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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

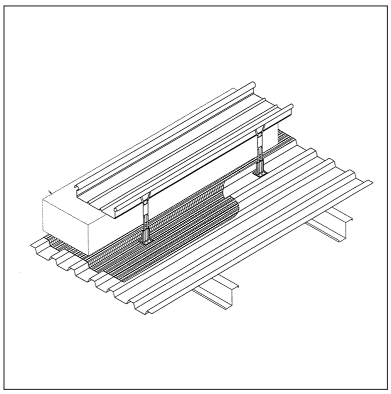
Ash & Lacy Building Systems Ltd

ASHZIP 300 AND ASHZIP 400 DOUBLE-SKIN ROOF SYSTEMS

Certificate No 06/4301

DETAIL SHEET 2
*Second issue**

Product



- *THIS DETAIL SHEET RELATES TO THE ASHZIP 300 AND ASHZIP 400 DOUBLE-SKIN ROOF SYSTEMS, COMPRISING PROFILED COATED OR UNCOATED ALUMINIUM ALLOY AND COATED STEEL OUTER SHEETS, STAINLESS STEEL HALTERS, INTERNAL WALKABLE PROFILED COATED STEEL LINERS WITH INSULATION, VAPOUR CONTROL LAYERS AND ACCESSORIES FOR FIXING TO SUBSTRUCTURES.*
- *The systems are suitable for buildings used for industrial, commercial, retail and leisure purposes as well as residential and non-residential buildings such as schools and hospitals.*
- *The systems are for use as structural roofing with a minimum pitch of 1.5°, where access is available for maintenance and repair only.*
- *The systems are weathertight and structurally stable within the limits set out in this Detail Sheet and are intended to be fixed to steel or timber purlins and structural steel decking.*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, and the Conditions of Certification, *respectively.*

Technical Specification

1 Description

1.1 The Ashzip 300 and Ashzip 400 Double-Skin Roof Systems comprise a covering sheet (Ashzip) attached to the roof substructure by halters. The seams of adjacent sheets are mechanically zipped together over the halter heads to secure the sheets to the support system without penetrating the covering sheet. The halters are screwed to the substructure through the internal profiled coated steel liner sheet (Ashliner). The void formed between the sheets is filled with glass mineral wool or rock mineral wool insulation.

1.2 Ashzip 300 and Ashzip 400 profiles are roll formed to the profile shown in Figure 1 and to the specifications given in Table 1. The profiles are formed from 0.9 mm aluminium alloy. In addition, Ashzip is also available formed from 0.7 mm thick steel sheets.

1.3 Ashzip sheets are roll formed to the length of the roof eliminating the need for end laps. Sheet lengths in excess of 22 m are generally rolled on site.

1.4 The Ashliner sheet is roll formed to the profile shown in Figure 2 from 0.7 mm thick steel to BS EN 10147 : 2000, grade Fe 220 G Z275. The reverse surface is finished with a 10 µm thick light brown polyester, and the visible external surface with a white 22 µm thick polyester.

Table 1 Facing sheet types and properties

Sheet/coating	Sheet thickness (mm)	Sheet Designation/ BBA Certificate No
Aluminium	0.9	EN-AW 3005 H27
– mill /Stucco finish		(BS EN 573-3)
– PVF_2 coated		87/1964 (Detail Sheet 2), 93/2922 (Detail Sheet 3), 93/2918 (Detail Sheet 3)
– ARS coated		93/2922 (Detail Sheet 4)
– PRA coated		87/1964 (Detail Sheet 3)
– Textured 800 coated		93/2918 (Detail Sheet 4)
Steel	0.7	
– zinc/aluminium alloy coated HPS 200		91/2717 (Detail Sheet 7)

Figure 1 Ashzip profiles (dimensions in mm)

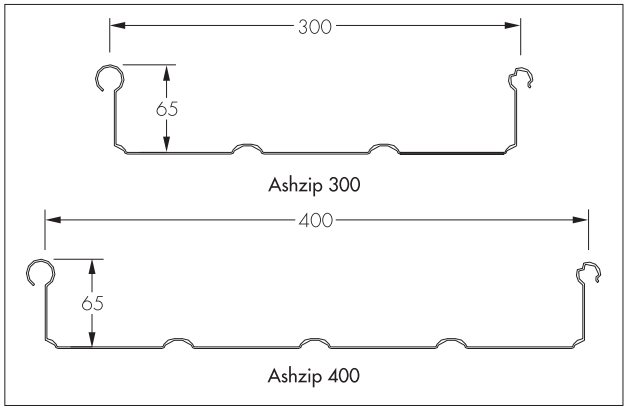
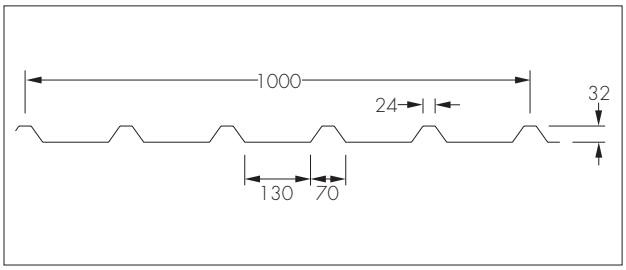
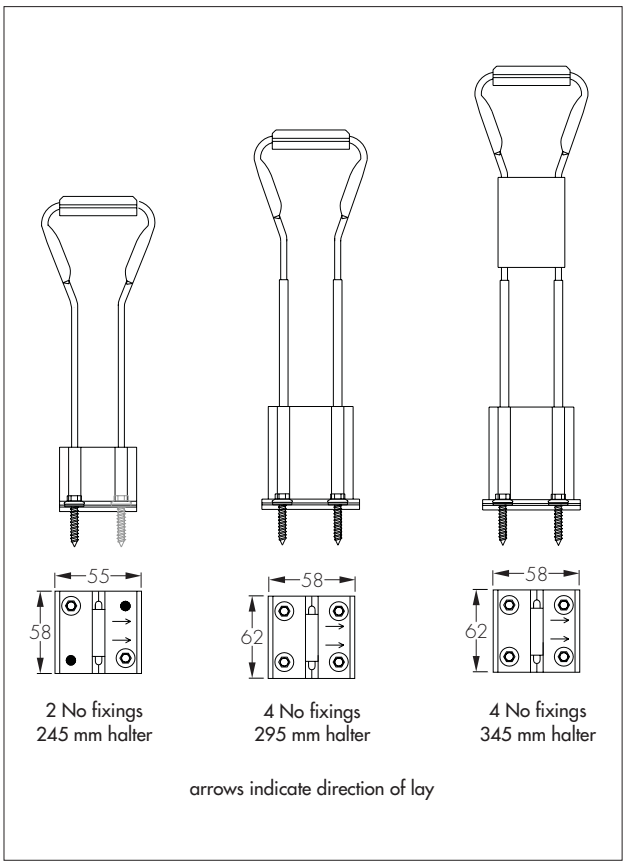


Figure 2 Typical Ashliner profile (dimensions in mm)



1.5 Halters are made from grade 304 annealed stainless steel with an aluminium head and a galvanized steel base. They are provided in depths of 245 mm, 295 mm and 345 mm and screw-fixed through the liner into the purlins (see Figure 3). In addition, verge tie bars of 2 mm galvanized steel are used between pairs of halters at each gable end.

Figure 3 Ashzip halters (dimensions in mm)



1.6 Insulation is non-combustible rock mineral wool or glass mineral wool in accordance with BS 476-4 : 1970, built up in layers (minimum of two). The uncompressed thickness is dependent on the halter length (see Table 1) and has a declared thermal conductivity *($\lambda_{90/90}$ value)*[1] of 0.040 $Wm^{-1}K^{-1}$ or lower.

Table 1 Insulation thickness

Halter length (mm)	Uncompressed insulation thickness[1] (mm)
245	200
295	250
345	300

(1) The thickness is achieved by adding insulation in layers (minimum of two).

1.7 Accessories included with the system include:

- Ashliner sealant — two lines of butyl mastic (HP500 cross linked), 6 mm wide by 5 mm thick bead sealant positioned 15 mm from each end of the end lap
- Polyband sealing strip — 50 mm wide by 1 mm thick, to side laps of liner sheet
- foam fillers for the Ashzip sheets — from polyethylene coated with EPDM
- flashings — either coated aluminium (grade EN AW 1050A) or coated steel
- ridge tie, verge extrusion, verge clip, and flashing clips — all of aluminium
- vented eaves and ridge closure pieces — polyethylene foam to allow ventilation
- fasteners — self-drilling, self-tapping austenitic stainless steel screws with diameter shown below and length to suit:
  - — Ashliner to purlins — 5.5 mm[1]
  - — Ashliner side laps — 6.3 mm
  - — Halters to purlins — 5.5 mm[2]
  - — Flashings are secured with sealed rivets or screws of compatible material
- halter — setting-out template
- zipping apparatus
- halter stabiliser strap.

(1) Length of screw to suit purlin material (see section 3.3).
(2) With two bonded washers.

1.8 Other accessories outside the scope of this Certificate include:

- Ashflex LC vapour control layer — can be specified where low- to medium-risk levels of moisture are present
- Ashflex HC vapour control layer — can be specified where a high risk level of moisture is present
- GRP or polycarbonate rooflights (including openings) — can be incorporated in the roof system
- gutters
- gutter support brackets.

1.9 Quality control checks include:

- dimensions
- chemical composition
- mechanical properties
- coating thickness
- panel dimensions.

2 Delivery and site handling

2.1 Factory produced sheets are delivered in banded bundles carrying a label bearing the BBA identification mark including the number of this Certificate.

2.2 Coils for site rolling are delivered in rolls carrying a label bearing the BBA identification mark incorporating the number of this Certificate.

2.3 Bundled sheets should be handled using lifting equipment with a spreader beam with slings set at every lifting point on the spreader beam[1] (nominally 2.5 m apart).

(1) The spreader beam can be supplied by the Certificate holder.

2.4 If storing on site, the sheets or coils should be kept clear of the ground, protected from the weather and supported at 2 m intervals and stacked with a slight fall to shed rainwater. The coils should be laid on pallets or other suitable supports.

2.5 The performance of the roof system is dependent upon the integrity of the insulation and vapour control layer and/or the sealed liner system. Care must be taken to handle and store them in accordance with the recommendations:

- vapour control layers — rolls must be handled carefully to avoid puncturing and must not be stored on end. For long-term storage, the rolls should be kept dry during the storage period
- glass or rock mineral wool insulation — should be stored indoors or under a waterproof covering and kept dry during installation.

Design Data

3 General

3.1 The Ashzip 300 and Ashzip 400 Double-Skin Roof Systems are satisfactory for use as a structural roof system, for steel and timber substructures, with slopes down to 1.5°, where access is available for maintenance and repair only.

3.2 If architectural features, through fittings or rooflights are required on the roof, special care and attention is necessary to ensure that, in common with all metal roofs, these features have been correctly detailed and fitted.

3.3 The system can be fixed to steel or timber purlins. However, the design information given in this Certificate is relevant only to fixing to mild steel purlins. The adequacy of fasteners to timber purlins must be checked against the requirements of BS 5268-2 : 2002 by a chartered structural engineer or suitably qualified person. Advice from the Certificate holder should be sought to determine the type of fasteners and design data required.

4 Structural performance

4.1 The sheets have adequate strength and stiffness to sustain specified loads. Load/span values are given in Tables 2 and 3.

Table 2 Maximum permissible snow and wind load for 0.9 mm aluminium (self-weight 3.5 kgm^{-2})

Span	Download (kNm^{-2})			Uplift (kNm^{-2})		
	Halter height (mm)			Halter height (mm)		
(m)	245	295	345	245	295	345
1.00	6.00	7.93	9.86	5.60	5.50	5.00
1.25	5.50	6.64	7.77	3.73	4.02	3.72
1.50	5.00	5.34	5.67	1.85	2.54	2.43
1.80	4.18	4.36	4.54	1.39	1.94	1.88
2.00	3.63	3.71	3.78	1.09	1.54	1.52
2.50	2.79	3.03	3.26	0.90	1.33	1.37
3.00	1.95	2.35	2.74	0.71	1.11	1.21

Table 3 Maximum permissible snow and wind loads for 0.7 mm steel (self-weight 7.75 kgm^{-2})

Span	Download (kNm^{-2})			Uplift (kNm^{-2})		
	Halter height (mm)			Halter height (mm)		
(m)	245	295	345	245	295	345
1.00	5.04	6.03	7.01	6.00	5.38	4.76
1.25	4.87	5.66	6.45	4.35	4.51	4.09
1.50	4.69	5.29	5.88	2.70	3.64	3.42
1.80	3.94	4.43	4.91	2.26	3.05	2.87
2.00	3.44	3.85	4.26	1.96	2.66	2.51
2.50	2.81	3.23	3.65	1.44	1.95	1.84
3.00	2.18	2.61	3.03	0.91	1.23	1.16

General notes:

- All loads are characteristic working loads (kNm^{-2}) based on four or more spans.
- The values are based on test data with a factor of safety of 1.4 applied for wind loading, 1.6 for snow loading and 2.0 for halter detachment.
- Download figures are based on a deflection limit of span/200.
- Wind uplift figures are based on a deflection limit of span/120.

4.2 When evaluating the design loads, the wind loads must be calculated in accordance with the recommendations of BS 6399-2 : 1997, and the imposed snow loads must be checked in accordance with the recommendations of BS 6399-3 : 1988.

4.3 The profiled sheets are capable of withstanding impacts associated with normal handling, installation and service.

4.4 Tests have been undertaken to assess the ability of the system to cope with thermal expansion in excess of that expected to occur in normal use.

5 Condensation risk

5.1 In common with all metal roof constructions, there is a risk of condensation; this can arise as either interstitial condensation within the roof construction or surface condensation at thermal bridges.

Surface condensation

5.2 The internal temperature at which surface condensation will occur on the internal surfaces of the roof is dependent on both the internal relative humidity and the external temperature. It has been shown by computer modelling that the risk of condensation occurring on the internal surfaces (including those below the thermal bridges formed by the Ashzip halter) is negligible.

5.3 In buildings likely to experience high internal relative humidities (eg Building internal humidity class 5) there is a minimal risk of intermittent condensation forming on the fixing screws penetrating the purlin. The designer should anticipate the areas of the structure that could be at risk from sustained sources of humidity and take the necessary measures to prevent any such problems (see section 5.6).

Interstitial condensation

5.4 The system has been assessed by computer modelling for the risk of damage and harmful effects on the building due to interstitial condensation. The modelling predicts that for buildings in internal humidity classes 1 to 4 (see Table 4), under the normal climatic conditions experienced in the UK, interstitial condensation is unlikely to be a significant problem and, therefore, the risk of reducing the thermal and structural performance of the roof system due to interstitial condensation will be limited. This assessment is only valid provided the following details are carried out in accordance with the Certificate holder's instructions and this Certificate:

- the vapour control layer remains undamaged, is continuous over ridges and hips, and is sealed at penetrations/abutments
- vapour control layer laps are adequately sealed
- for installations without the separate vapour control layer (Building internal humidity classes 1 and 2 only), the liner panel laps are adequately sealed
- the ribs of the profile are ventilated by air passing along them from and to open areas at the eaves and the ridge.

Table 4 Building internal humidity classes

Humidity class(1)	Building type
1	Storage areas
2	Offices, shops
3	Dwellings with low occupancy
4	Dwellings with high occupancy, sports halls, kitchens, canteens, buildings heated with unflued gas heaters
5	Special buildings, eg laundries, breweries, swimming pools

(1) As referenced in ISO 13788 : 2001 and BS 5250 : 2002.

5.5 For buildings in internal humidity class 5 and in buildings or areas of a building with special internal design conditions, a hygrothermal assessment of the proposed roof system should be undertaken using the guidance given in BS 5250 : 2002, BS 5720 : 1979, BS 5925 : 1991 and BS 6229 : 2003, to establish whether special provisions are required.

5.6 For those conditions that apply in section 5.5, a breather membrane might be required within the roof system, and/or additional ventilation or air-conditioning within the building may be required to maintain the internal conditions within acceptable limits. Advice should be sought from the Certificate holder's technical department.

5.7 For domestic situations, a separate vapour control layer is required.

6 Thermal insulation

6.1 The thermal performance of each building incorporating the roof system must be evaluated in accordance with the relevant national Building Regulations, and is the responsibility of the overall designer of the building.

6.2 The thermal transmittance (U values) for example constructions are given in Table 5. These have been calculated using an insulation thermal conductivity *($\lambda_{90/90}$ value)* of 0.040 $Wm^{-1}K^{-1}$ with Ashzip 400.

Table 5 U values for Ashzip ($Wm^{-2}K^{-1}$)

System type		Purlin spacing (m)						
Ashzip	Halter	1.0	1.25	1.5	1.8	2.0	2.5	3.0
300	245	0.26	0.25	0.25	0.25	0.25	0.25	0.24
400	245	0.25	0.25	0.25	0.25	0.25	0.24	0.24
300	295	0.20	0.20	0.20	0.19	0.19	0.19	0.19
400	295	0.20	0.20	0.19	0.19	0.19	0.19	0.19
300	345	0.17	0.17	0.16	0.16	0.16	0.16	0.16
400	345	0.17	0.16	0.16	0.16	0.16	0.16	0.15

6.3 The roof system contributes to meeting the requirements of the national Building Regulations, thus:

England and Wales

- roofs, subject to insulation thickness and purlin spacing, can achieve(1) (see Table 3):
  - 0.16 Wm^2K^{-1} required for 'notional' dwellings in SAP 2005.
  - 0.25 $Wm^{-2}K^{-1}$ for a 'notional' building, other than a dwelling, in the Simplified Building Energy Model SBEM
  - 0.25 $Wm^{-2}K^{-1}$ limit average value specified in Approved Documents L1A, Table 2 and L2A Table 4
  - 0.35 $Wm^{-2}K^{-1}$ limit value for an individual roof element specified in Approved Documents L1A, Table 2 and L2A, Table 4.
- junctions shown in the Figures in section 13 adequately limit heat loss by conduction and, when installed to limit air infiltration (see sections 7.1 and 7.2), comply with the requirements of *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings* TSO 2002, and the Accredited Construction Details (version 1.0). The relevant default psi values quoted in BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*, Table 3, may be used for these junctions in SAP or SBEM calculations.

(1) Where a proposed building roof U value is not better than that specified for the 'notional' building, additional energy saving measures will be required within the building envelope and/or services in order to achieve the required overall carbon dioxide emission rate reduction of about 20% for dwellings and 23 to 28% for buildings other than dwellings. Further information should be sought from the Certificate holder.

Scotland

- roofs, subject to insulation thickness and purlin spacing, can achieve(3) (see Table 5):
  - a 'notional' domestic roof with reference to clause 6.1.6(1) and SAP 2005
  - a 'notional' non-domestic pitched room (>10°) with reference to clause 6.1.3(2) and when 'Scotland' is selected in SBEM(3).
  - 0.20 $Wm^{-2}K^{-1}$ maximum average specified in Table to clause 6.2.1(1)
  - 0.25 $Wm^{-2}K^{-1}$ maximum average value specified in Table to clause 6.2.1(1)(2)
  - 0.35 $Wm^{-2}K^{-1}$ maximum value for an individual roof element specified in Table to clause 6.2.1(1)(2).
- junctions shown in the Figures in section 13 adequately limit heat loss by conduction and, when installed to limit air infiltration (see sections 7.1 and 7.3), comply with the requirements of the Accredited Construction Details (Scotland) in relation to clauses 6.2.3(1) and 6.2.4(2). The relevant default psi values

quoted in BRE Information Paper 1/06, Table 3, may be used for these junctions in SBEM calculations.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

(3) Wherever a proposed building roof value is not better than that specified for the 'notional' building, additional energy saving measures will be required within the building envelope and/or services in order to achieve the required overall carbon dioxide emission rate reduction of about 18% to 25% for domestic buildings and 23% to 28% for non-domestic buildings. Further information should be sought from the Certificate holder.

Northern Ireland

- roofs, subject to insulation thickness and purlin spacing, can achieve[1] (see Table 5):
  - 0.16 $Wm^{-2}K^{-1}$ required for 'notional' dwellings in SAP 2005[1].
  - 0.25 $Wm^{-2}K^{-1}$ for a 'notional' building other than a dwelling specified in SBEM
  - 0.25 $Wm^{-2}K^{-1}$ limit average value specified in Technical Booklets F1, Table 2.2 and F2, Table 2.4
  - 0.35 $Wm^{-2}K^{-1}$ limit value for an individual roof element as specified in Technical Booklets F1, Table 2.2 and F2, Table 2.4.
- junctions shown in the Figures in section 13 adequately limit heat loss by conduction and, when installed to limit air infiltration (see sections 7.1 and 7.4), comply with the requirements of the Accredited Construction Details (version 1.0). The relevant default psi values quoted in BRE Information Paper IP/06, Table 3, may be used for these junctions in SBEM calculations.

(1) Where a proposed building roof U value is not better than that specified for the relevant 'notional' building, additional energy saving measures will be required within the building envelope and/or services in order to achieve the required overall carbon dioxide emission rate reduction of about 20% for dwellings and 23 to 28% for buildings other than dwellings. Further information should be sought from the Certificate holder.

7 Air permeability

7.1 To minimise air leakage, the liner must be installed and sealed in accordance with the Certificate holder's recommendations at all laps, penetrations and around the perimeter.

7.2 Completed buildings in England and Wales are subject to pre-completion testing for airtightness in accordance with the requirements of section 20B of Approved Documents L1A and L2A.

7.3 Completed buildings in Scotland are only subject to pre-completion airtightness testing if the target air permeability of the proposed building is less than 10 $m^3h^{-1}m^{-2}$, or if the figure is between 10 $m^3h^{-1}m^{-2}$ and 15 $m^3h^{-1}m^{-2}$ and the designer does not wish to use the 15 $m^3h^{-1}m^{-2}$ default figure in the proposed building, in accordance with clauses 6.2.5[1] and 6.2.6[2].

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

7.4 In Northern Ireland, completed buildings are subjected to pre-completion testing for airtightness in accordance with the requirements of Technical Booklets F1, sections 2.46 to 2.54 and F2, Sections 2.57 to 2.61.

8 Weathertightness

8.1 When installed in accordance with the Certificate holder's instructions, the system is weathertight when used on roofs with finished fall down to 1.5° and within exposure conditions related to recommended maximum design wind pressures.

8.2 The weathertightness of the product will not be adversely affected by normal service deflections.

9 Performance in relation to fire

The sheets have a notional AA designation as defined by BS 476-3 : 1958 provided the blanket insulation installed has a 'non-combustible' classification when tested in accordance with BS 476-4 : 1970.

10 Maintenance

10.1 The system should be inspected regularly (at least once a year) for accidental damage to the roof sheets and their coatings, and also for any build-up of dirt and debris. Damage must be repaired and accumulated dirt and debris removed. The frequency of inspections will depend on the environment and use of the building.

10.2 In industrial and coastal areas it may be necessary to clean the installation periodically by hosing with water and a neutral detergent to restore its appearance and to remove corrosive deposits. It may be necessary to clean soffits in any environment.

10.3 Damaged sheets can be removed and replaced. The Certificate holder should be contacted for details.

11 Durability

11.1 The durability of the sheets will depend upon the coating material, the immediate environment, aspect faced and use.

11.2 Maintenance painting may be necessary to restore the appearance of coated sheets or to extend their design life, and should be considered at the intervals given in Table 6. The Certificate holder can recommend a suitable system for maintenance painting.

Table 6 Service life

Sheet material	Minimum service life (years)[1]	
	Environment	
	Rural or suburban	Industrial or coastal
Aluminium stucco embossed and plain mill finish	40	25
PVF_2/$PVDF_2$ coated aluminum[2]	20	15
ARS-coated aluminum[2]	20	15
Colorcoat HPS 200 coated steel[3]	18 to 25	15 to 21[4]

(1) Minimum service life is that when first maintenance painting is required.

(2) Full details of coated materials are given in BBA Certificates Nos 93/2918, 93/2922 and 87/1964.

(3) Full details of coated materials are given in BBA Certificate No 91/2717.

(4) This value is not given in the BBA Certificates, but has been individually assessed.

11.3 For coated sheets, if the building has an exposed eaves detail and is in an aggressive environment, or if there are corrosive conditions inside, a more durable specification of the reverse-side coating should be used. Details can be obtained from the Certificate holder.

11.4 Colour changes will be slight and uniform on any one elevation.

Installation

12 General

12.1 Installation of the Ashzip 300 and Ashzip 400 Double-Skin Roof Systems is carried out in accordance with the Certificate holder's instructions, by experienced roofing contractors. Guidance can be provided by the Certificate holder for contractors who are unfamiliar with the system.

12.2 The Ashzip aluminium external sheet should be treated with care. Protective boarding should be used in any area where work is carried out. Regular access areas should be protected by boarding.

12.3 Locating and setting out halters should be in strict accordance with Certificate holder's specified tolerances to allow free movement and avoid damage being caused to roof sheets through thermal movement.

12.4 Roof surfaces can be slippery when wet and the designer, contractors and others should consider these characteristics when they prepare the Health and Safety Plan for the contract.

13 Procedure

Roof liner and spacer system

13.1 The liner panels are positioned with all joints lapped, and fixed to the roof purlins with screws in every pan at sheet ends and alternate pans at intermediate purlins. Air-seal solid filler blocks (50 mm) are located beneath the profile at details such as eaves, ridges, penetrations and perimeters and secured in place by at least two screws per pan. The panels are sealed at side laps and junctions with 50 mm wide polyband and with 6 mm by 5 mm butyl bead at end laps. The panel side laps are screw fixed at 450 mm centres. Any swarf or debris should be removed from the panels as work proceeds.

13.2 The first line of halters is fastened at the verge of a roof. The dimension from the edge of the structure for the first rib is established and a straight line square to the eaves is determined. All halters are aligned using a string line or straight-edge. The roof should be measured to establish the position of the final sheet or other critical points such as roof openings. The position of the halter bracket nearest the eaves must be set to allow for thermal expansion and allow space for the foam filler.

13.3 Ashzip halters are fixed through the liner panels to the roof purlins using two diagonally opposed, self-drilling and tapping screws per 245 mm halter and four on 295 mm and 345 mm halters. Verge tie bars are push-fitted on pairs of halters positioned at the gable ends.

13.4 Mineral wool insulation should be placed onto the liner in layers to achieve the required thickness with layers offset with each other to give staggered joints. The insulation has to be perforated at each halter, taking care to avoid gaps between the insulation butt joints. The insulation should be progressively installed with the sheets to minimise the risk of it becoming wet.

13.5 The full insulation should be continued over ridges and hips. Adjacent insulation should be tightly butted avoiding gaps. Special attention should be paid to airtightness and sealing at perimeters and penetrations.

Ashzip Standing Seam Profile

13.6 The first sheet is engaged onto the first two rows of halter brackets. The large roll of the first sheet is tightened over the first line of halters using the seaming machine to allow the gable channel to fit over the seam. The gable channel is pushed onto the upstand seam of the first sheet.

13.7 The gable hook is fitted over the gable channel and secured by the halter screw.

13.8 The second sheet is engaged over the first fixed sheet and next row of halter brackets. The interlocking rolls are seamed together using the seaming machine in two passes in the same direction. The process is repeated across the roof area. Typical details at eaves and ridge are shown in Figures 4, 5 and 6.

Figure 4 Verge detail

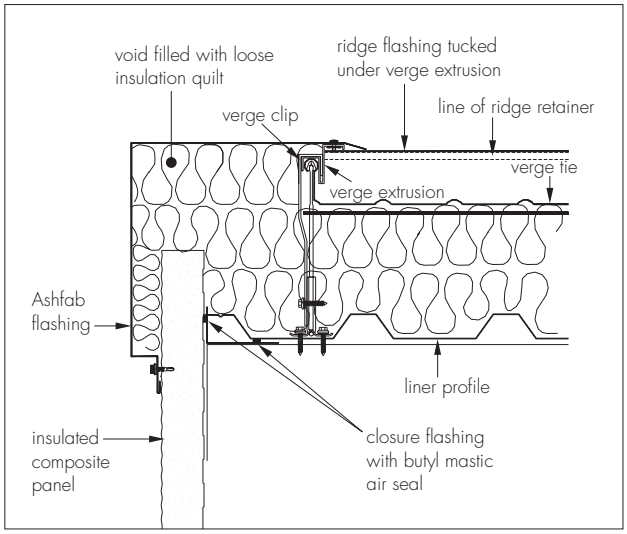
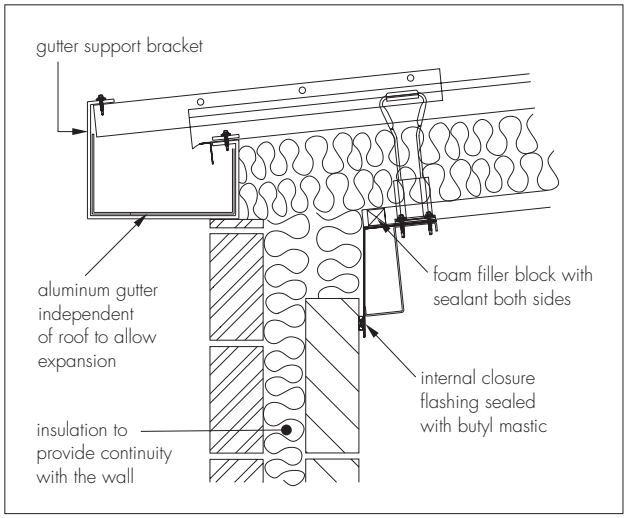


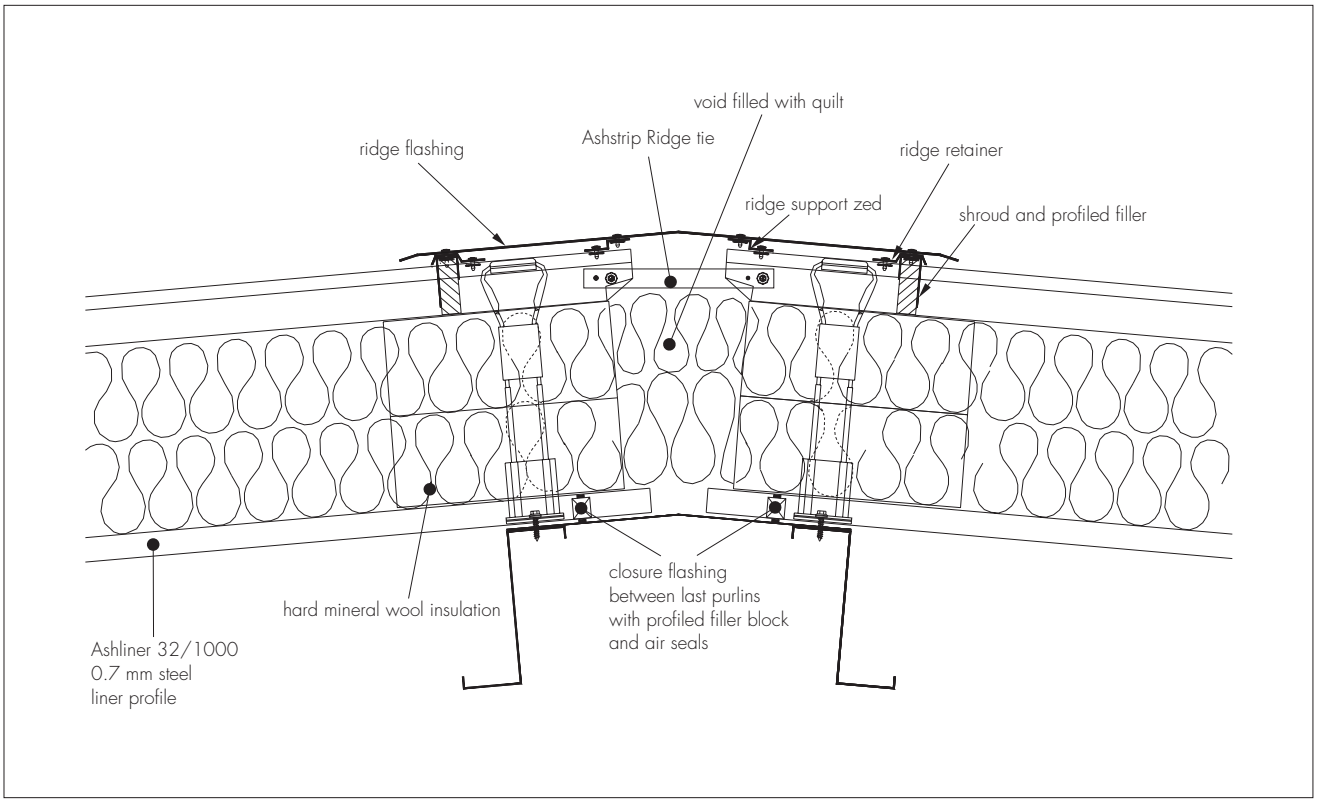
Figure 5 Typical eaves detail



13.9 The full insulation and membrane construction should be continued over ridges and hips. Any gaps or omissions should be avoided. Hard rock insulation is used between halters at ridge/hip detail to prevent dishing of the sheet profile when the end of sheet is turned up.

13.10 The ridge/hip end of a sheet is turned up using the correct end of the tool supplied and following the method described in the *Ashzip Fixing and Handling Guide*.

Figure 6 Typical ridge detail



Technical Investigations

The following is a summary of the technical investigations carried out on the Ashzip 300 and Ashzip 400 Double-Skin Roof Systems.

14 Tests

Tests were carried out on the product to establish:

- resistance to dead and imposed (snow) loading
- resistance to wind loading
- loading
- behaviour of fixings and profile under static and cyclic loading
- resistance to impact
- behaviour under concentrated loads
- sound absorption and sound transmission performance
- airtightness of liner
- load required for the sheet to slide over
- the halter (simulating resistance to thermal expansion).

15 Investigations

15.1 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained relating to the quality and composition of the materials used.

15.2 An assessment was made of:

- fire resistance
- practicability of installation
- condensation risk
- thermal transmittance
- weathertightness of fixed cladding and details.

15.3 Existing information, relating to the durability of the system, performance in fire and compatibility of materials in contact, has been examined.

15.4 A visit was made to a site to assess the practicability of installation.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*
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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

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Chief Executive

**Original Detail Sheet issued 3rd March 2006. This revised version includes the addition of the 295 mm and 345 mm halters and reference to tests simulating resistance to thermal expansion.*

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