



Lonsdale SkyGard 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

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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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 SkyGard Glazing Bars when subjected to the three combined loading conditions of 800, 1200 and 1800 N/ m². 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 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 British Standard loading for buildings

Code of practice for imposed loads.

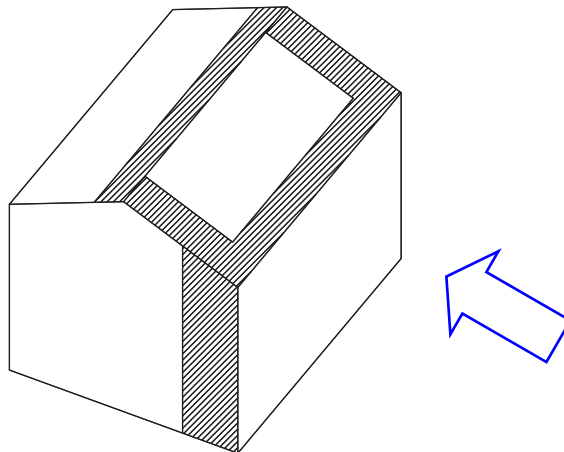
BS5516:1991 Code of practice for the design and installation of patent glazing.

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 ²	N/m ²	N/m ²
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.

Cleaning and Maintenance

Recommended procedures can be found on our website 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.

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 ²	Glazing Bar	Angle of Glazing relevant to the horizontal					
		15°	22.5°	30°	45°	60°	Vertical
800	SKY50	2.47	2.59	2.57	2.77	2.77	2.60
	SKY65	3.19	3.08	3.05	3.36	3.45	3.35
	SKY71	3.69	3.85	3.85	3.89	3.89	3.78
	SKY76	4.09	4.24	4.23	4.30	4.30	4.18
1200	SKY50	1.86	2.04	2.03	2.33	2.27	2.06
	SKY65	2.45	2.68	2.67	2.89	2.92	2.71
	SKY71	3.20	3.35	3.34	3.58	3.53	3.36
	SKY76	3.55	3.71	3.70	3.97	3.90	3.72
1800	SKY50	1.28	1.39	1.39	1.59	1.57	1.47
	SKY65	1.68	1.83	1.82	2.09	2.06	1.93
	SKY71	2.29	2.50	2.49	2.86	2.82	2.64

Double Glazed Bars

Table 3

Combined basic wind & snow loading N/m ²	Glazing Bar	Angle of Glazing relevant to the horizontal					
		15°	22.5°	30°	45°	60°	Vertical
800	SKY50	-	-	-	-	-	-
	SKY65	2.08	2.03	2.03	2.11	2.16	2.15
	SKY71	2.64	2.58	2.58	2.69	2.75	2.75
	SKY76	3.25	3.21	3.21	3.74	3.71	3.98
1200	SKY50	-	-	-	-	-	-
	SKY65	1.64	1.81	1.79	1.84	1.81	1.71
	SKY71	2.09	2.31	2.29	2.34	2.30	2.18
	SKY76	2.90	3.05	3.04	3.27	3.18	2.96
1800	SKY50	-	-	-	-	-	-
	SKY65	1.08	1.19	1.18	1.36	1.33	1.21
	SKY71	1.38	1.51	1.51	1.73	1.69	1.55
	SKY76	2.36	2.47	2.46	2.64	2.61	2.50

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 for guidance and compliance with the Regulations relating to fire, non-fragility, thermal and air-tightness performance.

Typical Specification

See 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>SKYGARD SKY65</i>
Type:	<i>Traditional "T" bar with continuous pressure beads and gaskets</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>6.4mm clear laminate</i>
Incorporated components:	<i>None</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

SkyGard

Drawing number CAD code	Description	Page
SKY50Y	SKY50 profile	8
SKY65Y	SKY65 profile	8
SKY71Y	SKY71 profile	8
SKY76Y	SKY76 profile	9
EBARWING	End bar wing	9
MFIXSHOE	Metal fixing shoe	9
SKY11MY	Top fixing to metal	10
SKY11TY	Top fixing to timber	10
SKY12MY	Eaves fixing to metal	11
SKY12TY	Eaves fixing to timber	11
SKY13MY	Valley gutter aluminium or steel	12
SKY13TY	Valley gutter detail lead lined to timber	13
SKY14X	Parapet to brickwork	14
22Y	Glass jointing	14
SKY18MY	Hip detail to metal	15
SKY18TY	Hip detail to timber	16
SKY19MY	Ridge detail to metal	17
SKY19TY	Ridge detail to timber	18
SKY21Y	Intermediate roof detail to timber/steel	19
SKY23MY	Tiered roof detail to metal	19
SKY23TY	Tiered roof detail to timber	20
SKY24MY	Vertical head fixing to steel	21
SKY24TY	Vertical head fixing to timber	21
SKY25MY	Vertical cill to metal	22
SKY25TY	Vertical cill to timber	22
SKY26X	Vertical jamb to brickwork	23
SKY27X	Internal corner to vertical	23
SKY28X	External corner to vertical	23
SKY29MY	Vertical intermediate detail	24
SKY31X	Verge	24
SKY32MY	Lead flashing to steel ridge / hip	25
SKY32TY	Lead flashing to timber ridge / hip	26

SkyGard

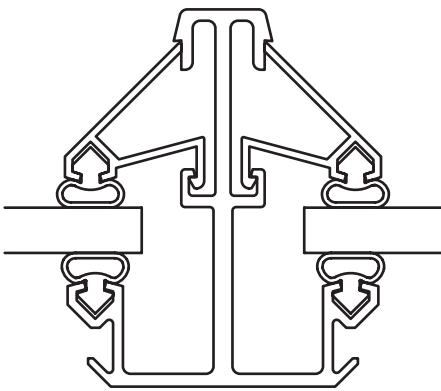
SkyGard is the latest development of the original Lonsdale glazing bars first introduced over fifty years ago. Maintaining all the benefits of traditional patent glazing, SkyGard utilises modern technology to beat all others in terms of weathering performance and value for money.

- Quick and easy to fit continuous pressure beads.
- Traditional "T" bar appearance.
- 6/7 mm single glazing or 24 mm double glazing – not thermally broken.
- Economy without sacrifice to quality or performance.
- No-nonsense easy to follow installation details.

SKY50 Profile

CAD Code SKY50Y

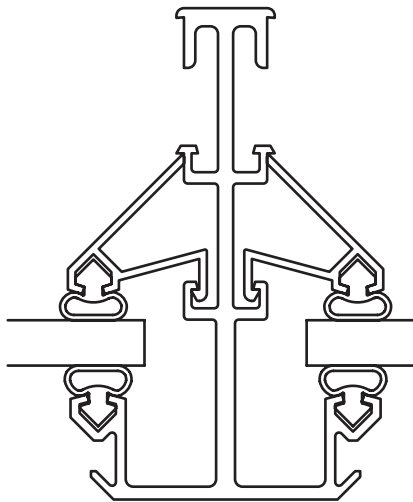
Single Glazing only



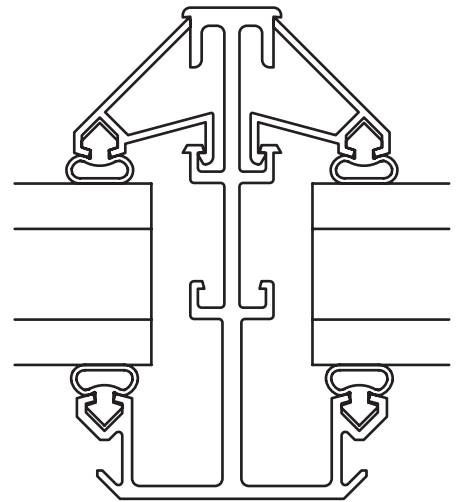
SKY65 Profile

CAD Code SKY65Y

Single Glazing



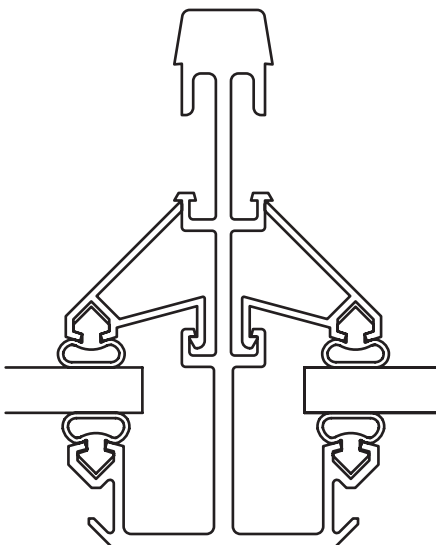
Double Glazing



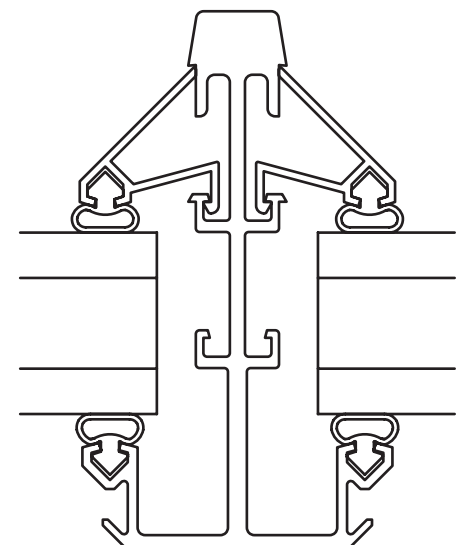
SKY71 Profile

CAD Code SKY71Y

Single Glazing



Double Glazing

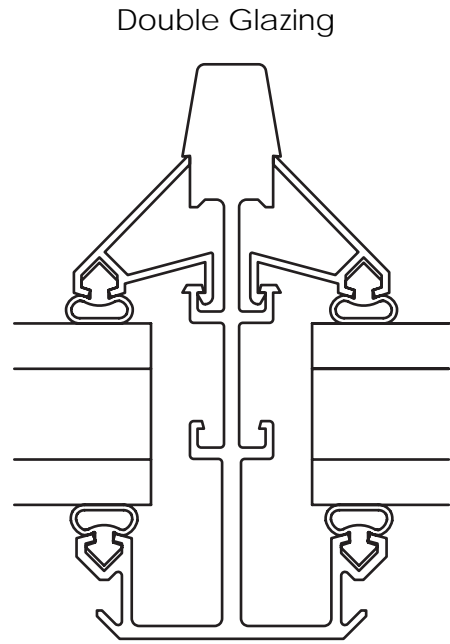
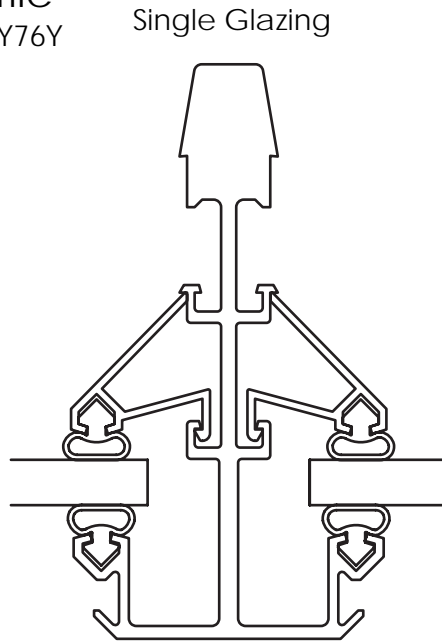


Scale of all profiles 1:1

SkyGard

SKY76 Profile

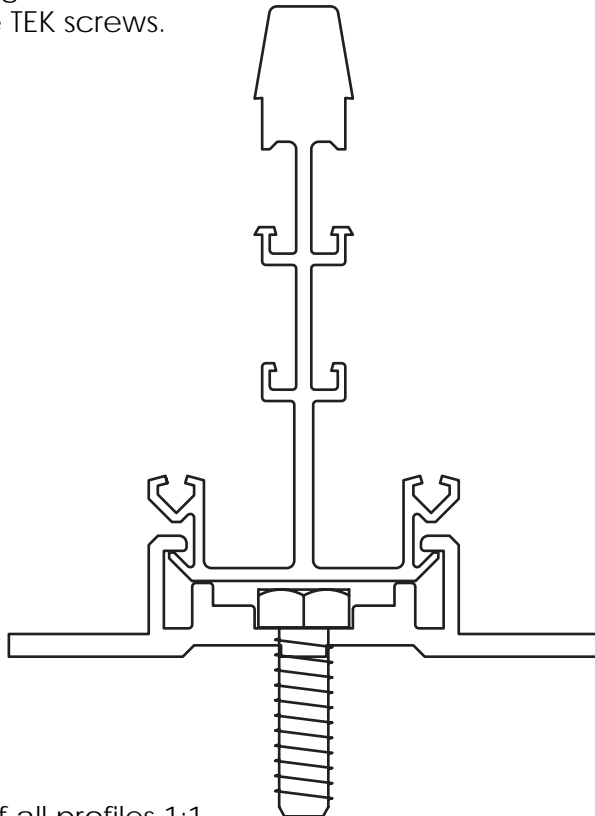
CAD Code SKY76Y



Metal Fixing Shoe

CAD Code MFIXSHOE

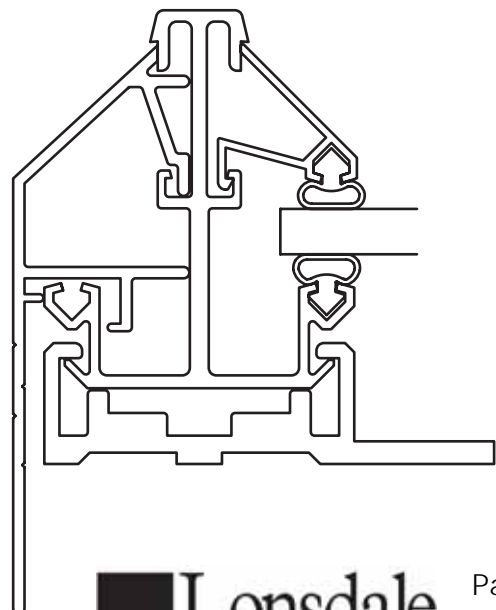
Fixing to metal supports is by single hole fixing shoe supplied with stainless steel M8 nut and bolt. Alternatively, fixing to RHS may be achieved by drilling and tapping into the metal supports using the fixing shoe and M6 machine set screws or suitable TEK screws.



End Bar Wing

CAD Code EBARWING

End bar wing fits all sections and should be secured with No 8 self-tapping screws.



Scale of all profiles 1:1

SkyGard

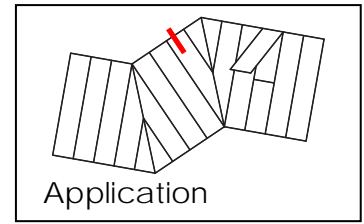
Top fixing to metal

CAD Code SKY11MY

**LONSDALE SKYGARD SERIES
GLAZING BAR**

**SUITABLE ISOLATOR TO AVOID
BI-METALLIC CORROSION BETWEEN
DIS-SIMILAR METALS**

**SINGLE HOLE M8 x 25mm POSITIVE
TOP FIXING SHOE RIVETTED TO BAR**



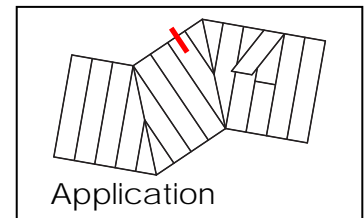
Top fixing to timber

CAD Code SKY11TY

**IF REQUESTED, LONSDALE BARS MAY
BE NOTCHED OUT FOR LEAD FLASHING**

**No.10 x 1½" GALVANIZED
WOOD SCREW FIXING**

TOP SUPPORT

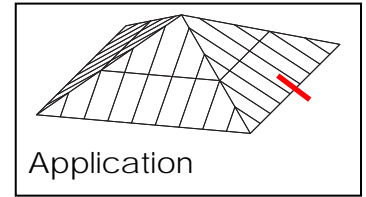
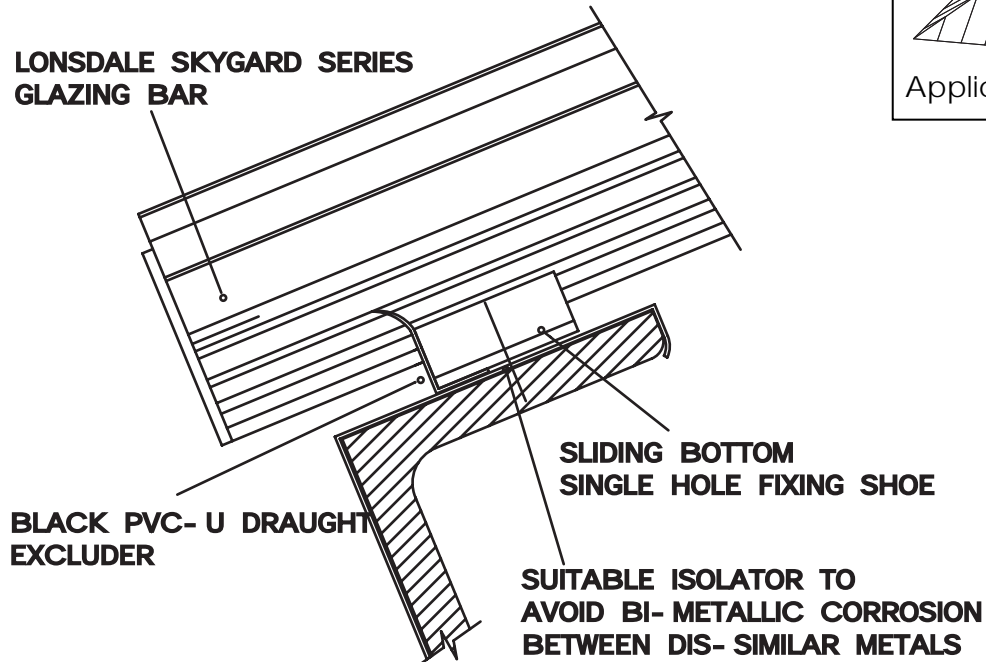


Scale of views 1-2

SkyGard

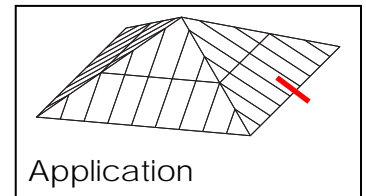
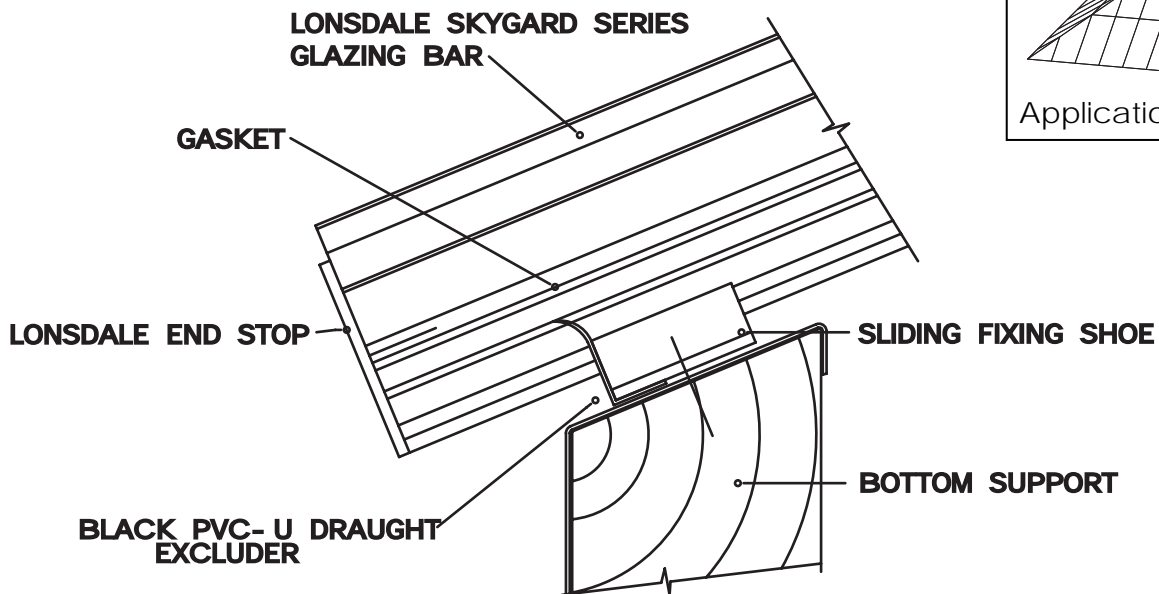
Eaves fixing to metal

CAD Code SKY12MY



Eaves fixing to timber

CAD Code SKY12TY

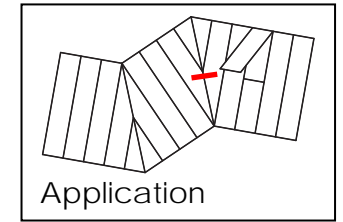


Scale of views 1-2

SkyGard

Valley gutter aluminium or steel

CAD Code SKY13MY



**LONSDALE SKYGARD SERIES
GLAZING BAR**

END STOP

**M8 x 25mm SINGLE HOLE SLIDING
FIXING SHOE WITH ISOLATOR TO
AVOID BI-METALLIC CORROSION
BETWEEN DIS-SIMILAR METALS**

**10G PRESSED ALUMINIUM OR
GALV. STEEL VALLEY GUTTER-
STRUCTURAL SUPPORT REQUIRED
TO SUIT SPAN**

**BLACK PVC-U DRAUGHT
EXCLUDER**

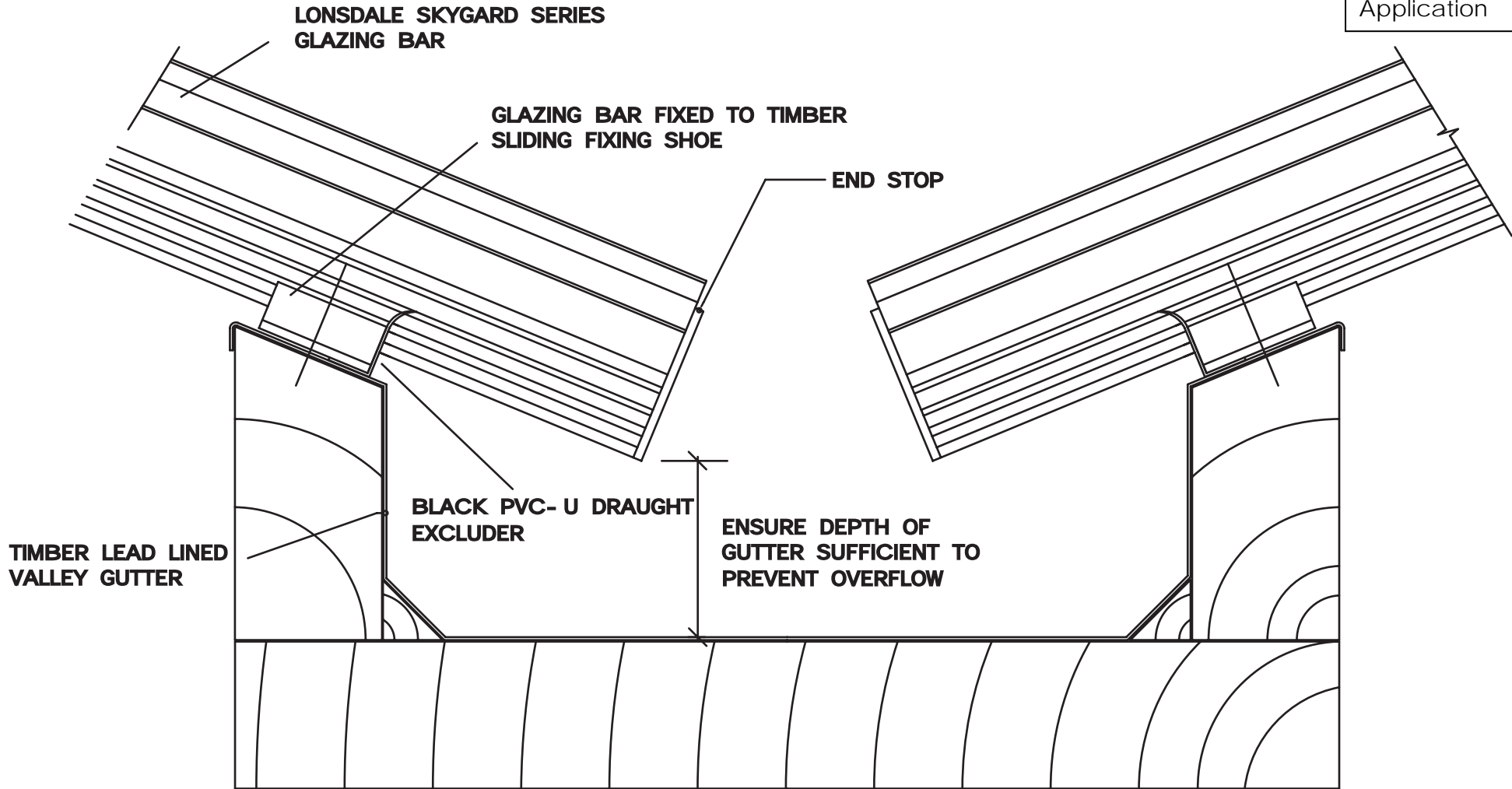
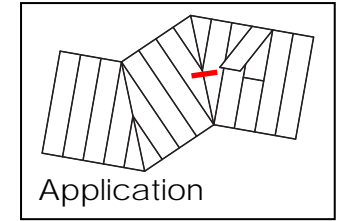
**ENSURE DEPTH OF GUTTER
SUFFICIENT TO AVOID OVERFLOW**

Scale of view 1: 2

SkyGard

Valley gutter detail lead lined to timber

CAD Code SKY13TY

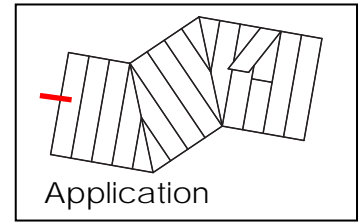
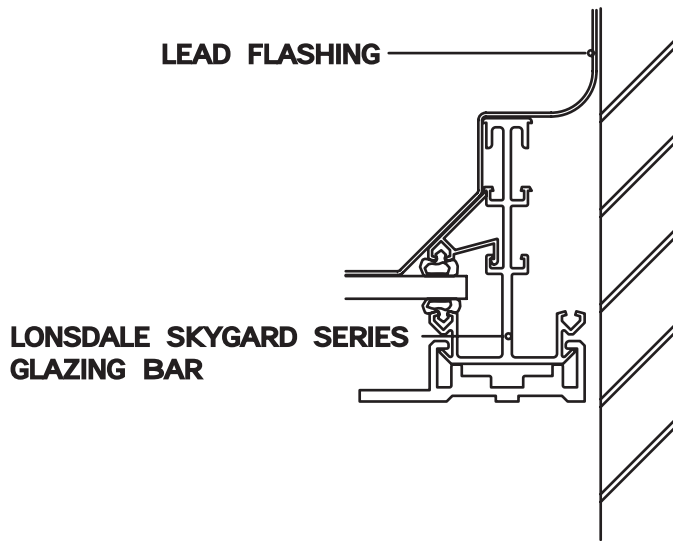


Scale of view 1: 2

SkyGard

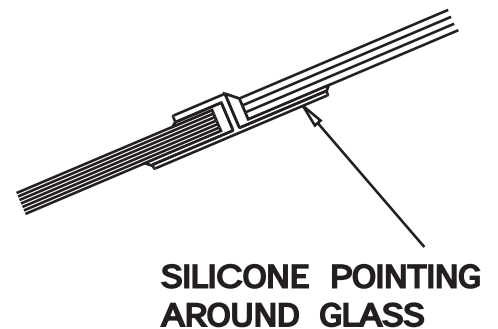
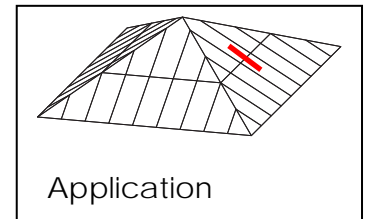
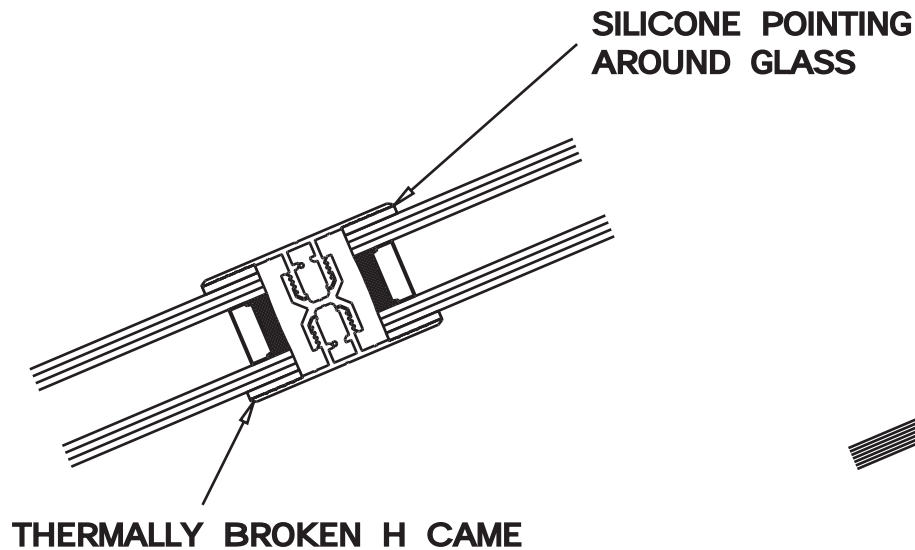
Parapet to brickwork

CAD Code SKY14X



Glass jointing – Single glazing

CAD Code 22Y

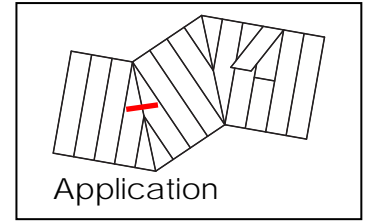


Scale of views 1-2

SkyGard

Hip detail to metal

CAD Code SKY18MY – also see page 31 CAD Code SKY32MY



**16G ALUMINIUM HIP FLASHING
SCREW FIXED TO HIP CARRIER
FIXING SCREWS SILICONE SEALED**

**FLASHING SILICONE SEALED
TO GLASS AT EDGES.**

**GLAZING BAR STALK
NOTCHED FOR FLASHING**

**SINGLE HOLE M8 x 25mm POSITIVE
TOP FIXING SHOE RIVETTED TO BAR**

**SUITABLE ISOLATOR TO AVOID
BI-METAL CORROSION BETWEEN
DIS-SIMILAR METALS**

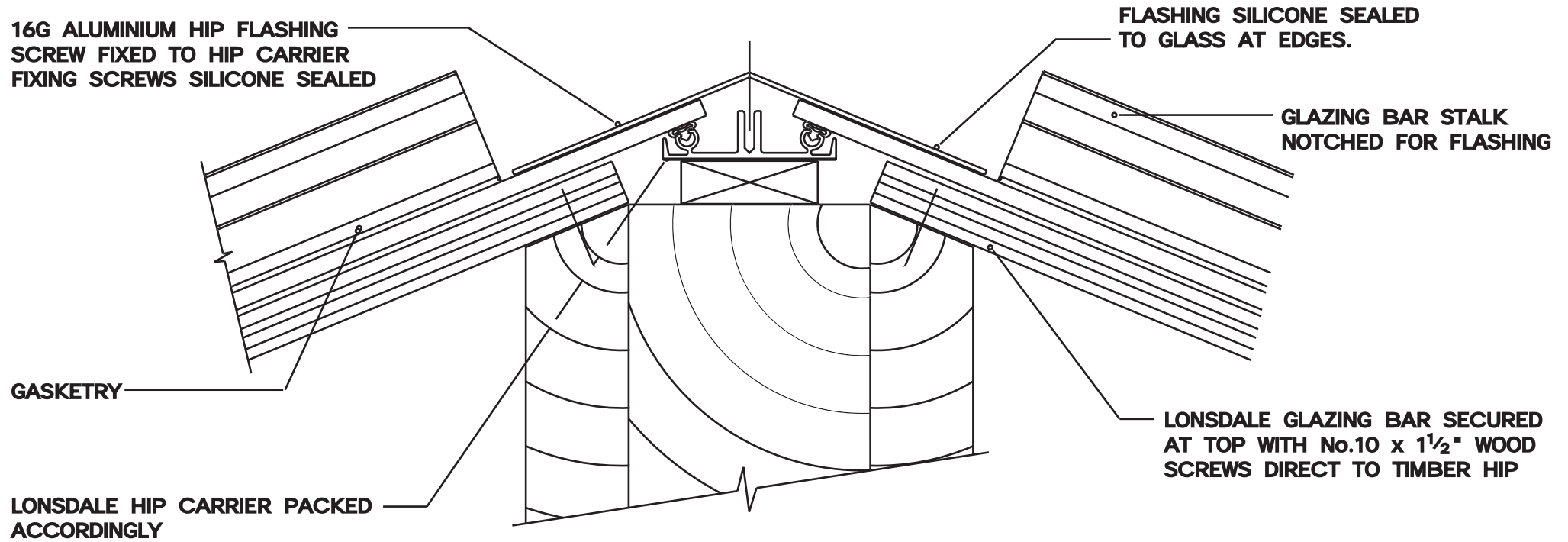
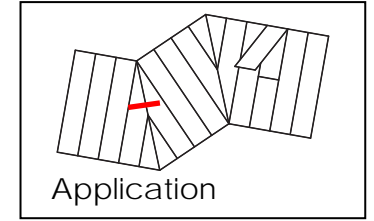
**LONSDALE HIP CARRIER PACKED
ACCORDINGLY**

Scale of view 1: 2

SkyGard

Hip detail to timber

CAD Code SKY18TY – also see page 32 CAD Code SKY32TY

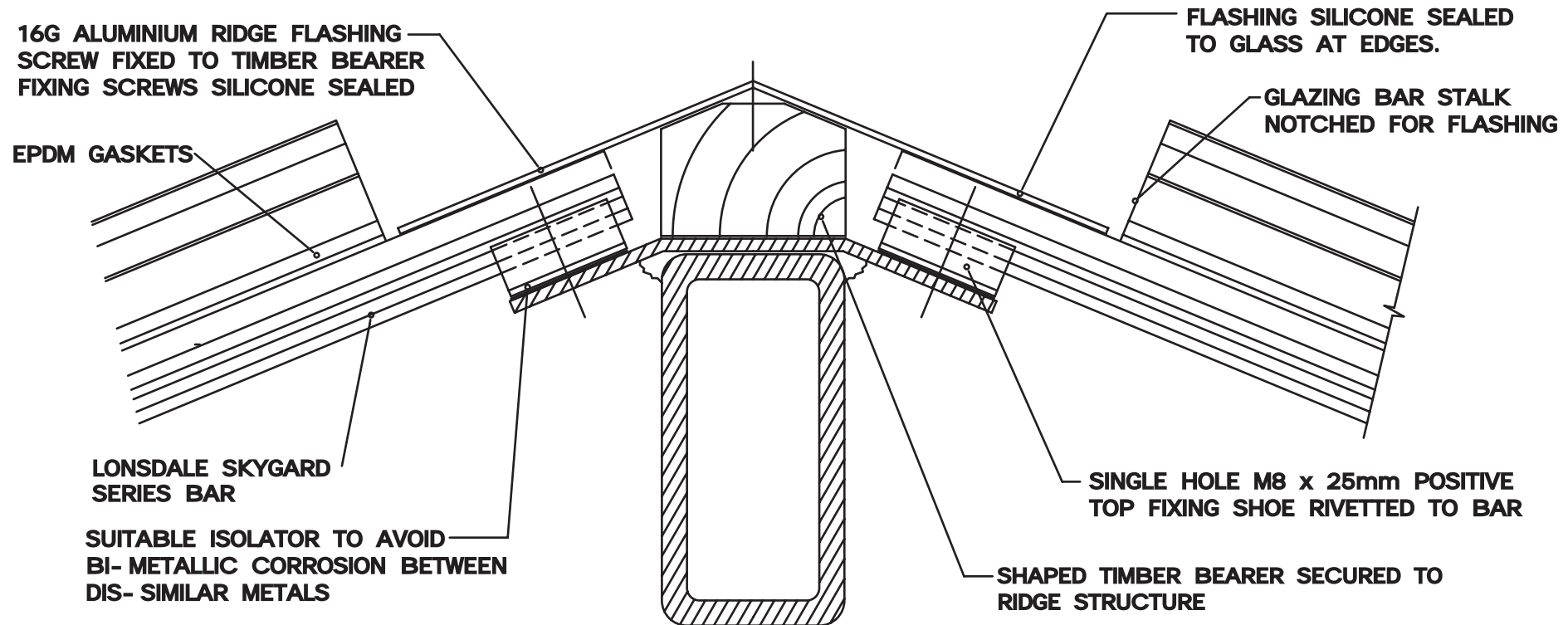
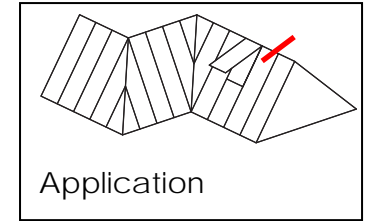


Scale of view 1: 2

SkyGard

Ridge detail to metal

CAD Code SKY19MY

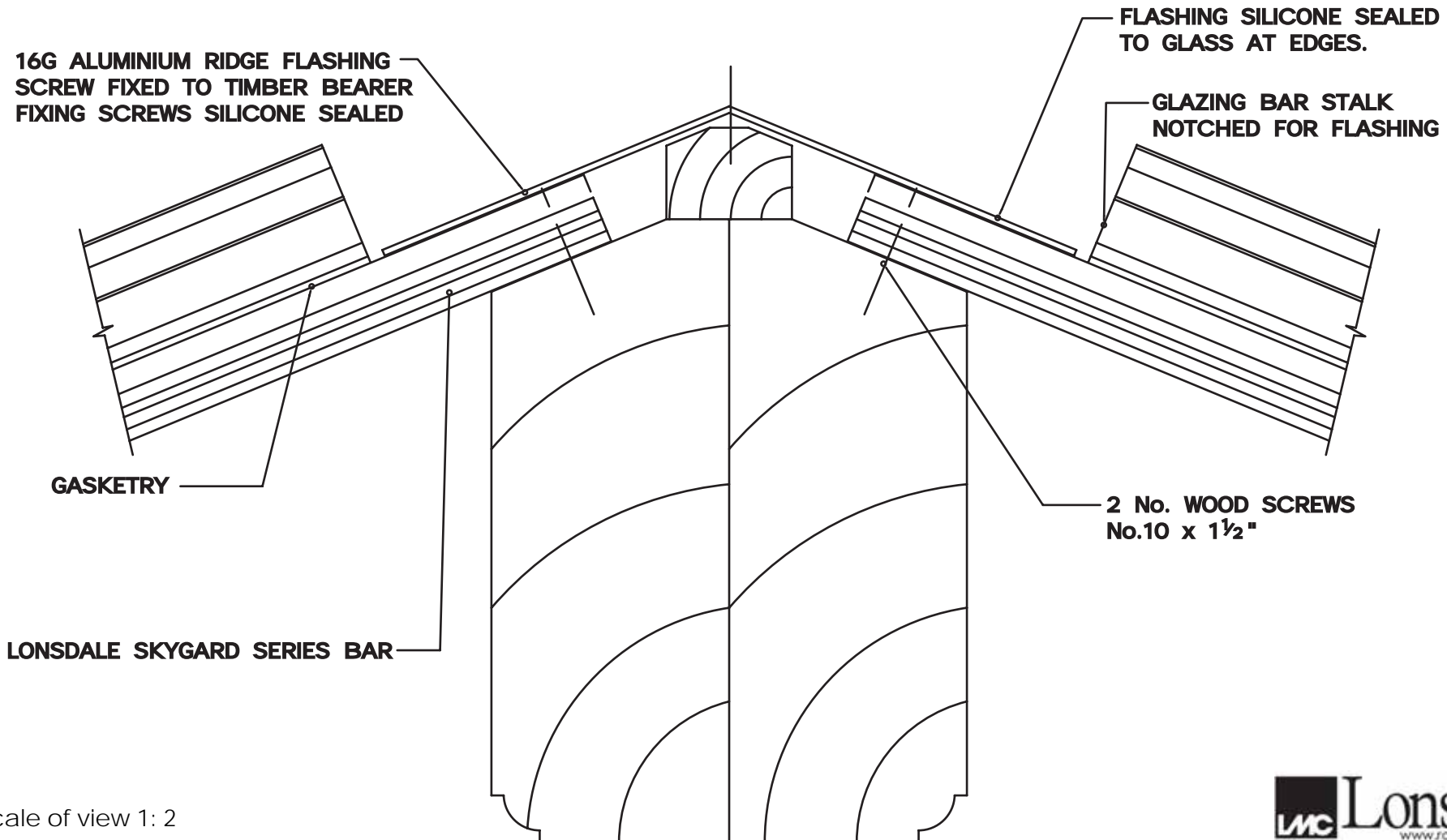
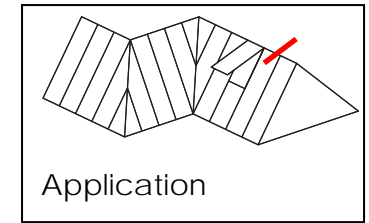


Scale of view 1: 2

SkyGard

Ridge detail to metal

CAD Code SKY19TY

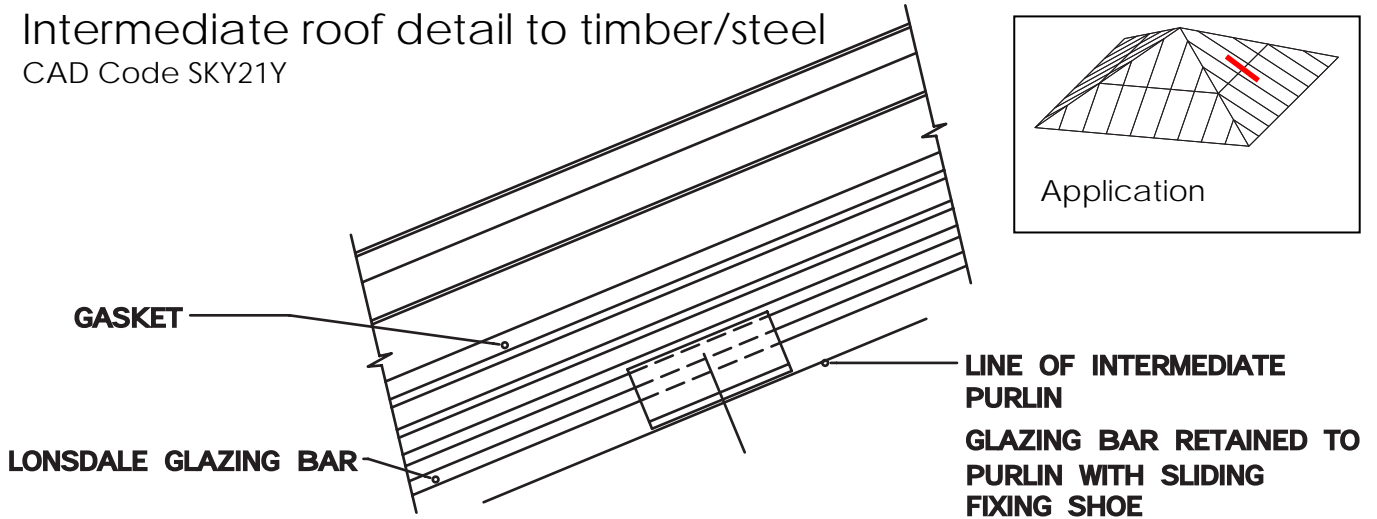


Scale of view 1: 2

SkyGard

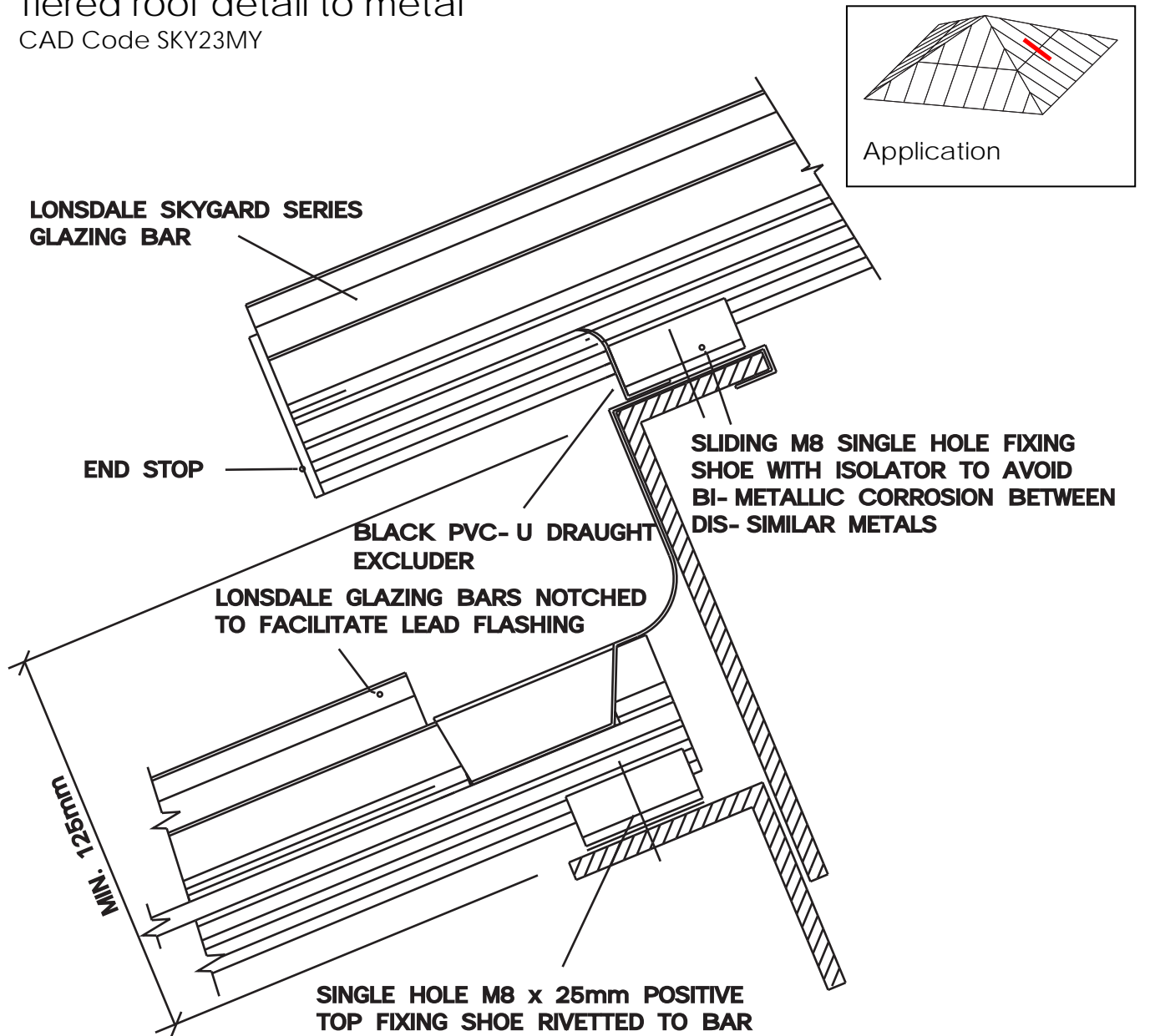
Intermediate roof detail to timber/steel

CAD Code SKY21Y



Tiered roof detail to metal

CAD Code SKY23MY

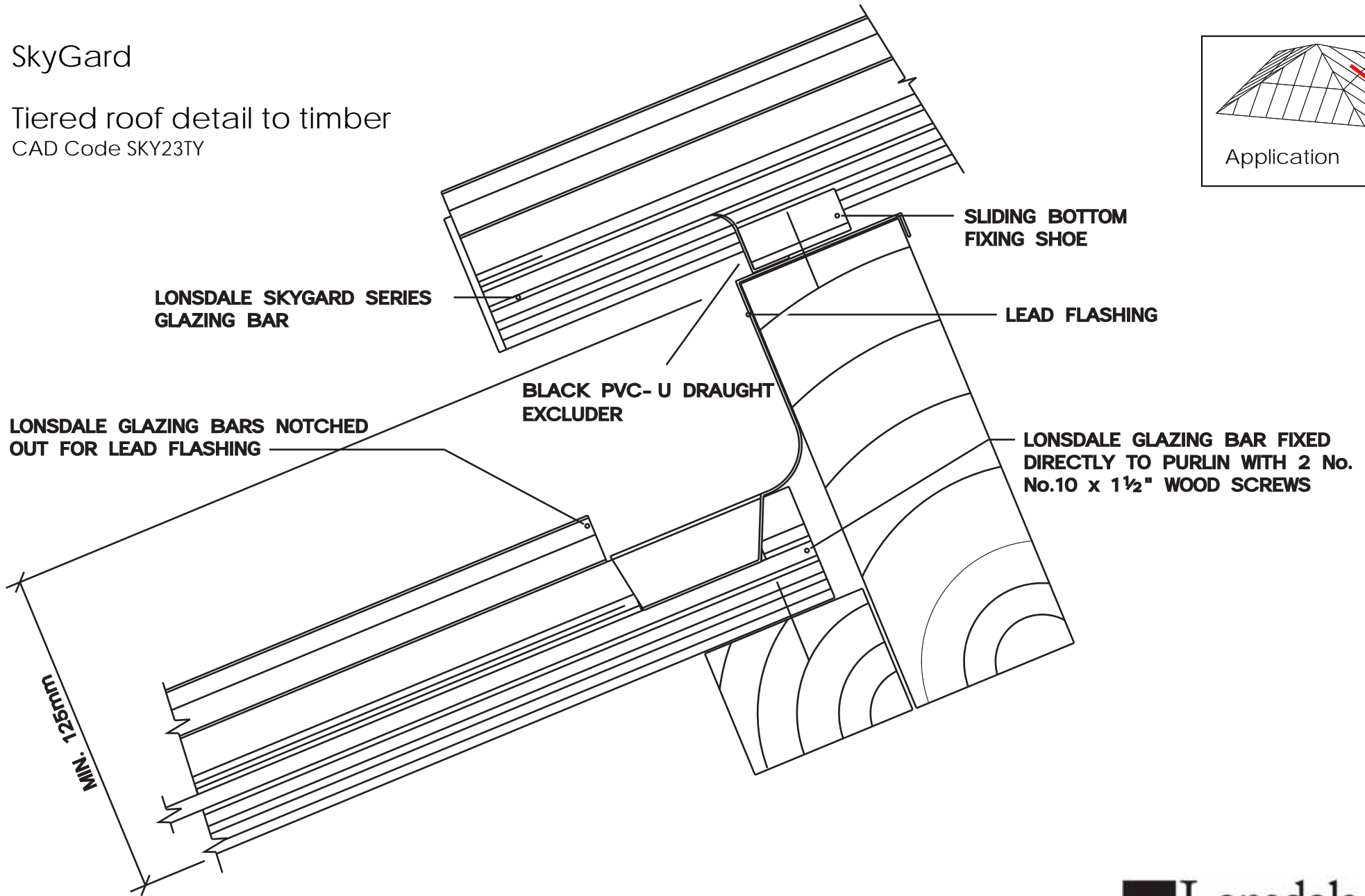
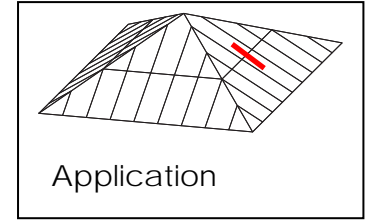


Scale of views 1-2

SkyGard

Tiered roof detail to timber

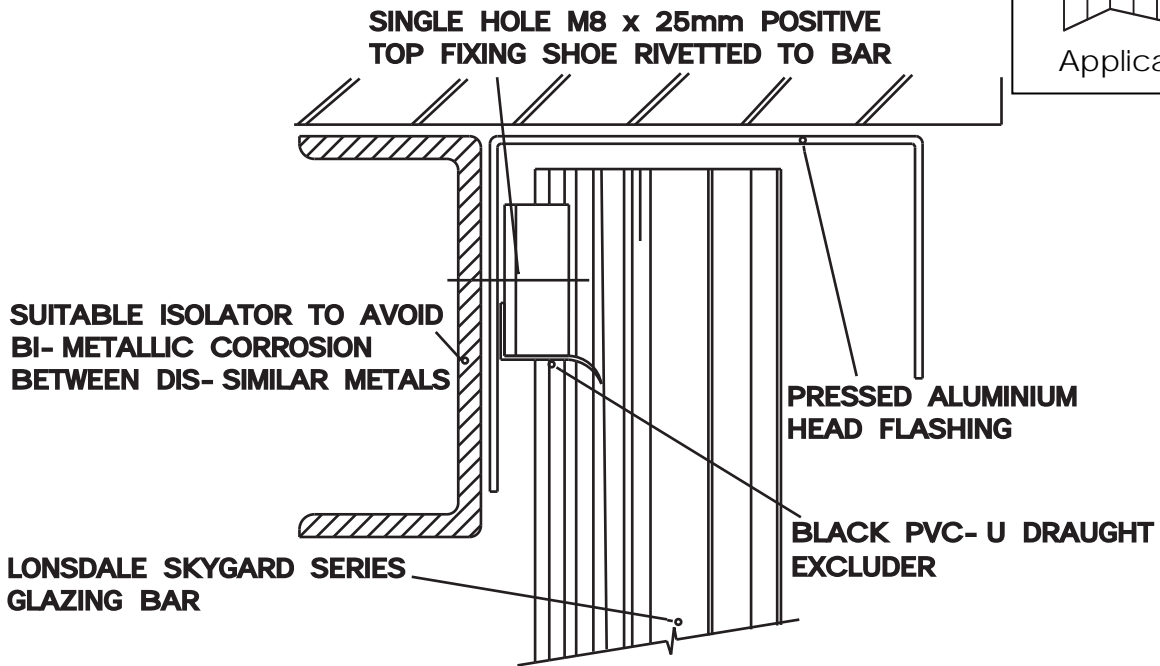
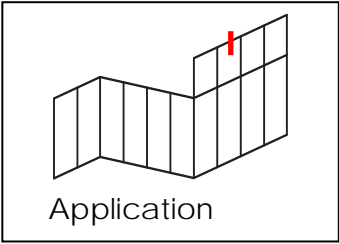
CAD Code SKY23TY



Scale of view 1: 2

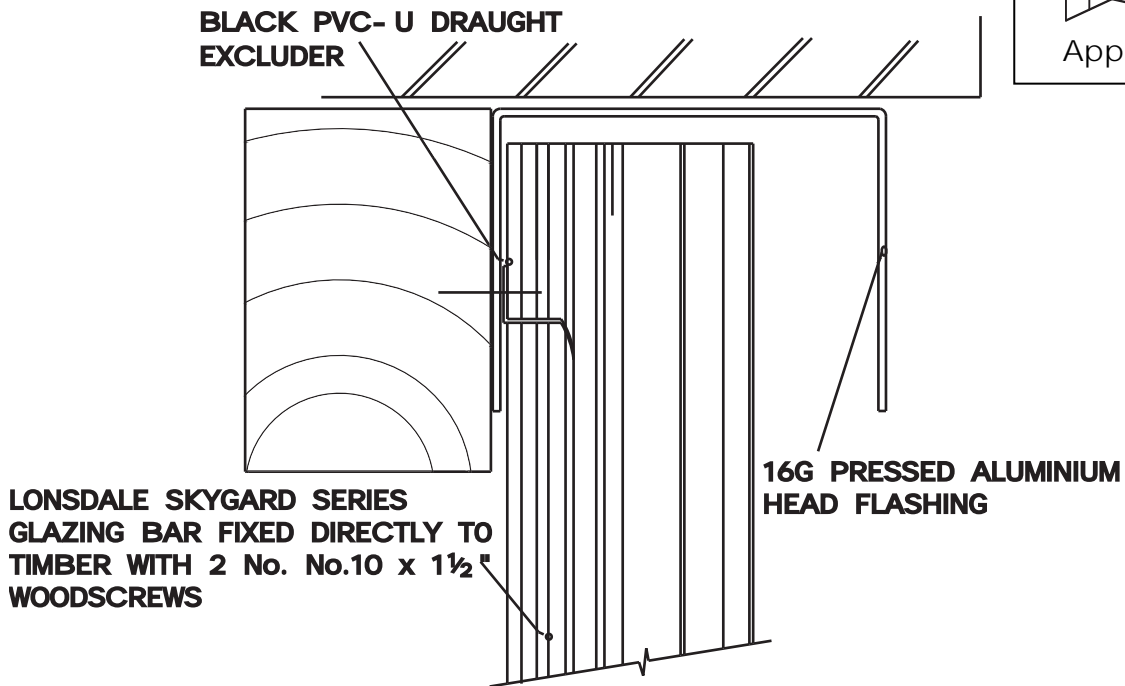
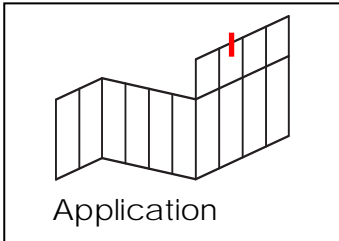
Vertical head fixing to steel

CAD Code SKY24MY



Vertical head fixing to timber

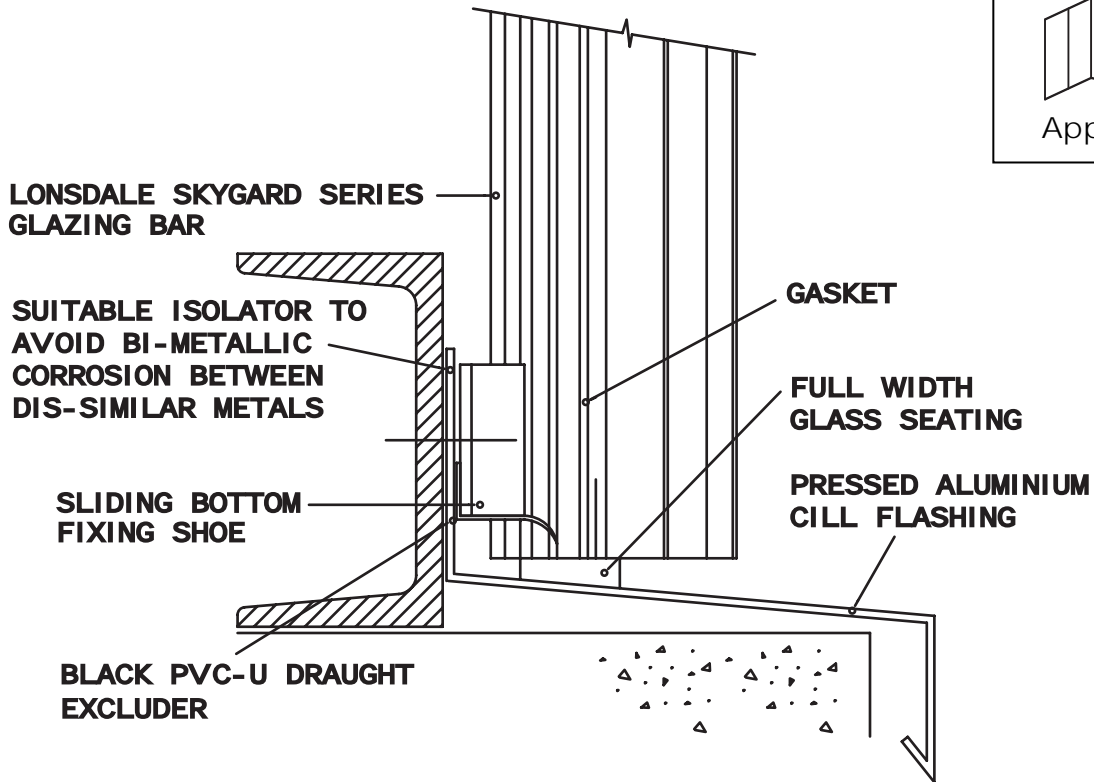
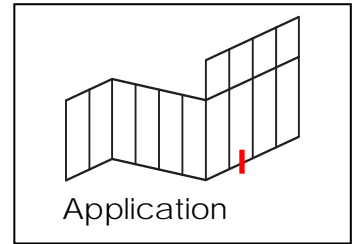
CAD Code SKY24TY



SkyGard

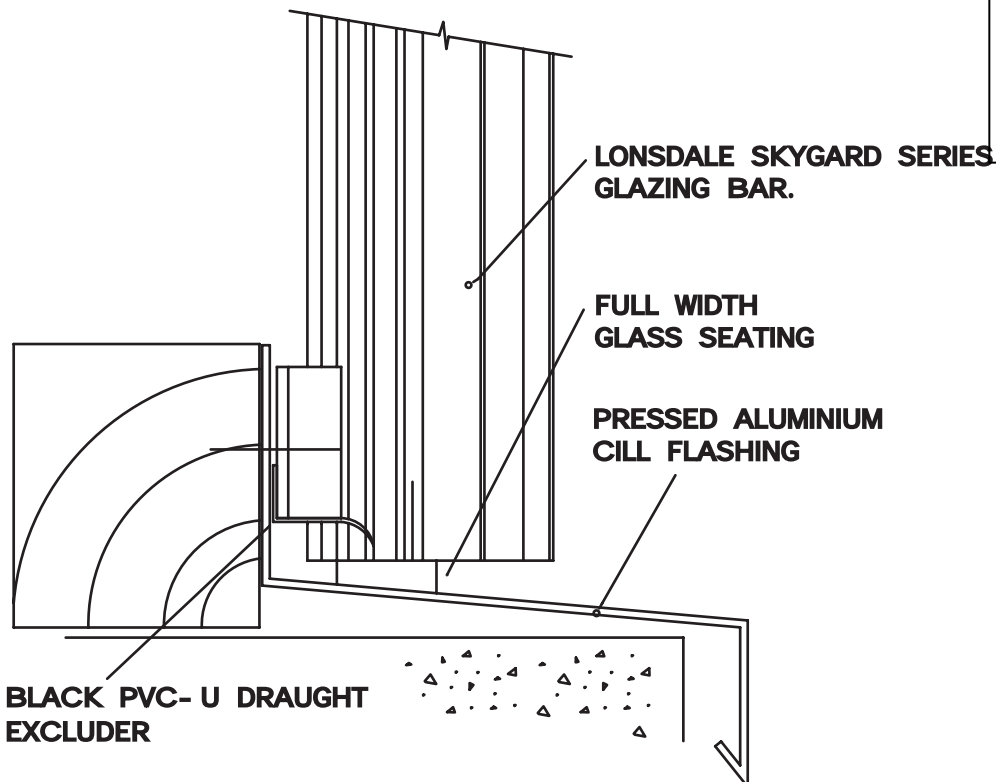
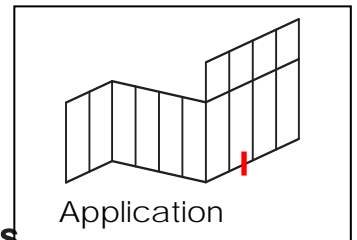
Vertical cill to metal

CAD Code SKY25MY



Vertical cill to timber

CAD Code SKY25TY

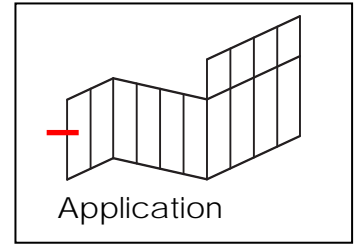
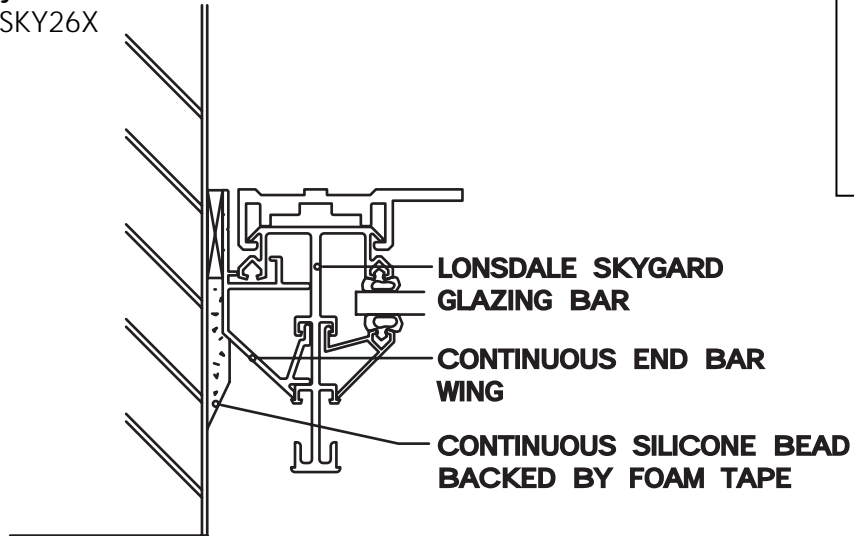


Scale of views 1-2

SkyGard

Vertical jab to brickwork

CAD Code SKY26X



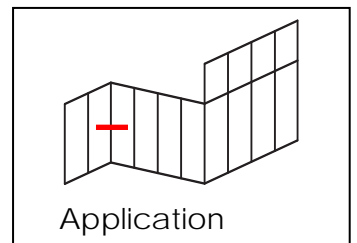
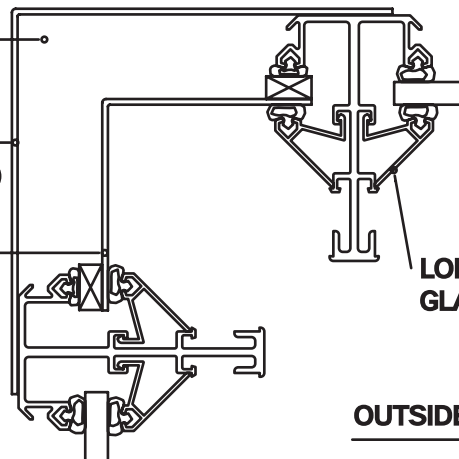
Internal corner to vertical

CAD Code SKY27X

**OPTIONAL INSULATION MAY
BE PLACED IN THIS VOID**

**16G PRESSED ALUMINIUM
CORNER FLASHING (OPTIONAL)**

**16G PRESSED ALUMINIUM
CORNER FLASHING**



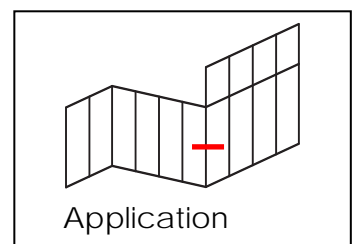
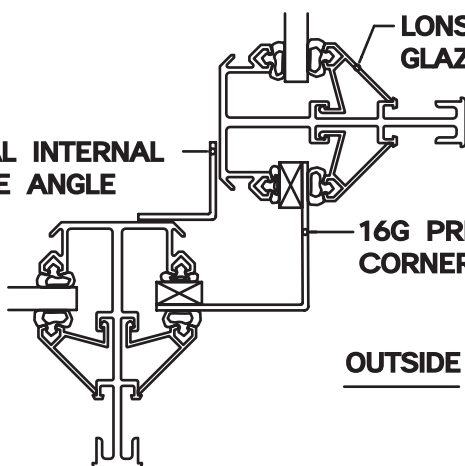
External corner to vertical

CAD Code SKY28X

**LONSDALE SKYGARD SERIES
GLAZING BAR**

**OPTIONAL INTERNAL
CLOSURE ANGLE**

**16G PRESSED ALUMINIUM
CORNER FLASHING**

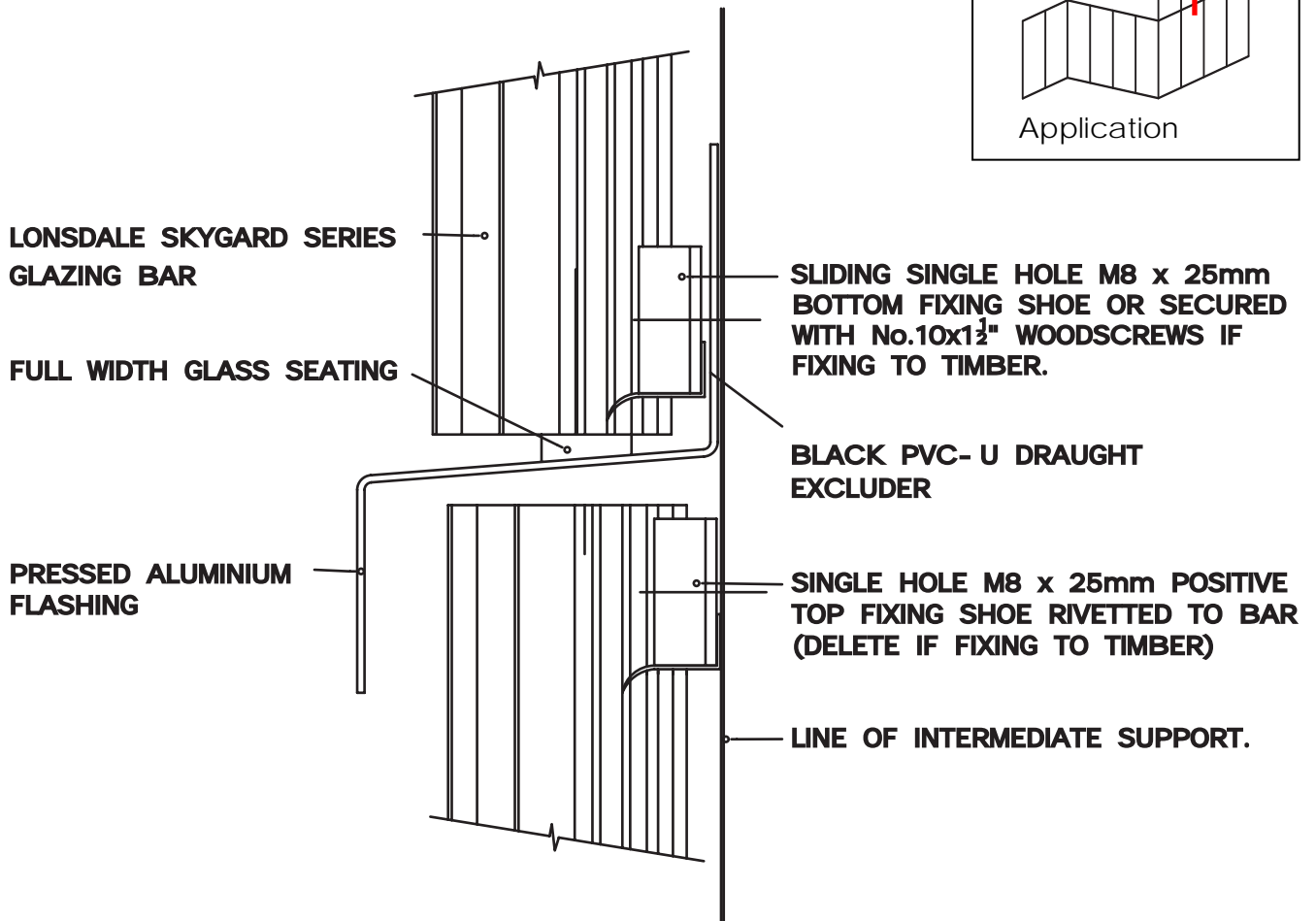
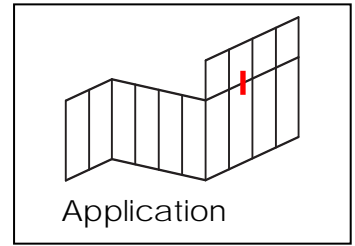


Scale of views 1-2

SkyGard

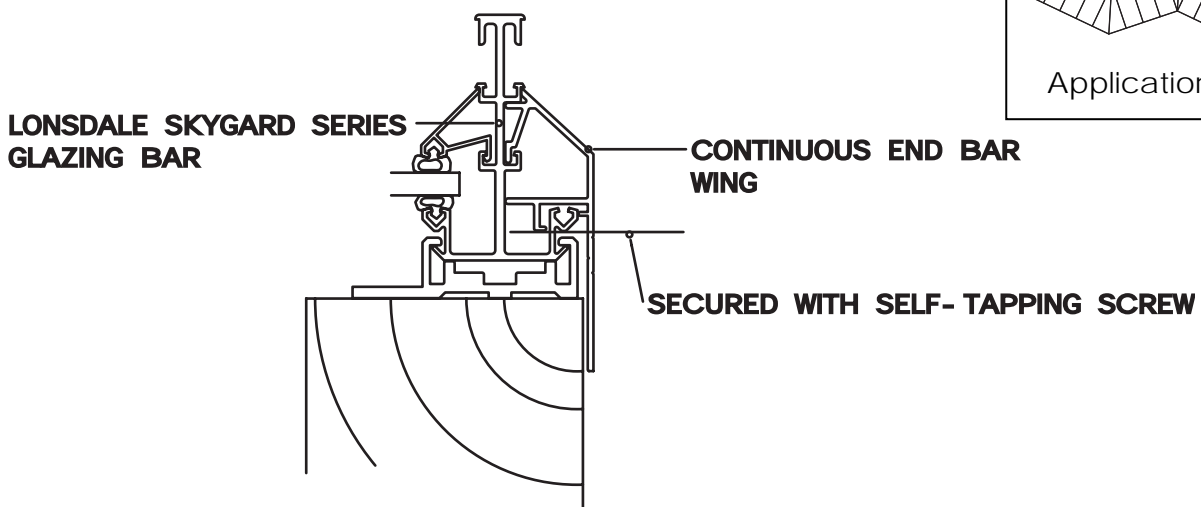
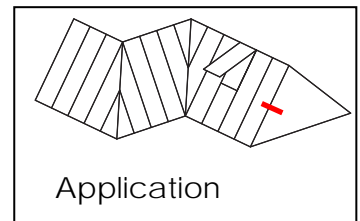
Vertical intermediate detail

CAD Code SKY29MY



Verge

CAD Code SKY31X

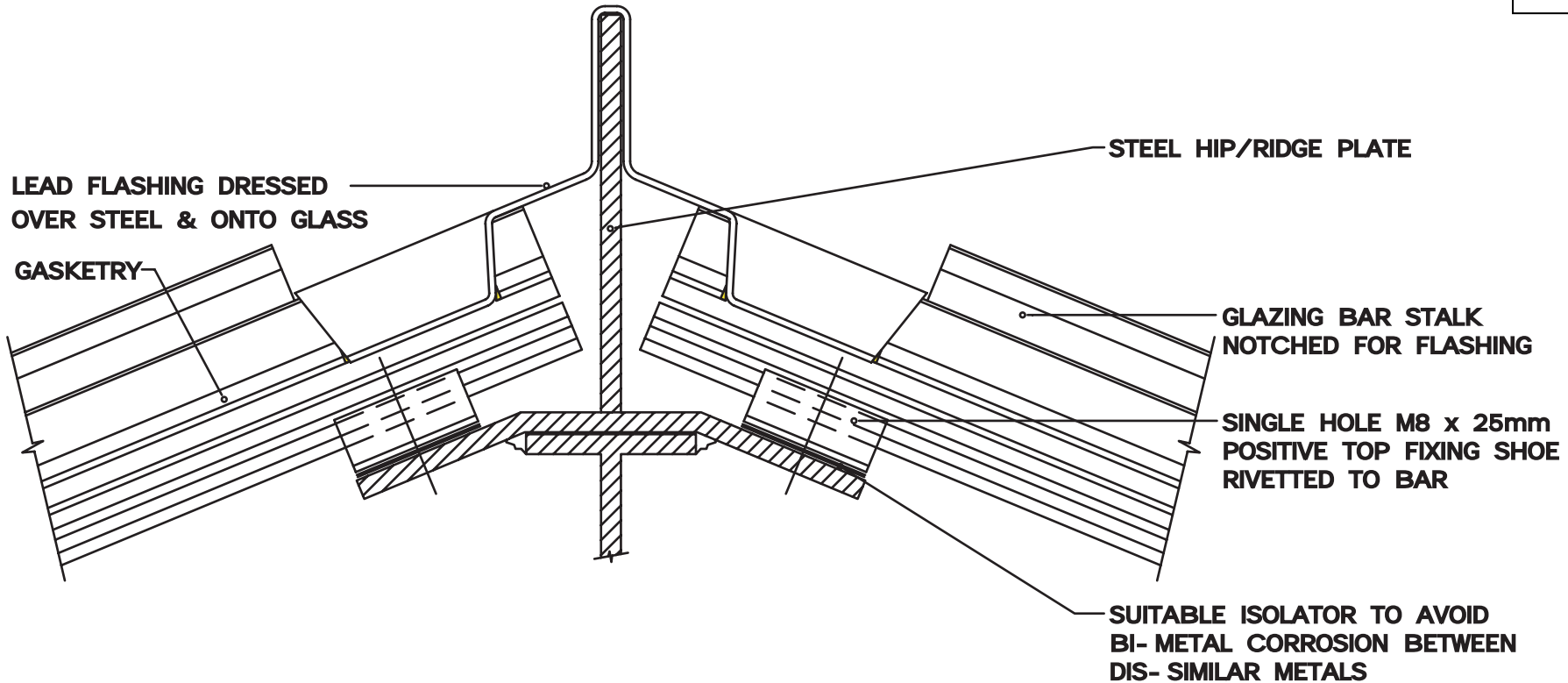
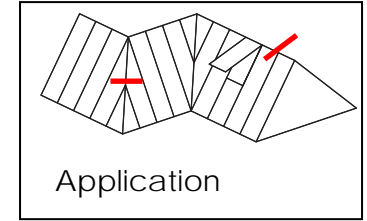


Scale of views 1-2

SkyGard

Lead flashing to steel ridge/hip

CAD Code SKY32MY – see also page 21 CAD Code SKY18MY

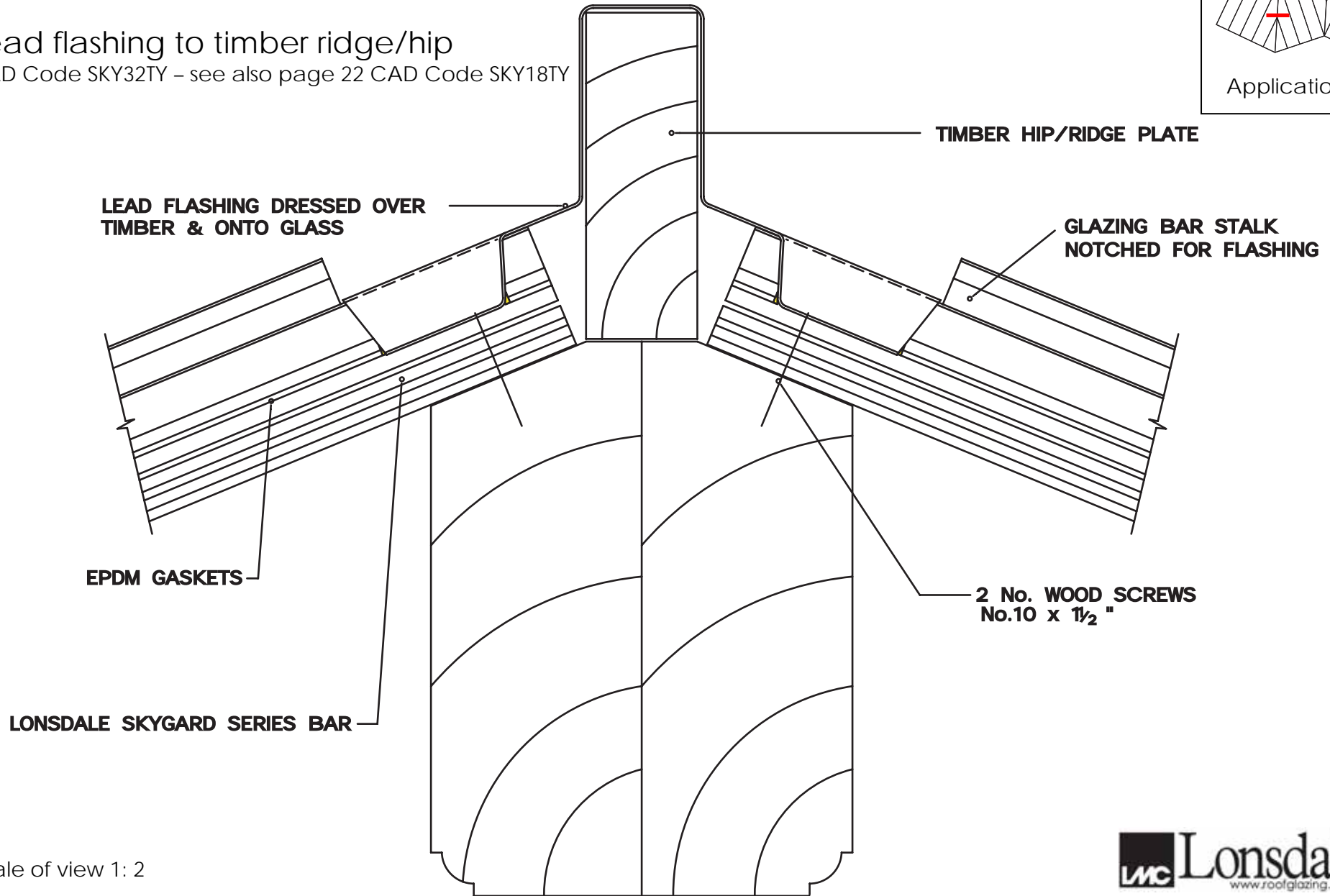
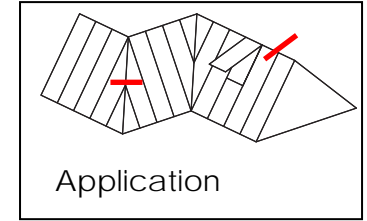


Scale of view 1: 2

SkyGard

Lead flashing to timber ridge/hip

CAD Code SKY32TY – see also page 22 CAD Code SKY18TY



Scale of view 1: 2



Research & Development

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