Proseam System

Proseam is a standing seam system in its true sense. It does not have any penetrations in the external fabric in order to secure it to the structure.

Manufactured

Proseam can be manufactured from a variety of metals and finishes in both 300mm and 400mm cover widths. The 300mm cover width is predominately used where increased spanning capabilities are required and where highly exposed climatic conditions may be experienced. The 400mm cover width is the more widely used of the two as it offers good spanning ability to suit most construction designs encountered on a regular basis and, of course, is the more cost effective of the two consisting of Less material and requiring less fixing.

Installation

The **Proseam** system comprises of the external sheet, which has an overlap and an underlap (see **figure 1**). The underlap is placed over the fixing halter, which has been mechanically fixed either to an insulation spacer system or directly back to the purlin through the liner tray (see **figure 2**). Also the halter can be fixed directly back to a decking system providing the mechanical fixings have been specifically designed for that purpose. A thermal pad is placed on to the base of the halter prior to fixing. This is to isolate the component from being in contact with the external sheet, creating a thermal bridge and reducing thermal transmission through the system.

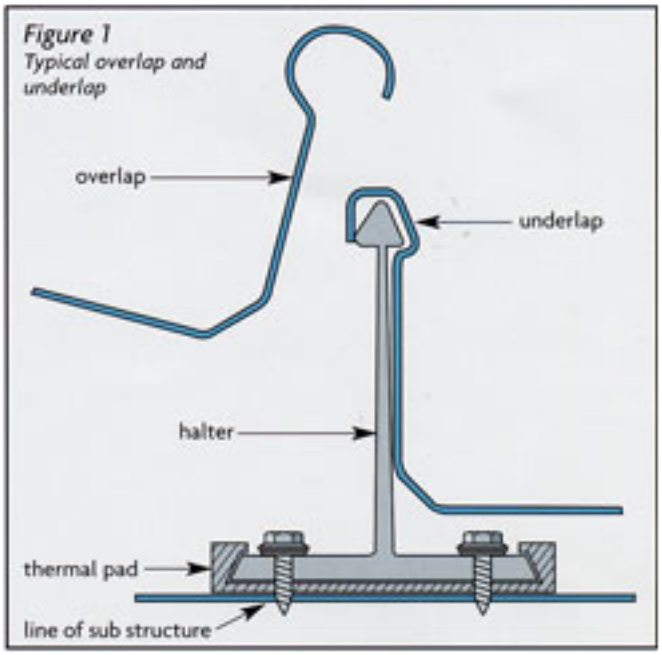


Figure 1
Typical overlap and underlap

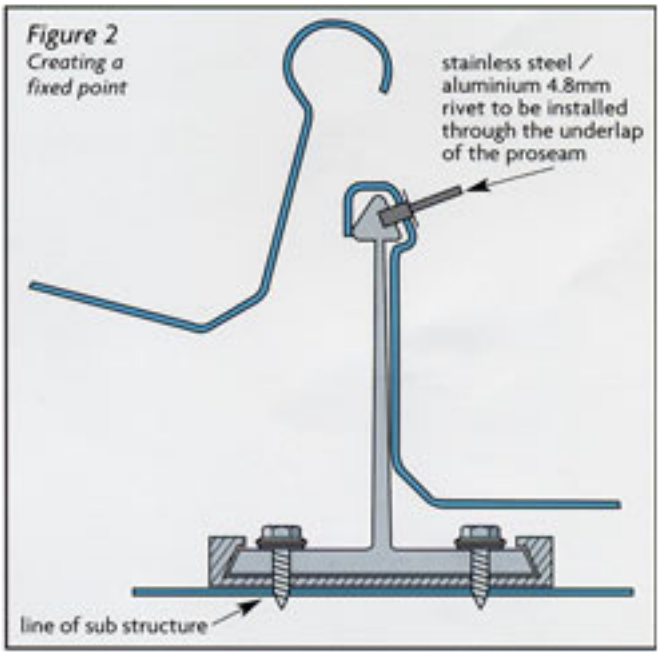
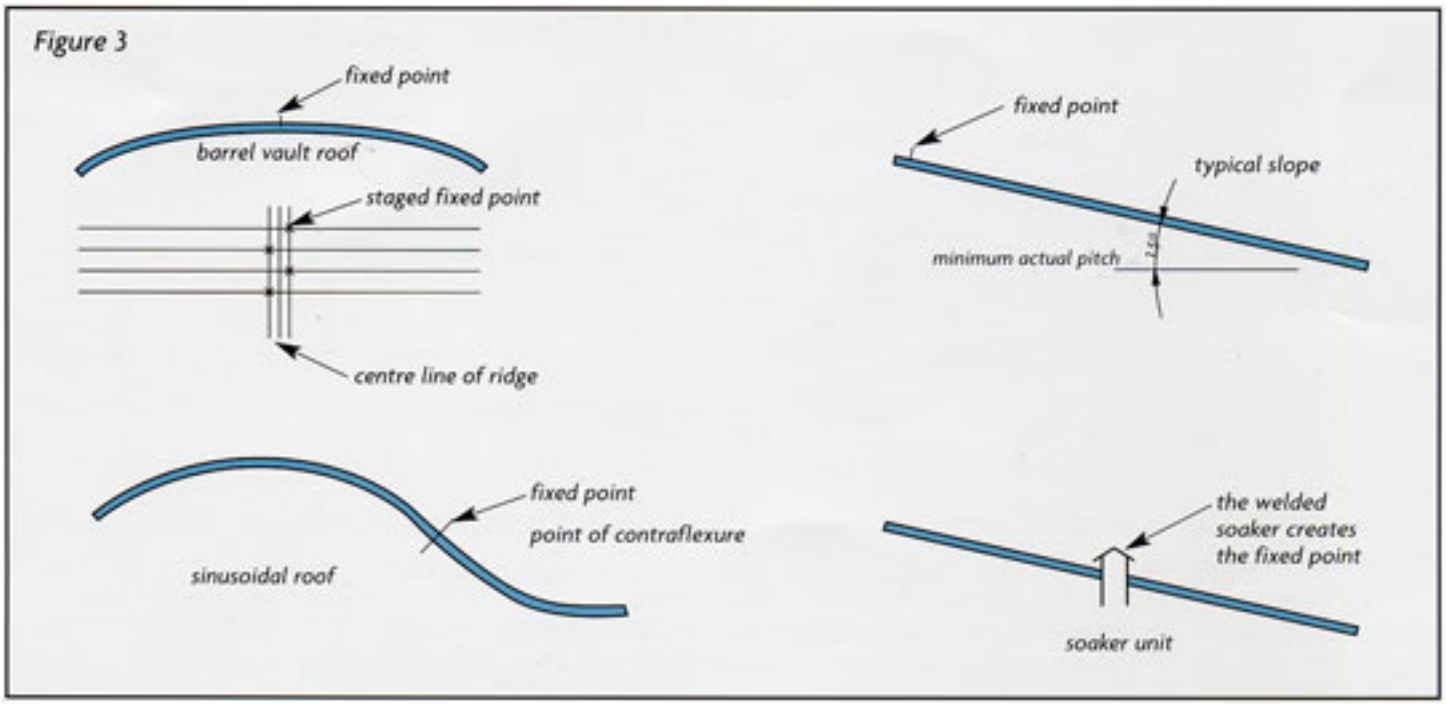


Figure 2
Creating a fixed point

The underlap needs to be fixed at the relevant positions to the halter in order to control thermal expansion (see **figure 2&3**). **The control of thermal expansion is critical and must always be adhered to**. Failure to do so may result in the roof system being seriously compromised

The insulation within the system needs to be compressed by a minimum of 10% and a maximum of 20%. This is to close any pockets of air to the immediate underside of the external face of the Proseam which may cause interstitial condensation



The Proseam itself allows for the external fabric to breath through the upstands and at the overlap positions, thus allowing any moisture that my be trapped during the system's installation to naturally escape as airborne molecules. The incorporation of either an insulation spacer system or varying size halters allows for a wide range of U values to be achieved and the introduction of acoustic layers to either the external face for noise intrusion or to the underside to minimize noise escape, both of which are becoming more of a design requirement than preference.

Proseam is designed to be used on roofs with as little as 1.5 degree pitch (actual) right up to a vertical application. The underlap is positioned.over the halter and the fixed point created. With this in place the overlap is then positioned over the underlap. With the use of the pre-seaming tool form the underlap and overlap for at least 200mm of the sheet that is intended to be zipped. When the pre-forming is complete offer the open zipper onto the preformed area and carefully lock the rolls onto the sheet using the tension bar taking care not to crimp the top of the sheet. Make sure that sufficient electrical lead is present to travel the full length of the sheet and that there is an operative in place at the other end of the sheet to stop and remove the zipper. The sheets need to be zipped before any foot traffic is allowed to take place. Once the sheets have all been zipped they will need either to be turned down at the eaves or turned up at the ridge. The reason for turning the sheet down at the eaves is to prevent silt build up which may occur on all roofing sheets where they have been guillotined by some form or another. The turn-up of the roof sheets is to prevent wind driven rain entering the system at the ridge flashing position which is more vulnerable on low pitches. If this is of design concern then the introduction of a welded seam may be more appropriate. Individual building advice should be sought from our technical department who will advise the best method of weathering the more complicated areas.

Curving

Proseam can naturally curve down to a radius of 40m without being mechanically induced. Tighter radii can be achieved and technical advice should be sort when designing or utilising Proseam in this type of construction due to the large variances on loading and profile displacement.

Design Solutions

Proseam is an engineered roof system that is flexible enough to cope with the demands of the most Intricate designs whether they are sinusoidal, conical or barrel-vaulted, not discounting conventional roofs. The system provides for the most thermally efficient to the most sound proficient requirements that can be achieved. The durability of Proseam allows the lifespan lifespan of a roof to be dramatically increased; depending on the materials utilised upto a 40-year life can be expected. With a vast range of colours and finishes available, Proseam is totally flexible system, designed with the client in mind.

The use of Proseamn in the refurbishment market is a rapidly expanding one due to inherent properties of the product. Because of the lightweight nature of the system and the development of spacer systems it allows the client to re-define the buildings shape, aesthetical appearance and incorporate insulation to increase the energy efficiency of the building. It also allows for existing structures to breathe which is important if the roof is being replaced due to leaking, something that conventional sealed systems like felt membranes and sealed trapezoidal systems prevent.

Onsite Production

It's onsite production unit not only allows total independent manufacturing with it's self contained power generator and 5 tonne loading unit for coil utilisation, but also enables the production of extremely long sheets up to and exceeding lOOm in length. The major advantages of long length production onsite are numerous. There is no requirement for Ministry of Transport movement notices which can take up to 12 weeks to obtain and often create restricted routes and site access. The possibility of transport damage is also eradicated which plays a major part in site delays as replacements are restricted by the same movement notices. The ability to check the structures onsite prior to manufacture also enables minimal wastage and deviations that occur on large span buildings if the steelwork radii have been set out incorrectly. Even a discrepancy of 1 degree can have a major effect on the finished sheet length.

The site production team comprises of a team leader and three operatives. All fully trained in the onsite rollforming and health and safety issues that affect a manufacturing unit in a construction site environment, thus enabling smooth transition from factory to site production.

The materials are rollformed and packed into their designated pack weights and roof positions. They can then be craned into position with the use of our lightweight triangulated lifting beams which are all certificated by independent assessors for use in lifting our rollformed product. The beams are designed to lift sheets up to 40m in length. Packs would be calculated prior to commencement of work on site dependent on length and quantity. There is an alternative method of production incorporating a constructed scaffold ramp, which allows the rollformed sheets to be produced straight from the rollformer, up the scaffold ramp and directly onto the

sheets to be produced straight from the rollformer, up the scaffold ramp and directly onto the roof. This method of manufacturing is recommended for sheets greater than 50m as this enables production to proceed without the restrictions of cranage. Further advice can be obtained from the Cladco Production team with regard to these different methods of manufacture.

Technical properties

Alloy Designation	Temper	Rm Mpa		Rp 0.2Mpa	A 50mm (%) min.for specified Thickness t (mm)	
		Min	Max	Min	t<0.5	t= 0.5 to 1.5
1050A	H44	100	100	80	3	4
3105	H46	180	210	160	5	6
	H48	195	--	170	2	2
3005	H41	130	180	80	7	8
	H42	140	195	95	5	5
	H44	165	215	135	3	3
	H46	185	240	160	2	2
	H48	210	--	180	1	2
3004	H42	185	225	130	4	4
	H46	210	250	180	3	3
	H48	230	270	200	3	3

Thermal expansion

Although aluminum has a relatively high CO-efficient of linear expansion, 23.6 X 10-6(/ °C in its pure form , the low modulas of elasticity enables the temperature induced stresses to be held at a low level. These are two thirds of those induced in a similar steel construction .It is still recommended that in long restrained sheets that are susceptible to temperature variation that might be experienced with solar gain and with dark colours that specific advise be sought from the technical office at the design stage.

The following temperatures are set out in B55427 as being the guideline maximum temperature for insulated roofs in Britain.

Mill Finish = 50 °C
Light Colours = 60 °C
Mid Range Colours = 70 °C
Dark Colours = 80 °C

Fire

ALUMINIUM DOES NOT BURN. It will not ignite. It will not add to the fire load. It will not spread surface flame Although aluminium melts at around 620 °C, it has a thermal conductivity of four times that of steel and a specific heat twice of steel. Heat is conducted away faster and therefore a greater heat input is necessary to bring aluminium up to a given temperature than required for steel.aluminium is rated as non-combustible as defined by B5476 part 4 : 1970 as indicated in the table below.

Part No	Title	Aluminium Results
*4	Non-Combustablility Test	Non-Combustable
*5	Ignitibility	P, not easily ignited
*6	Fire Propagation Test	P, actual index will vary with thickness
*7	Surface Spread of Flame Test	Class 1, Painted surfaces will reduce performance rating
21 22 23	Time / Structural Resistance & Insulation Test	**Individual Component testing required