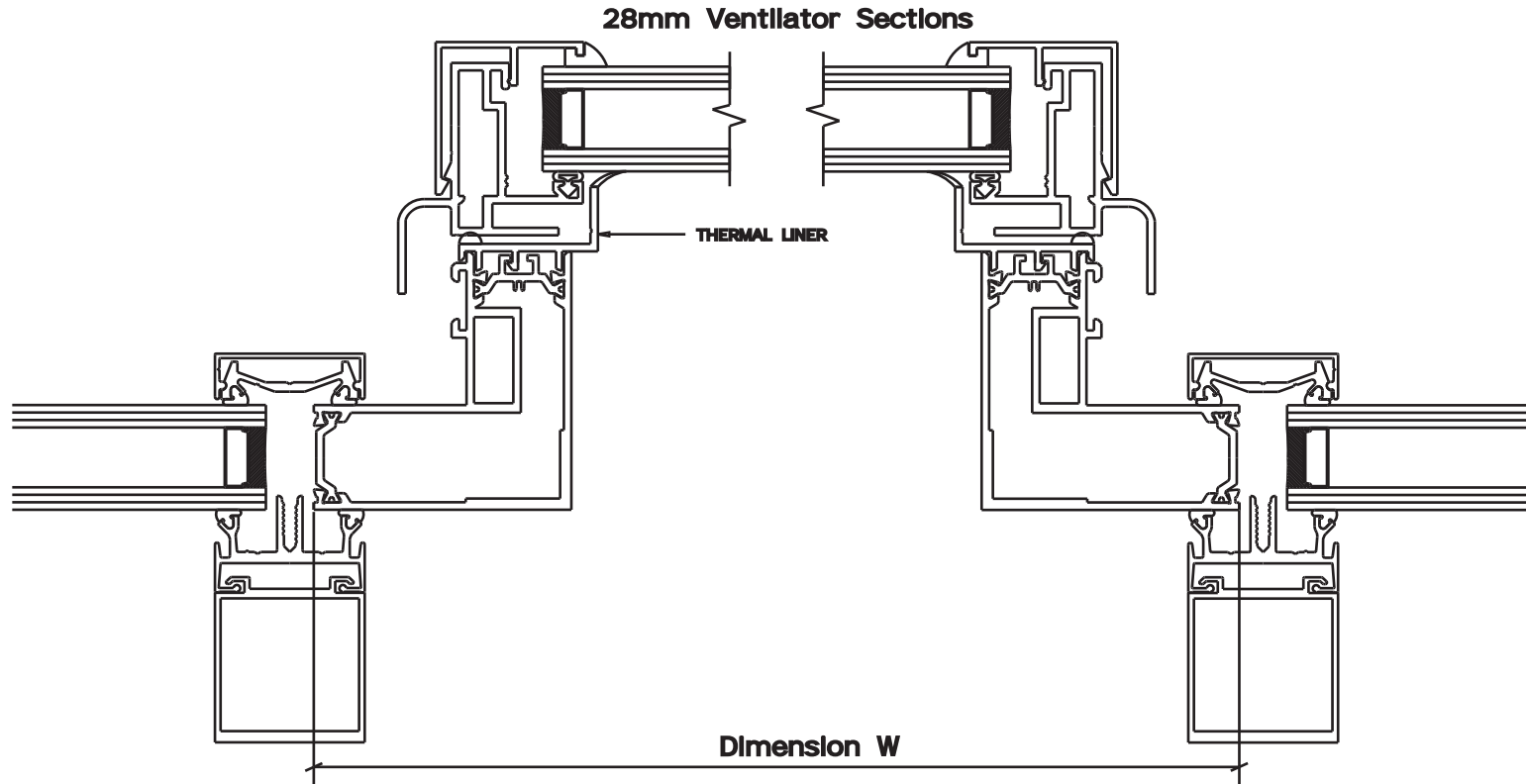


Scale of view 1: 2

GlazaTherm

Side rail into Patent Glazing bar or sloping curtain walling

CAD Code GLAZ2PGCW



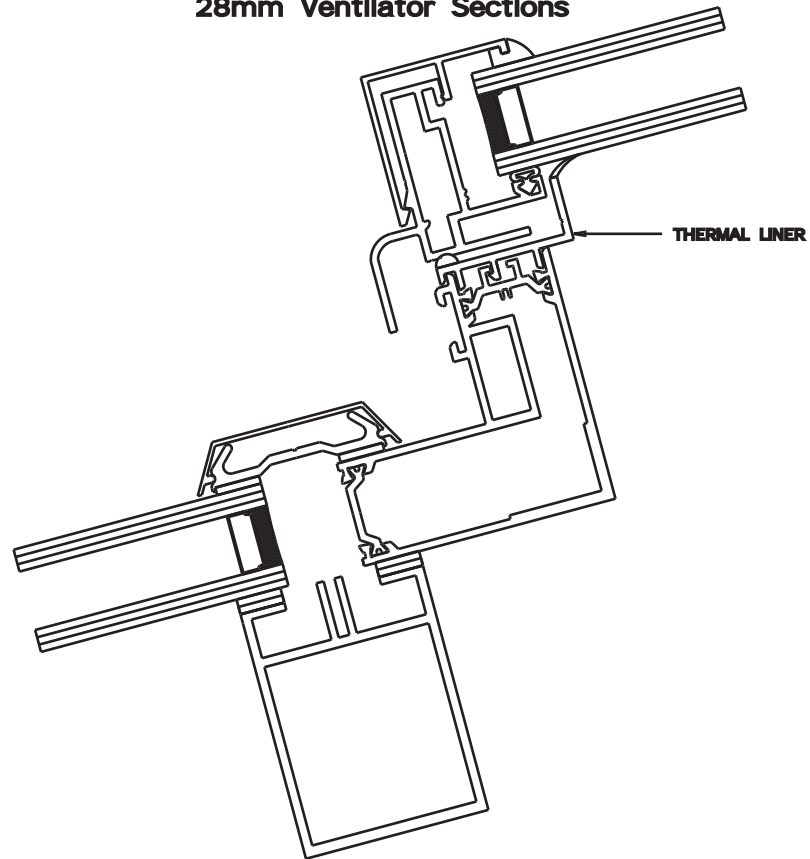
Scale of view 1: 2

GlazaTherm

Bottom detail into typical curtain wall transom

CAD Code GLAZ3CW

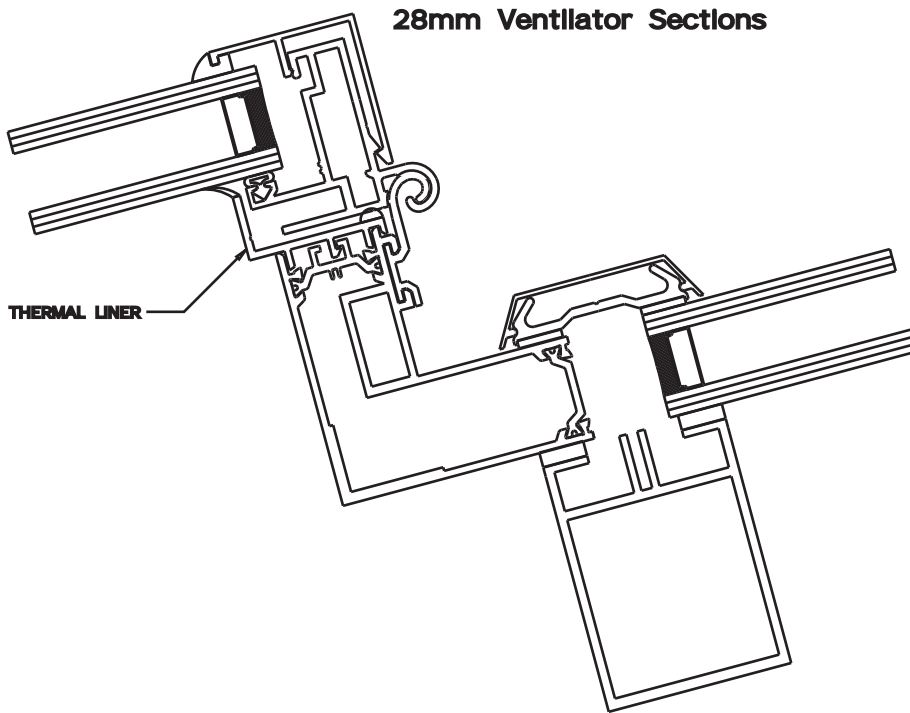
**28mm Ventilator Sections**



Scale of view 1: 2

# Head detail into typical curtain wall transom

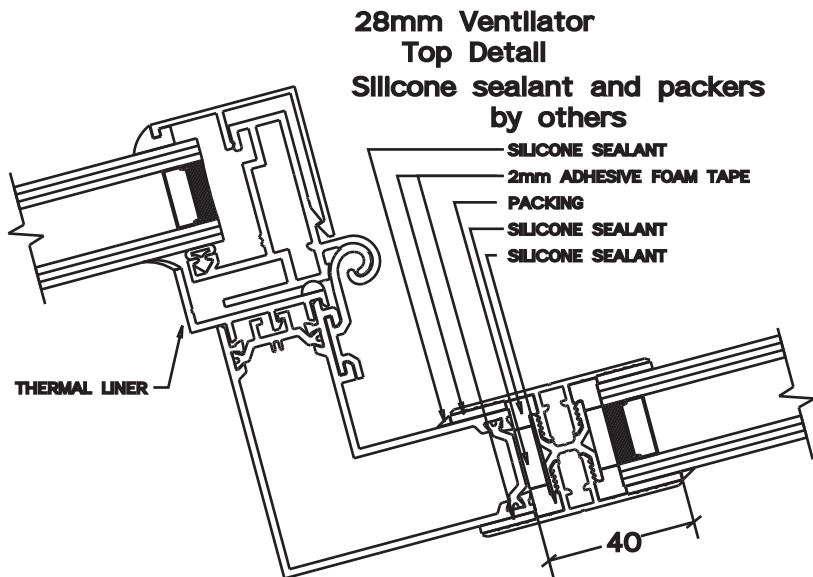
CAD Code GLAZ4CW



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## Vent detail with glass above

CAD Code GLAZ5PG





## Research & Development

Lonsdale has made a very significant investment in research and development to bring you the products set out in this publication. Lonsdale's intention is to continue to invest to stay at the fore front of its Industry and bring its customers products with unrivalled technological advancements and standards. We reserve the right to make changes without prior notification to achieve these aims.

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