HILAND TRAY™

ROOFING I WALLING

DESIGN GUIDE

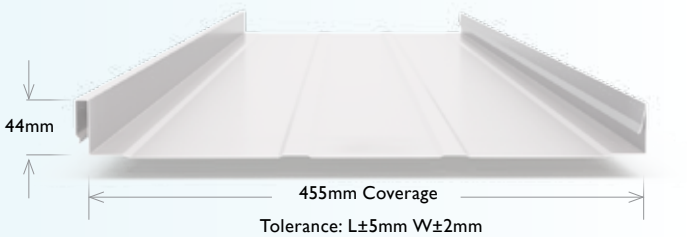
FORM AND FUNCTION

Hiland Tray is a modern 455mm wide tray roofing and walling system, roll formed onsite with a mobile roll forming facility in long single lengths and secret fixed or 'snap locked' to roof purlins and wall girts via a simple clip system. The profile is available with the option of swages within the tray pan, or no swages for a more traditional look.

The Hiland™ Tray profile has a high rib height of 44mm which enhances its smooth bold lines and provides greater water carrying capacity and strength for snow loading applications in alpine regions.

Hiland Tray is available in 0.55mm BMT Zinc/Al and four contemporary pre-painted colour steel options to suit any home design comprising of Loch™ (Ironsand), Castle™ (Sandstone Grey), Bluff™ (Grey Friars), Knight™ (Ebony).

Note: Ironsand, Sandstone Grey, Grey Friars and Ebony equivalent colour names listed are trade marks of New Zealand Steel Limited and used only for comparison.



Tolerance: L±5mm W±2mm

MATERIAL SPECIFICATIONS

Material Properties	Finish	0.55 BMT
Minimum 'AZ' Coating Mass (g/m²)	Zinc/al & Colour	150
Mass (kg/linear metre)	Zinc/al	2.71
	Colour	2.75
Mass (kg/square metre)	Zinc/al	5.97
	Colour	6.05
Yield (square metre/tonne)	Zinc/al	168
	Colour	165
Tensile Strength (MPa)	Zinc/al & Colour	340
Width Coverage (mm)	Zinc/al & Colour	455
Sheet Tolerances (mm)	Length & Width	±5 ±2
Minimum Roof Pitch	Zinc/al & Colour	3°

SPAN TABLES

MAXIMUM RECOMMENDED SPANS (mm)

Span Type	Roofing BMT (mm)	Walling BMT (mm)
	0.55	0.55mm
End/ Double	600	1800
Internal	900	1800

Roofing : Spans are limited based on foot traffic incidental to maintenance.
Walling: Spans are based Region A, Terrain Category 2.0 wind loading, refer to the 'Spans' table below.

SPANS (mm)

Terrain Category	Local Pressure KI	Roofing				Walling			
		Region A		Region W		Region A		Region W	
		End/ Double	Internal	End/ Double	Internal	End/ Double	Internal	End/ Double	Internal
1	1	600	900	600	900	1800	1800	1800	1800
	1.5	600	900	600	900	1800	1800	1800	1800
	2	600	900	600	900	1800	1800	1470	1600
	3	600	900	560	620	1320	1450	950	1080
2	1	600	900	600	900	1800	1800	1800	1800
	1.5	600	900	600	900	1800	1800	1800	1800
	2	600	900	600	900	1800	1800	1790	1800
	3	600	900	600	900	1640	1760	1280	1410
3	1	600	900	600	900	1800	1800	1800	1800
	1.5	600	900	600	900	1800	1800	1800	1800
	2	600	900	600	900	1800	1800	1800	1800
	3	600	900	600	900	1800	1800	1800	1800

WIND CAPACITIES (kPa)

BMT	Span Type	Limit State	SPAN (mm)					
			450	600	900	1200	1500	1800
0.55mm	End/Double	Serviceability	5.23	3.78	3.14	2.57	2.08	1.68
		Strength	6.54	4.73	3.92	3.21	2.60	2.10
	Internal	Serviceability	5.23	3.78	3.14	2.57	2.08	1.68
		Strength	7.15	5.17	4.29	3.51	2.85	2.30

Capacities determined based on a minimum of two screws per clip into timber supports.

ENGINEERING

TESTING SYSTEMS

Stratco have developed purpose built testing equipment for the testing of cladding systems sufficient to ensure the structural adequacy of the product it produces.

COMPLIANCE

Wind Capacity Tables are based on testing for compliance with the New Zealand Metal Roof and Wall Cladding Code of Practice. Span tables have been developed by determining relevant wind pressures in accordance with AS/NZS 1170.2. Capacity tables are in limit state format.

SPANS

Span tables are based on a maximum overall building height of ten metres and a 500 year design return period for strength limit state wind load assessment. Roofing spans specified are suitable for snow loading up to 2kPa in accordance with the New Zealand Metal Roof and Wall Cladding Code of Practice.

Roofing calculations are based on Cpe=-0.9 and Cpi=0.2, walling is based on Cpe=-0.65 and Cpi=0.2. Local pressures are as specified and have been considered for both strength and serviceability limit states. Roof spans take into consideration loads incidental to maintenance noting ends spans allow for foot traffic over supports only.

All pressures have been determined assuming wind loading in any direction without shielding but which is not affected by topography (i.e. Mt=1.0). Allocated spans do not allow for Lee Zones, for areas within these zones, utilise the wind capacity tables to calculate spans based on the relevant allowance for Lee Multipliers.

Additional engineering advice can be obtained from Stratco if any design parameters vary from those indicated above.

DESIGN CONSIDERATIONS

Hiland Roofing and Walling has a 455mm cover with a 0.55mm BMT material thickness. The minimum allowable roof pitch is 3°.

FIXING RECOMMENDATIONS

Hiland sheets should be laid into the prevailing wind and sit neatly on the preceding roof sheet. They should be fixed within the recommended support spacings. Avoid 'stretching' the width of the sheet when installing, as this could allow wind and rain to enter. Edge fixing is mandatory for strength/spanning capability.

This is done with 10 gauge self drilling screws to secure the standing seam to edge clips (i.e. to all clips along edges of sheet layouts).

Due to the seam height, flashing turn downs into the pan of Hiland sheeting should always be notched around the rib to provide maximum weather tightness.

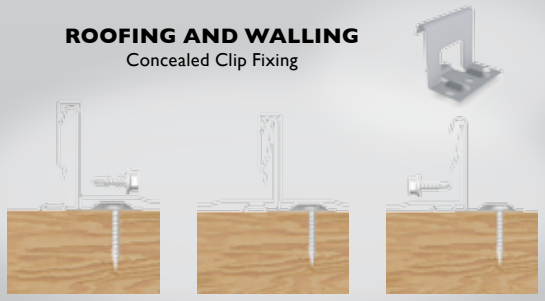
For roof pitches less than 10°, it is recommended that safety mesh is used directly under the Hiland Tray and purlin centres are reduced to 450mm. Use either roofing string or tape to support the underlay.

ROOFING LAYING PROCEDURE

LAYING DIRECTION **PREVAILING WIND**

INSTALLATION DETAILS

ROOFING AND WALLING
Concealed Clip Fixing



Fixing to Timber
Two 10 x 30mm wafer-head timber fixing screws (square drive recommended) per clip. Clips located at every sheet overlap and sheet edges at each timber support.
Timber supports to be 100 x 50mm planer gauged and minimum MGP10 or F5 grade.

WALKING ON HILAND

When walking on Hiland Roofing, walk over the purlins to avoid damage to the sheeting. Wear flat rubber soled shoes and walk flat footed in the pans only.

Walking on end spans is restricted explicitly to over the end span purlins with no access allowed directly on end spans due to potential sheet damage.

MAINTENANCE REQUIREMENTS

The performance of Hiland Roofing and Walling over time depends on its correct application and maintenance. Maintenance should be performed as often as is required to remove any dirt, salt and pollutants.

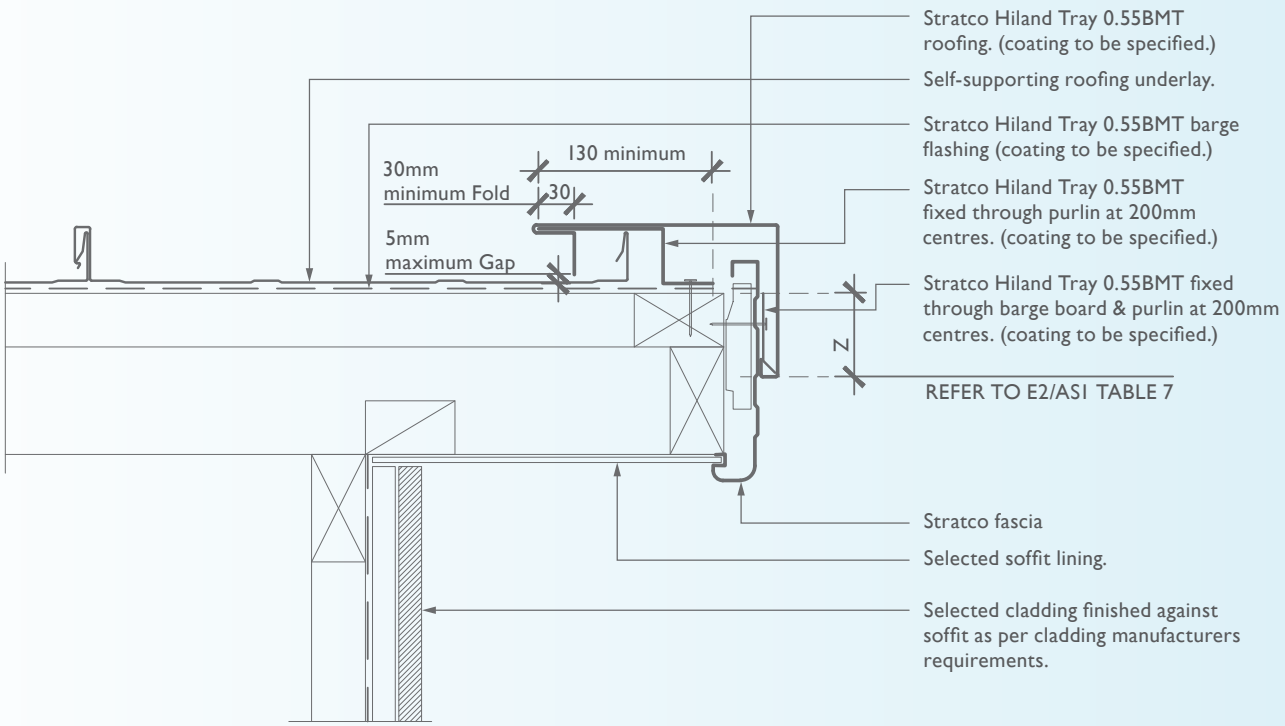
Where Hiland cladding is used in severely corrosive environments, cleaning should be performed more often. It is important that screws have the same life expectancy as the Hiland cladding you have specified.

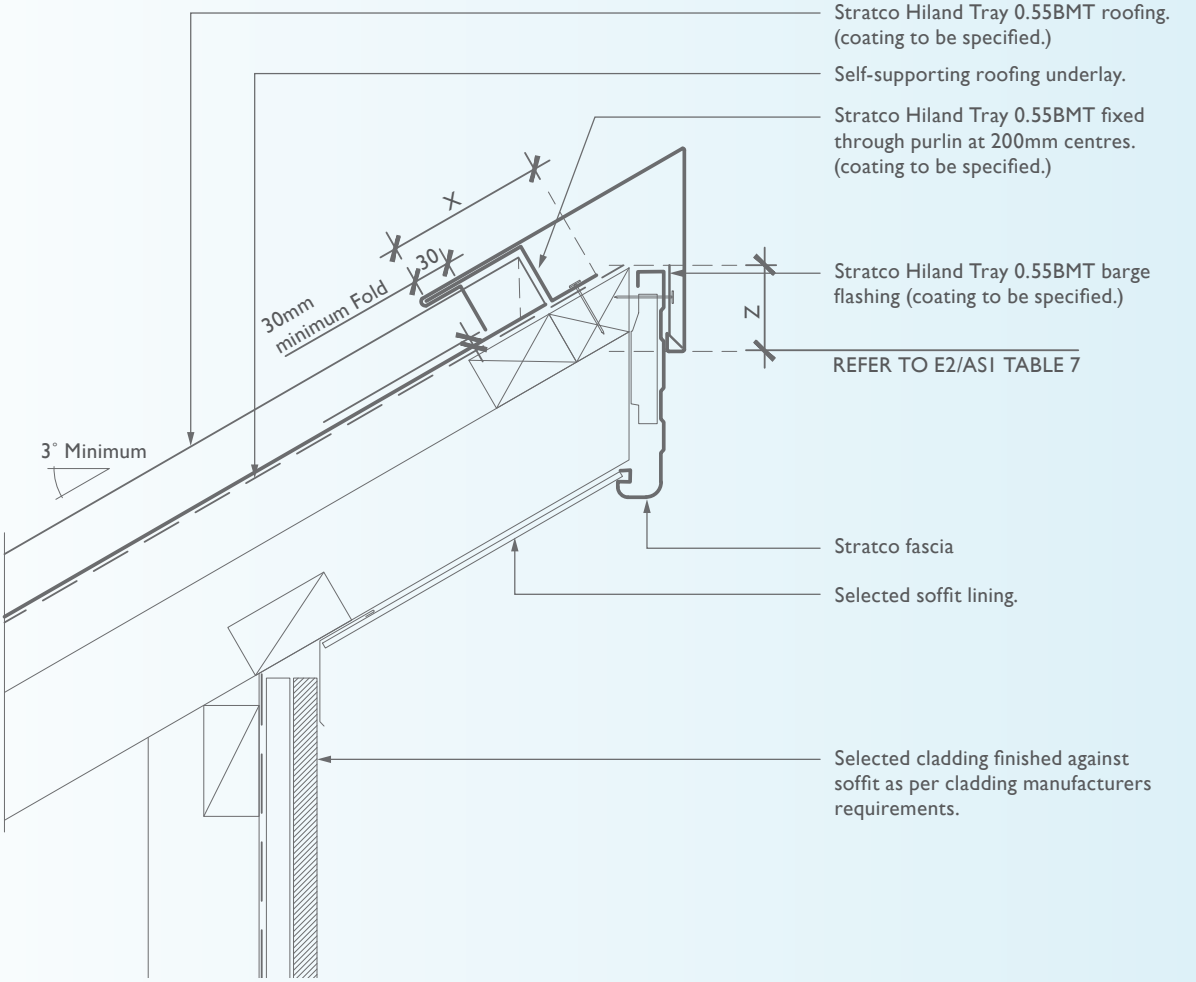
Packs of Hiland sheeting should always be kept dry and stored above ground level on site. If the sheets have become wet, they should be separated, wiped and placed in the open to dry.

Refer to the Stratco 'Selection, Use and Maintenance' brochure for more detailed information about the correct use and maintenance of this product.

DESIGN APPLICATIONS

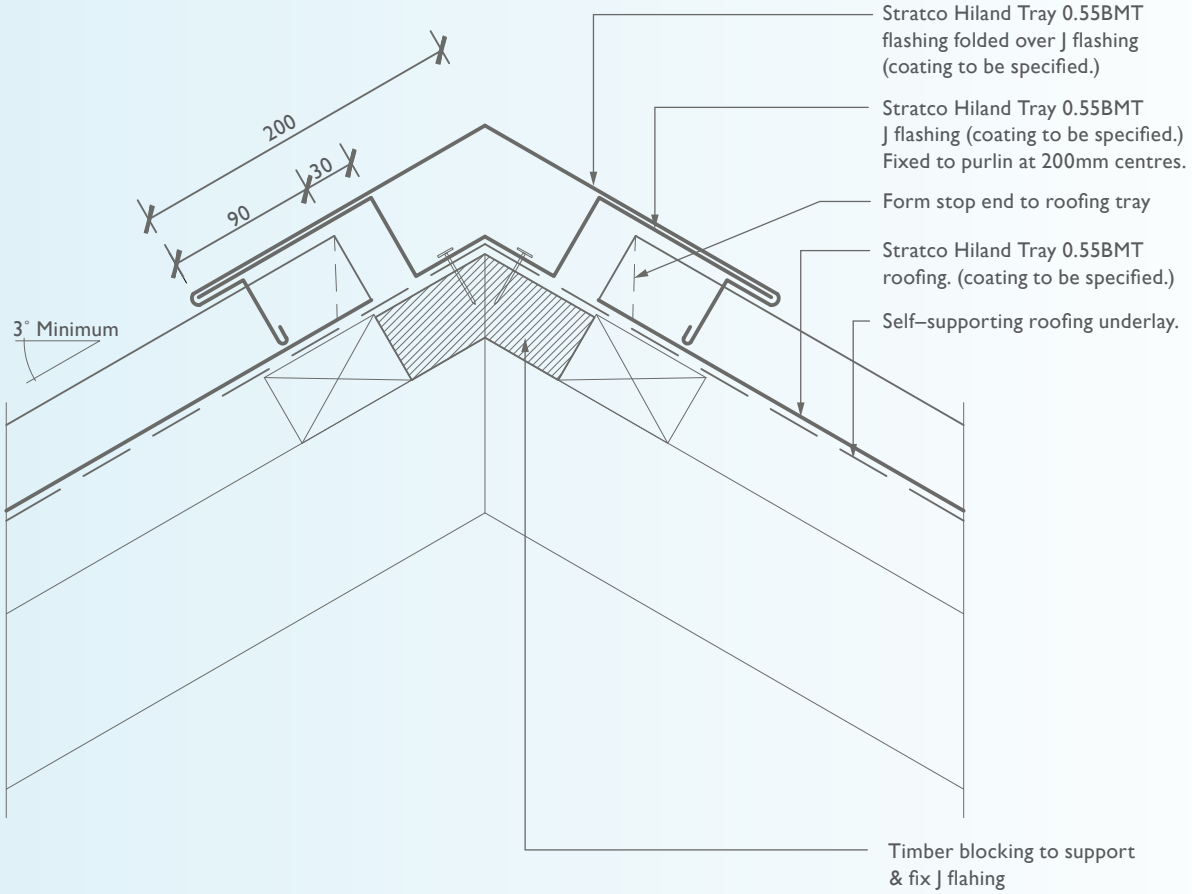
BARGE CAPPING DETAILS



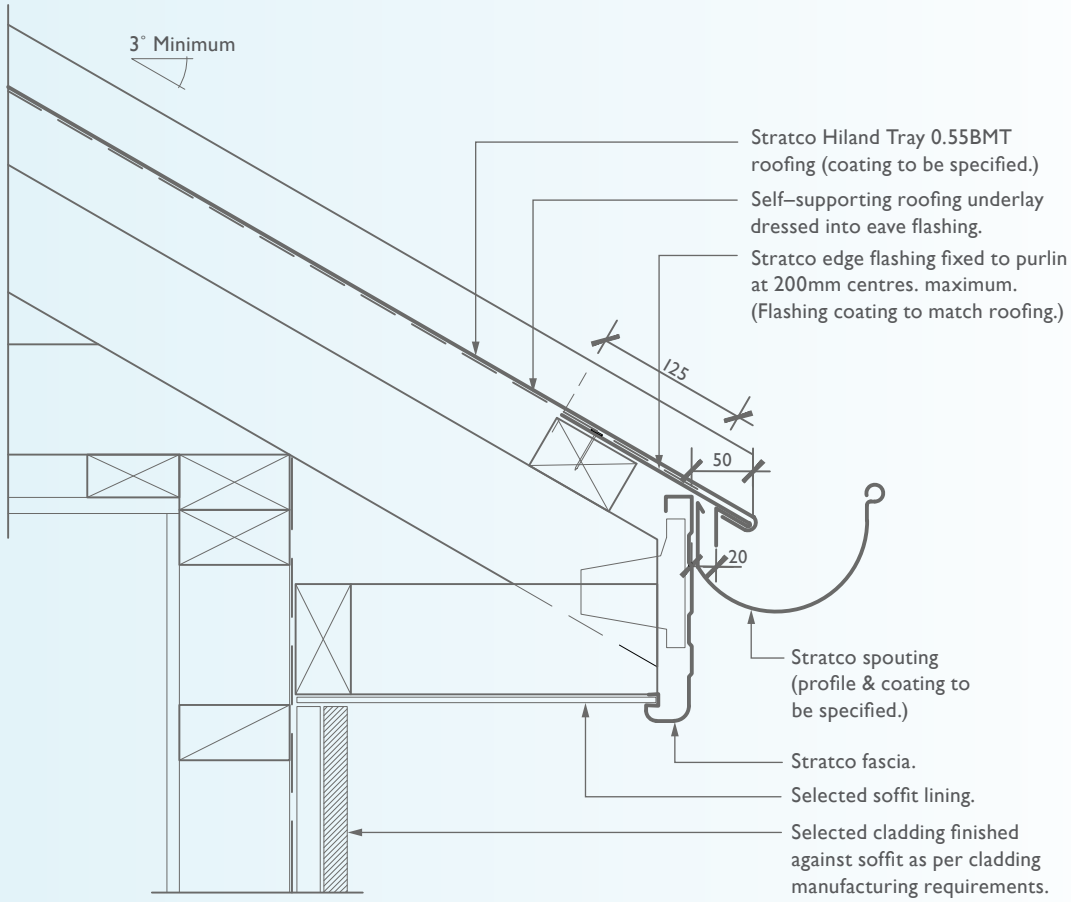


DESIGN APPLICATIONS

ROOF CLADDING DETAILS



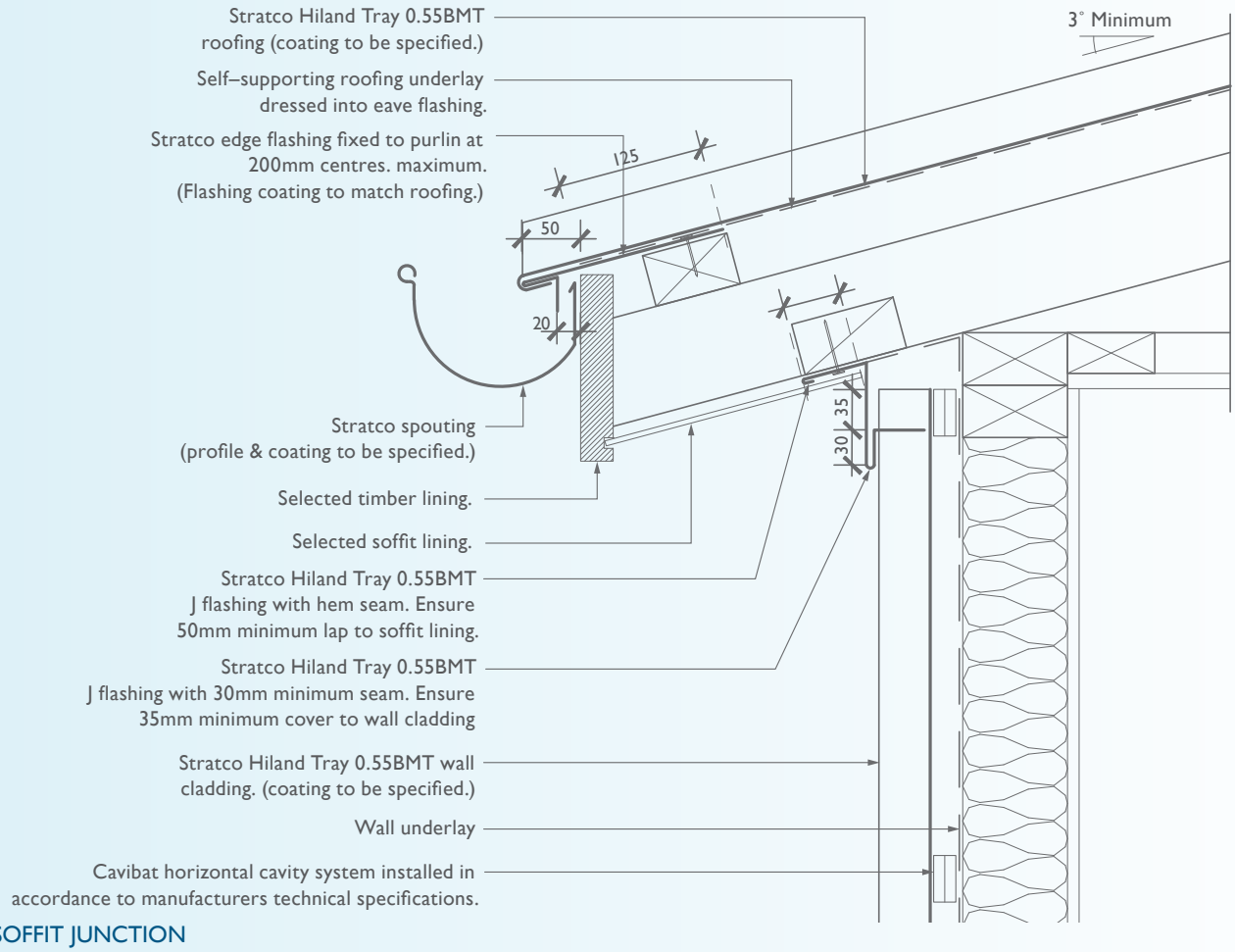
RIDGE DETAIL



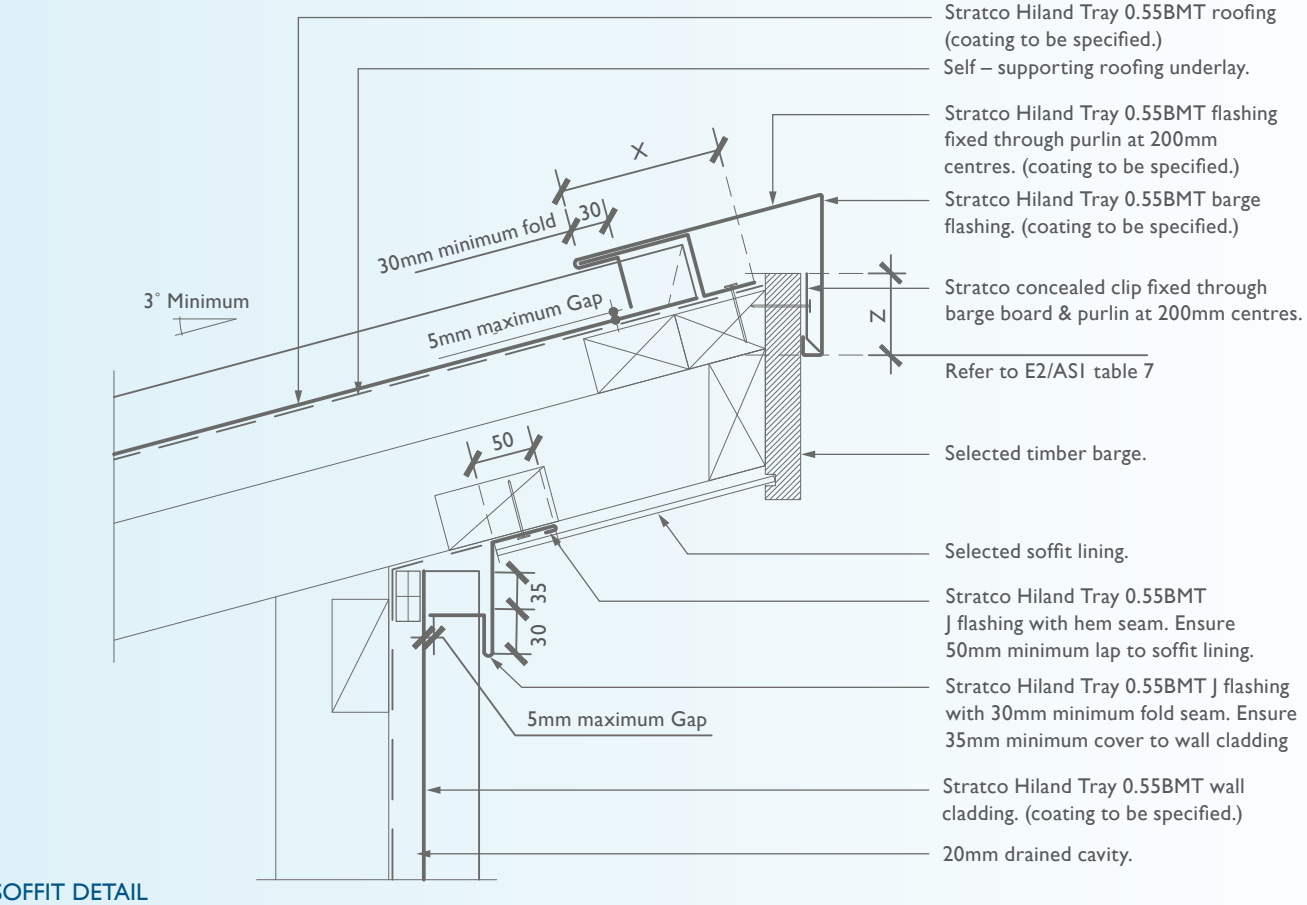
EAVE DETAIL

DESIGN APPLICATIONS

ROOF CLADDING DETAILS



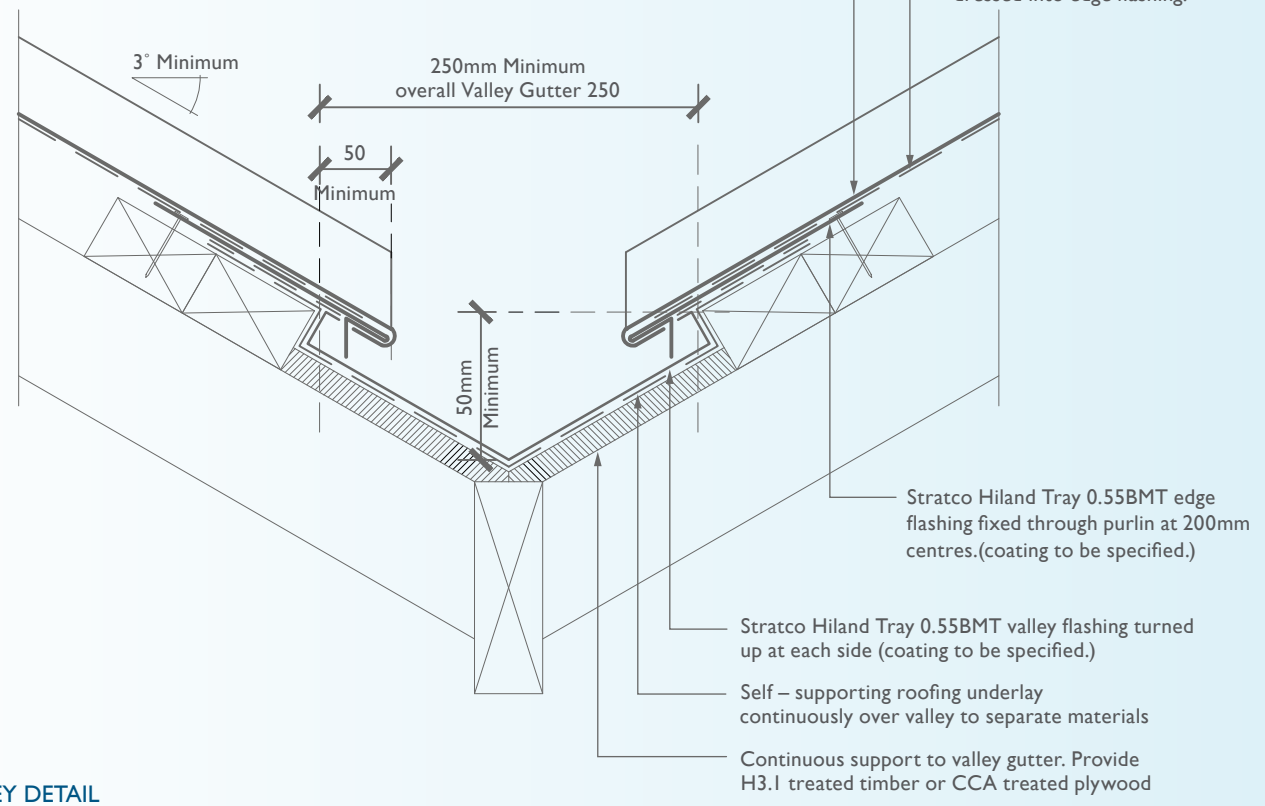
SOFFIT JUNCTION



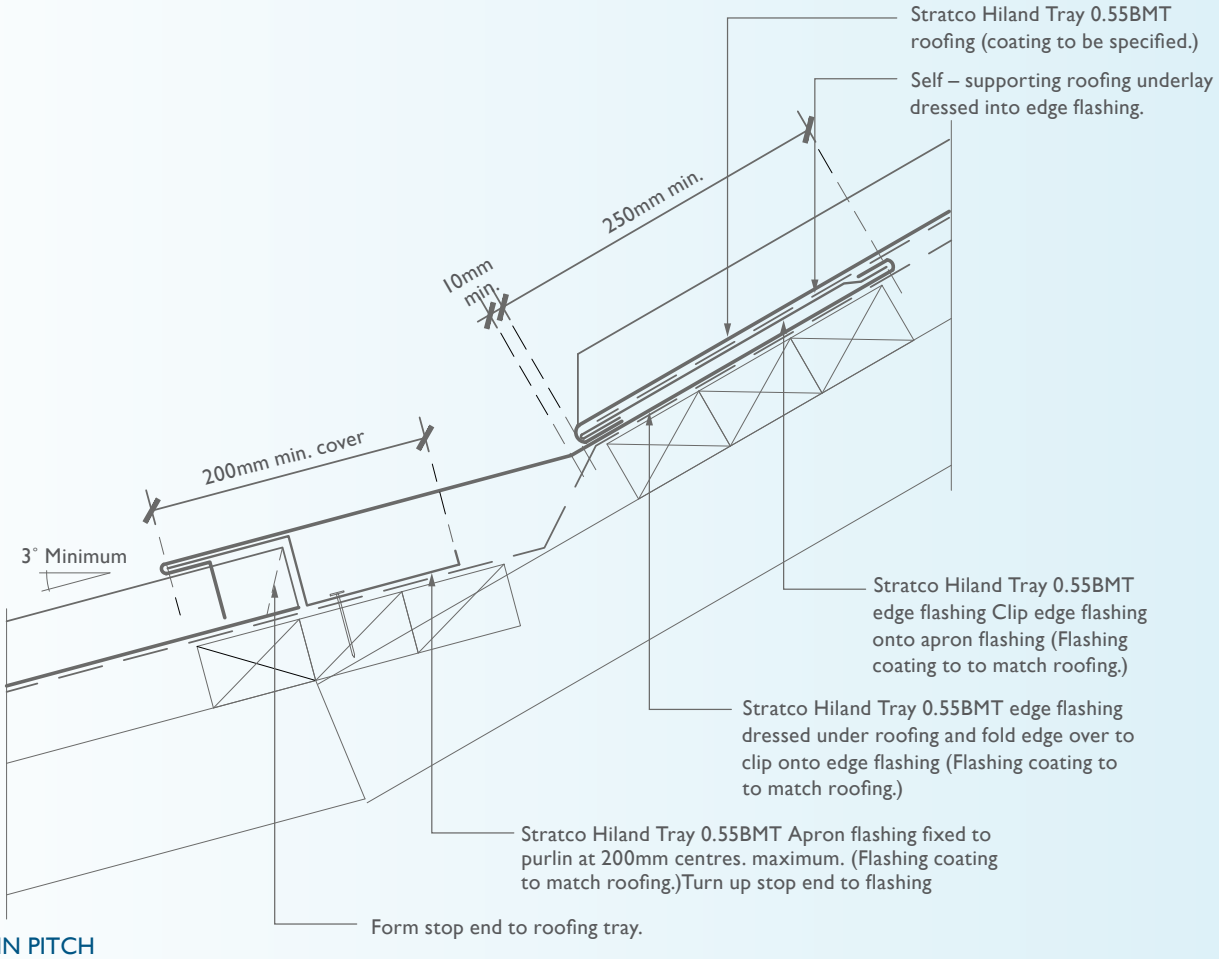
SOFFIT DETAIL

DESIGN APPLICATIONS

ROOF CLADDING DETAILS



VALLEY DETAIL



CHANGE IN PITCH