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**Agrément
 Certificate
 No 04/4177**
*Second issue**

Designated by Government
 to issue
 European Technical
 Approvals

ASHJACK OVER-ROOF CONVERSION SYSTEMS

Système de soutien de revêtement de toit
 Förderungsprogramm der Dachverkleidung

Product



Propped rafter over-roof conversion

Spanning trusses


- THIS CERTIFICATE RELATES TO ASHJACK OVER-ROOF CONVERSION SYSTEMS, COMPRISING GALVANIZED STRUCTURAL STEEL FRAME AND TRUSSES FOR CONVERSION OF FLAT ROOFS TO PITCHED ROOFS AND FOR NEW BUILD.

- The systems are for use as support for overcladding of an existing flat roof to convert to a pitched or curved roof.

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provides information specific to particular systems.

Regulations — Detail Sheet 1

1 The Building Regulations 2000 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément aspects of performance to be used by the BBA in assessing the compliance of roof support systems and waterproofing with the Building Regulations. In the opinion of the BBA, Ashjack Over-Roof Conversion Systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: A1	Loading
Comment:	The systems' components can be designed to have adequate strength and stiffness. See the relevant tinted areas in the <i>General</i> and <i>Strength and stability</i> sections of the accompanying Detail Sheets.
Requirement: Regulation 7	Materials and workmanship
Comment:	The systems are acceptable. See the tinted areas in the <i>Durability</i> section of the accompanying Detail Sheets.
In addition to meeting, or contributing to meeting, the relevant requirements the following comments should be noted.	
Requirement: C2(b)(c)	Resistance to moisture
Comment:	The weathertightness of a roof constructed using the system is dependent upon the roof covering used. See the tinted area in the <i>Weathertightness</i> section of the accompanying Detail Sheets.

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Requirement: F2

Condensation in roofs

Comment:

The product will contribute towards a roof meeting the Requirement. See the relevant tinted area in the *Hygrothermal performance* section of the accompanying Detail Sheets.

2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, Ashjack Over-Roof Conversion Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation: 8

Fitness and durability of materials and workmanship

Regulation: 8(1)

Fitness and durability of materials and workmanship

Comment:

The systems' can contribute to a construction satisfying this Regulation. See the tinted area in the *Durability* section and the *Installation* part of the accompanying Detail Sheets.

Regulation: 9

Building standards – construction

Standard: 1.1(a)(b)

Structure

Comment:

The systems' components have sufficient strength and stiffness to transmit self-weight and design loads to the structural frame, with reference to clause 1.1.1⁽¹⁾⁽²⁾ of this Standard. See the tinted areas in the *Strength and stability* section of the accompanying Detail Sheets.

Standard: 3.10

Precipitation

Comment:

The weathertightness of a roof construction using the product is dependent upon the roof covering used. See the tinted area in the *Weathertightness* section of the accompanying Detail Sheets.

Standard: 3.15

Condensation

Comment:

The product will contribute towards a roof meeting this Standard. See the relevant tinted area in the *Hygrothermal performance* section of the accompanying Detail Sheets.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Ashjack Over-Roof Conversion Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation: B2

Fitness of materials and workmanship

Comment:

The systems are acceptable when used in accordance with this Certificate. See the tinted areas in the *Durability* section of the accompanying Detail Sheets.

Regulation: C4

Resistance to ground moisture and weather

Comment:

The weathertightness of a roof constructed using the system is dependent upon the roof covering used. See the tinted area in the *Weathertightness* section of the accompanying Detail Sheets.

Regulation: C5

Condensation

Comment:

The systems will contribute towards a roof meeting this Regulation. See the relevant tinted area in the *Hygrothermal performance* section of the accompanying Detail Sheets.

Regulation: D1

Stability

Comment:

The systems' metal trusses can be designed to have adequate strength and stiffness. See the tinted areas in the *Strength and stability* section of the accompanying Detail Sheets.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section:

2 *Delivery and handling* (2.2) of the accompanying Detail Sheets.

Conditions of Certification

5 Conditions

5.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

5.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

5.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

5.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

5.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, Ashjack Over-Roof Conversion Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 04/4177 is accordingly awarded to Ash & Lacy Building Systems Ltd.

On behalf of the British Board of Agrément

Date of Second issue: 10th January 2006

A handwritten signature in black ink, appearing to read 'G. A. Cooper', is written over a white background.

Chief Executive

**Original Certificate issued 13th January 2005. This revised version includes an additional colour picture, reference to the revised Scottish Building Regulations and addition of new Detail Sheet 3.*

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For technical or additional information,
contact the Certificate holder (see
front page).
For information about the Agrément
Certificate, including validity and
scope, tel: Hotline 01923 665400,
or check the BBA website.



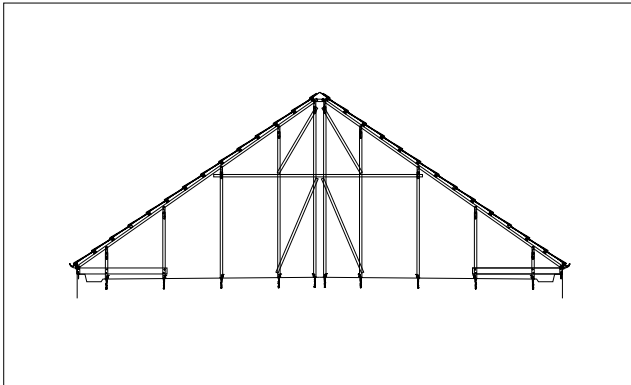
Ash & Lacy Building Systems Ltd

Certificate No 04/4177

**ASHJACK PROPPED RAFTER OVER-ROOF
CONVERSION SYSTEM**

DETAIL SHEET 2

Product



• THIS DETAIL SHEET RELATES TO THE ASHJACK PROPPED RAFTER OVER-ROOF CONVERSION SYSTEM, COMPRISING GALVANIZED STRUCTURAL STEEL FOR CONVERSION OF FLAT ROOFS TO PITCHED OR CURVED ROOFS AND FOR NEW BUILD.

- The system is for use where the existing flat roof structure is robust enough to carry the design loads.
- It is suitable for use to support roofs up to a maximum pitch of 35°.

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.

Technical Specification

1 Description

1.1 The Ashjack Propped Rafter Over-Roof Conversion System utilises galvanized steel components and fixings to form the support for overcladding existing flat roofs. It incorporates a base spreader section fixed to the existing roof, adjustable vertical props, rafters spanning eaves to ridge, cross and longitudinal bracing, purlins and a range of pressed steel brackets. The general arrangement of a typical propped rafter system is shown in Figure 1.

1.2 The system comprises a range of profiles of galvanized steel to BS EN 10326 : 2004, S390GD and Z275(NA), as detailed in Figure 2. The use of each component is shown in Table 1.

Table 1 Use of profiles

Use	Profile
Telescopic prop	AG40 or BX40
Base spreader	Zed 60 or TH 40, 60 or 80
Rafters	U40 or TH 40, 60 or 80
Purlins	P40, P40/65 or zed sections
Bracing	AG40
Hip or valley rail	zed sections

1.3 A range of galvanized steel brackets, manufactured from 1.5 mm thick galvanized steel to BS EN 10327 : 2004 (Fe PO2 G Z275), are used to connect the main profiles including:

- AJ and AJPE head connector
- TH 40, 60, 80 and 100 splice joints
- Zed strap.

1.4 The fasteners used are self-drilling screws of cold-forging, low carbon steel, carbonised to provide a high skin hardness and ductile core.

1.5 Quality control checks are carried out on:

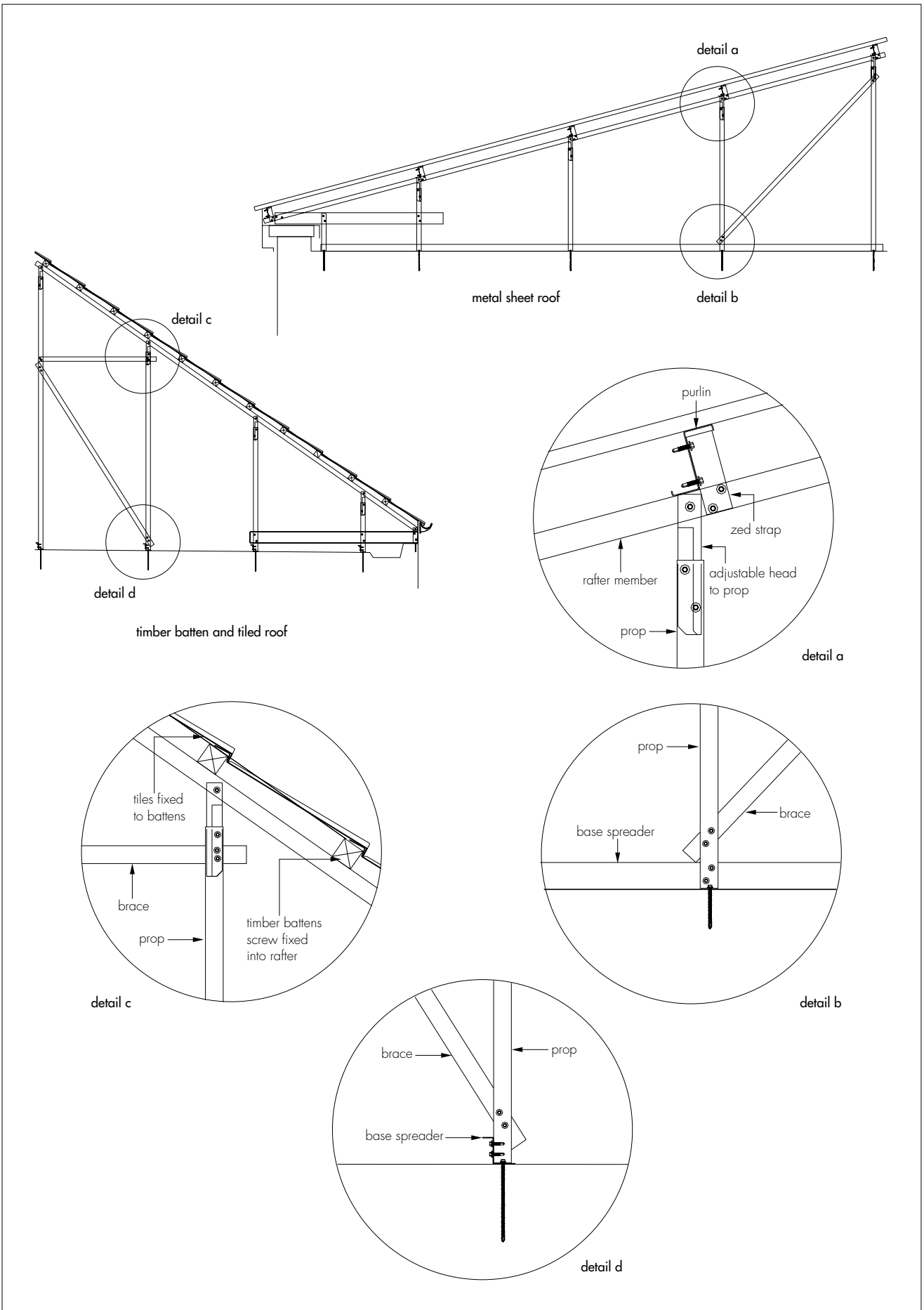
- dimensional accuracy
- chemical composition
- mechanical properties
- coating thickness.

2 Delivery and site handling

2.1 In transit, the components should be protected from adverse weather and accidental damage.

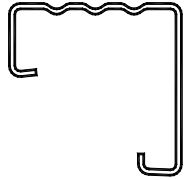
2.2 The components are delivered on pallets or timber bearers and should be lifted into position, normally by crane, prior to installation.

Figure 1 Typical details of propped rafter

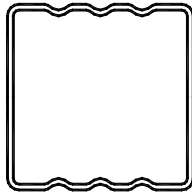


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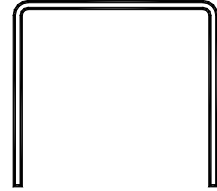
Figure 2 Profiles



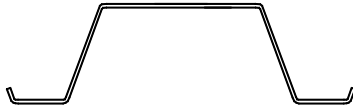
AG40



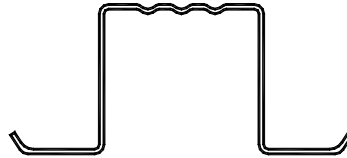
BX40



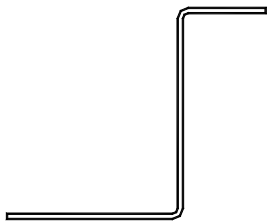
U40



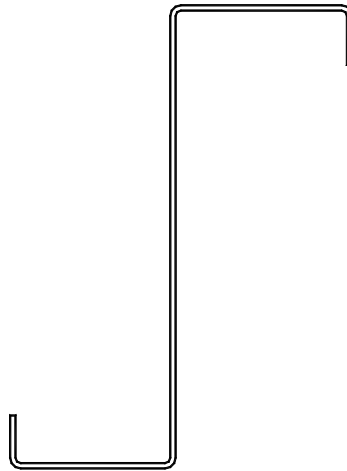
P40/65
(P40 similar)



TH40
(TH60 and TH80 similar)



Zed 60



Zed 90
(Zed 120, Zed 140, Zed 177, and Zed 200 similar)

Design Data

3 General



3.1 The existing building must be surveyed and assessed by a chartered civil or structural engineer or other suitably qualified person (see Zurich Building Guarantees Technical Standards, Section 1 Page 12) to ensure that it can sustain the change in loads that the over-roof will impose [see Approved Document A, Section 3, to the Building Regulations (England and Wales)].

3.2 The details of the connections between the base spreader and the existing building structure and any requirements for additional lateral bracing are dependent upon the type of building structure to which the propped rafters are being fastened. Details of the connections and bracing must be designed by a chartered civil or structural engineer or other suitably qualified person.

4 Practicability of installation

4.1 The components can withstand normal site handling and usage. However, care should be taken as damaged frames must not be used.

4.2 The components are installed by the Certificate holder's trained specialist contractors.

5 Strength and stability



5.1 The design of the system is in accordance with:

- BS 5950-5 : 1998
- BS 6399-2 : 1997
- BS 6399-3 : 1988.

5.2 The design of the support system is dependent on the design loads and the ability of the overcladding to span between purlins.

5.3 The magnitude of imposed loadings and wind loads will depend upon a number of factors, ie height above sea level, geographical location, roof size and geometry, height of roof above ground. Therefore, it is recommended that the methods specified in BS 6399-3 : 1988 and BS 6399-2 : 1997 are used to calculate actual loads and check for wind uplift, and BS 5950-5 : 1998 is used to calculate the centres of rafters, purlins and struts to support these loads.

5.4 The Certificate holder's Design Department provides a detailed design taking due consideration of the relevant factors and ensure that the components and connections comply with the requirements of BS 5950-5 : 1998.

5.5 Full-scale tests have been carried out to confirm the load capacity of the vertical prop and connector system.

5.6 The purlins are designed as multi-span members. Typical load/span data by purlin type roof load and purlin span are given in Table 2. Similar data for props are given in Table 3.

5.7 Timber purlins must be designed in accordance with BS 5268-2 : 2002.

Table 2 Purlins — Load/span data⁽¹⁾

Purlin type	Load (kN)									
	Maximum span for prop centres (m)									
	1.2		1.5		2		3		4	
	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve
P40	4.96	5.66	3.41	4.53	1.92	3.40	—	—	—	—
P40/65	6.99	7.99	5.51	6.39	3.10	4.79	—	—	—	—
Zed 90	—	—	—	—	—	—	6.48	4.38	—	—
Zed 120	—	—	—	—	—	—	10.97	8.33	8.23	5.49
Zed 140	—	—	—	—	—	—	12.51	9.38	9.38	6.79
Zed 177	—	—	—	—	—	—	—	—	11.25	8.13
Zed 200	—	—	—	—	—	—	—	—	14.73	11.05

(1) All loads are working loads. Figures are derived from steel of Z39 material, a maximum deflection of span/200 (download) and span/90 (uplift) and an ultimate bending stress based on a load factor of 1.6 (download) and 1.4 (uplift).

Table 3 Props — Load data

Effective height ⁽¹⁾ (mm)	Permissible ultimate axial load (kN)	
	AG40	BX40
500	51.76	72.44
1000	42.06	60.37
1500	25.06	36.55
2000	15.05	21.89
2500	9.89	14.36
2800	—	11.55

(1) Effective height based on le/r for prop section (<180).

6 Hygrothermal performance



6.1 The use of the system will not increase the risk of interstitial or surface condensation in the roof construction.

6.2 The use of additional insulation with the system will reduce the risk of condensation in the existing roof deck. The risk of condensation in the refurbished roof system can be evaluated in accordance with BS 5250 : 2002, Section 8.4. Any penetration to the existing roof waterproofing layer, or vapour control layer should be carefully detailed to reduce water vapour transmission into the roof space.

6.3 Ventilation should be provided in accordance with the requirements of BS 5250 : 2002 for pitched roofs, whether additional insulation is used or not. Alternatively, ventilation may be provided at the gable spandrels, at the same rate as stated in BS 5250 : 2002. If the roof waterproofing is not intact, a condensation risk assessment in accordance with BS 5250 : 2002 should be carried out.

7 Weathertightness



The weathertightness of an over-roof constructed using the system is dependent upon a weathertight outer sheeting being used. Any BBA approved roof system or profiled sheet to BS 5427-1 : 1996, installed correctly, can be considered suitable.

8 Fire

Consideration should be given for the need to install cavity barriers within the new roof void. These barriers do not form part of the system, but where necessary should be installed in accordance with the appropriate Building Regulations.

9 Durability



9.1 The components have a zinc coating (see section 1.2) giving adequate protection against corrosion in normal internal situations, provided that roof coverings are kept in good repair and remain weathertight.

9.2 Materials not specifically stated in this Certificate coming into contact with the galvanized steel framework, ie roof fixings and clips, should be approved for this use.

Installation

10 General

10.1 All installations must be carried out by the Certificate holder's own personnel or by approved installers under the direct supervision of the Certificate holder.

10.2 Assembly must be carried out in accordance with the Certificate holder's installation instructions.

10.3 The existing flat roof should be carefully mapped and the positions and centres of the base spreaders laid out before installation commences.

10.4 The components can withstand normal site handling and usage but if any are significantly damaged they must not be used.

10.5 The steel components must not be cut or otherwise altered on site⁽¹⁾.

(1) Should cutting be necessary, approval should be sought from the Certificate holder.

10.6 All roofing materials should be hoisted up to the roof using nylon or similar slings.

10.7 The addition of the system and overcladding to an existing flat roof will change the requirements for roof drainage. A check should be carried out to ensure that existing guttering and downpipes are adequate and, if not, provision must be made before installing the system.

11 Procedure

11.1 The base spreaders are secured to the existing roof structure in accordance with the layout drawings. Normally, the spreaders will be oriented either parallel or perpendicular to the existing roof sections. The fixing type will depend on the type of roof structure (see Figure 3).

Figure 3 Base spreader fixed into position



11.2 The vertical props are fixed to the base spreader with the correct type and number of fixings (see Figure 4), braced (see Figure 5) and the adjustable heads fitted to them.

11.3 The rafter is fitted into position on the adjustable heads and fixed with the correct type and number of fixings (see Figure 6).

11.4 The purlins are set out on the rafters and secured by fixing into each flange with the correct type and number of fixings (see Figure 7).

11.5 When two adjacent frames are constructed, the purlins are attached at either end to stabilise the structure.

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Figure 4 Fixing prop to base spreader



Figure 5 Base fixed to prop



11.6 The process is continued until the complete support structure is constructed and braced accordingly.

Figure 6 Rafter fixed to adjustable head of prop



Figure 7 Purlin fixed to rafter



11.7 The structure is then ready to receive any conventional or BBA approved roof overcladding. If required any additional insulation should be laid on the top of the old roof and a vapour permeable underlay suspended over the steelwork and below the overcladding.

Technical Investigations

The following is a summary of the technical investigations carried out on the Ashjack Propped Rafter Over-Roof Conversion System.

12 Investigations

12.1 Calculations in accordance with BS 5950-5 : 1998 were examined for the props, rafters and purlins.

12.2 Test data was evaluated in relation to the strength of the props and connections.

12.3 An assessment was made of the practicability of installation and condensation risk.

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

12.5 Existing information relating to the durability of the system and compatibility of materials in contact has been examined.

12.6 Site visits were carried out to establish the practicability of installation.

Bibliography

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*

BS 5427-1 : 1996 *Code of practice for the use of profiled sheet for roof and wall claddings on buildings — Design*

BS 5950-5 : 1998 *Structural use of steelwork in building — Code of practice for design of cold formed thin gauge sections*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 6399-3 : 1988 *Loading for buildings — Code of practice for imposed roof loads*

BS EN 10326 : 2004 *Continuously hot-dip coated strip and sheet of structural steels — Technical delivery conditions*

BS EN 10327 : 2004 *Continuously hot-dip coated strip and sheet of low carbon steels for cold forming — Technical delivery conditions*



On behalf of the British Board of Agrément

Date of issue: 13th January 2005

A handwritten signature in black ink, appearing to read 'P. C. Newson', is written over a light grey background.

Chief Executive

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For technical or additional information,
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front page).
For information about the Agrément
Certificate, including validity and
scope, tel: Hotline 01923 665400,
or check the BBA website.



Ash & Lacy Building Systems Ltd

Certificate No 04/4177

DETAIL SHEET 3

ASHJACK SPANNING TRUSS SYSTEM

Product



- THIS DETAIL SHEET RELATES TO THE ASHJACK SPANNING TRUSS SYSTEM, COMPRISING GALVANIZED STRUCTURAL STEEL FOR CONVERSION OF FLAT ROOFS TO PITCHED AND FOR NEW BUILD.
- The system is for use where the new roof is supported on the perimeter walls of the existing building.
- The system is suitable for use where the existing frame is adequate to support the load and may be used to create roofs with a maximum pitch of 35°.
- The system is suitable for use as an over-roof conversion where the existing roof does not have the capacity to support further loads.

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.

Technical Specification

1 Description

1.1 The Ashjack Spanning Truss System is used for the creation of roofs over existing roofs that are unable to support further loads and in new construction.

1.2 The system utilises galvanized steel components to form a roof support structure. The trusses are formed from steel sections, brackets and fixings. The general arrangement of a typical spanning truss is shown in Figure 1.

1.3 The system comprises a range of profiles of galvanized steel to BS EN 10326 : 2004, S390GD and Z275(NA), as detailed in Figure 2. The use of each component is shown in Table 1.

Table 1 Use of profiles

Use	Profile
Chord sections (mm)	25 x 60 x 50 zed, TH60, TH80
Struts	AG40, 40 x 40 channel
Purlins	zed sections

1.4 A range of galvanized steel brackets, manufactured from 1.5 mm thick galvanized steel to BS EN 10327 : 2004 (Fe PO2 G Z275), are used to connect the main profiles including:

- Purlin connectors
- TH 60 and 80 splice joints
- lower chord restraint brackets.

1.5 The fasteners used are self-drilling screws of cold-forging, low carbon steel, carbonised to provide a high skin hardness and ductile core.

1.6 Quality control checks are carried out on:

- dimensional accuracy
- chemical composition
- mechanical properties
- coating thickness.

2 Delivery and site handling

2.1 In transit, the trusses should be protected from adverse weather and accidental damage.

2.2 The trusses are delivered on timber bearers and should be lifted into position, normally by crane, prior to installation.

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Figure 1 Typical details of spanning truss

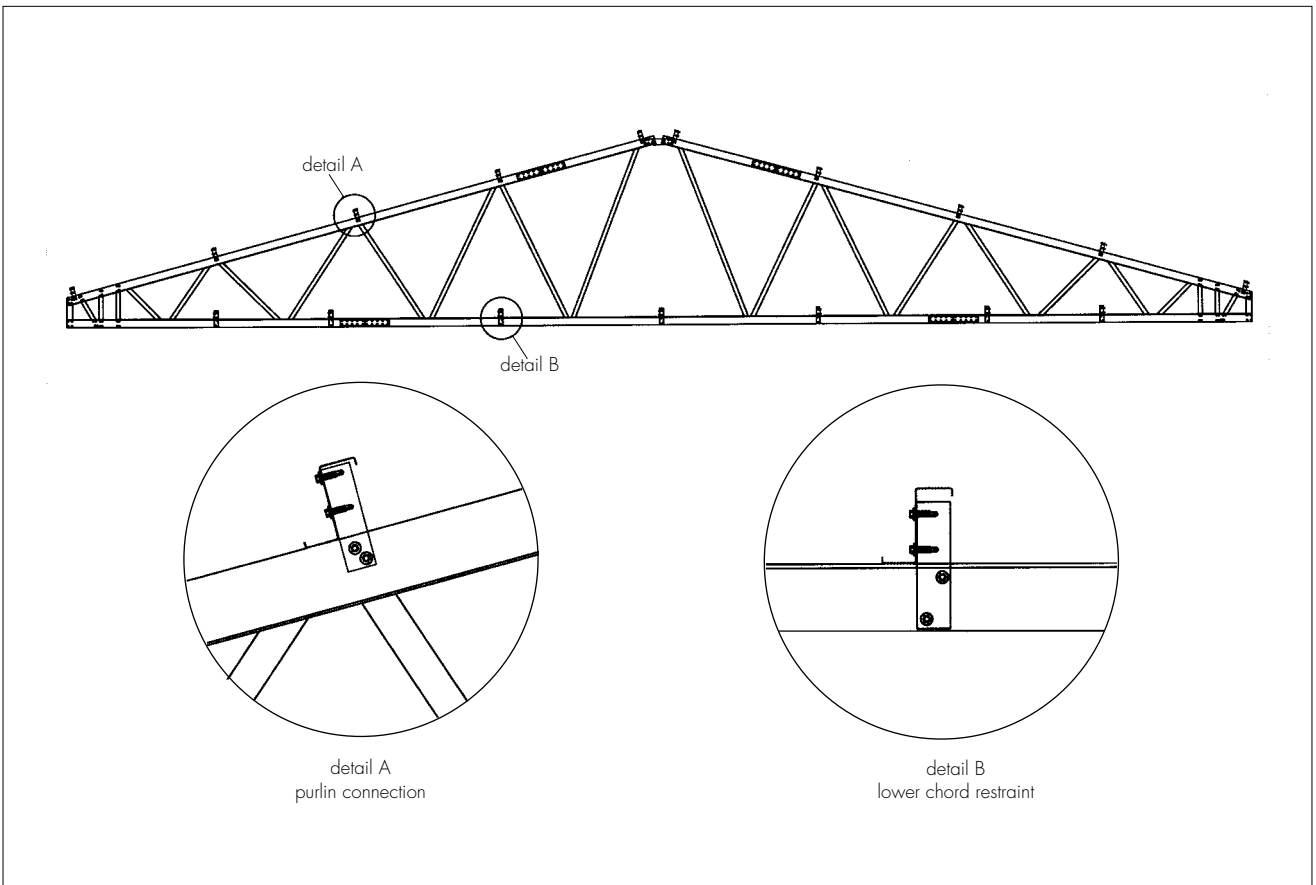
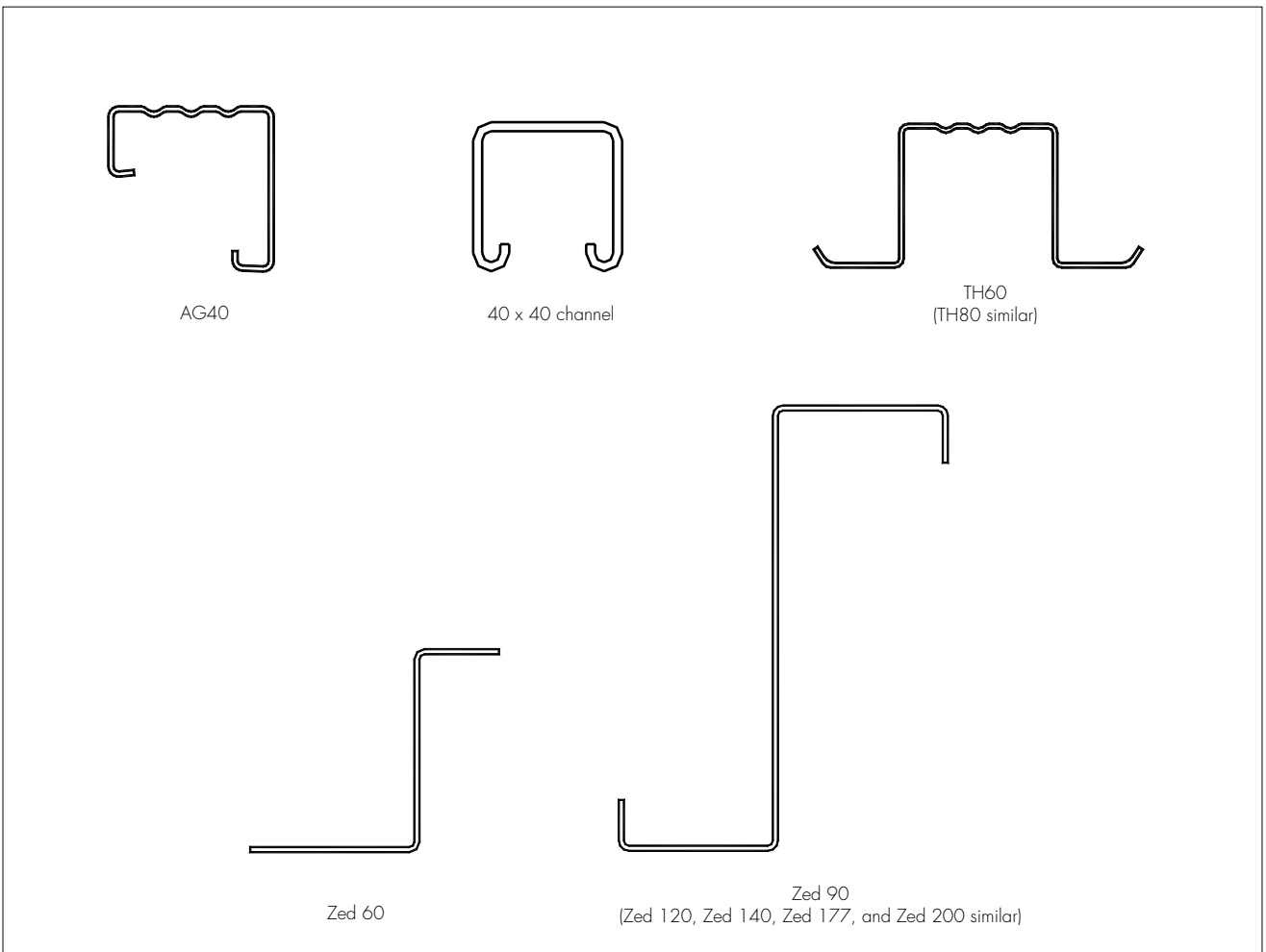


Figure 2 Profiles



3 General



3.1 The existing building must be surveyed and assessed by a chartered civil or structural engineer or other suitably qualified person (see *Zurich Building Guarantee Technical Manual*, Section 1, Page 12) to ensure that it can sustain the change in loads that the spanning trusses will impose [see Approved Document A, Section 3, to The Building Regulations (England and Wales)].

3.2 The details of the connections between the truss and the existing building structure and any requirements for additional lateral bracing are dependent upon the type of building structure to which the trusses are being fastened. Details of the connections and lateral bracing must be designed by a chartered civil or structural engineer or other suitably qualified person.

4 Practicability of installation

4.1 The components can withstand normal site handling and usage. However, care should be taken as damaged frames must not be used.

4.2 The components are installed by the Certificate holder's trained specialist contractors.

5 Strength and stability



5.1 Buildings incorporating the system should be designed in accordance with:

- BS 5950-5 : 1998
- BS 6399-2 : 1997
- BS 6399-3 : 1988.

5.2 The design of the truss system is dependent on the design loads and the span between supports.

5.3 The magnitude of imposed loadings and wind loads will depend upon a number of factors, ie height above sea level, geographical location, roof size and geometry, height of roof above ground. Therefore, it is recommended that the methods specified in BS 6399-3 : 1988 and BS 6399-2 : 1997 are used to calculate actual loads and check for wind uplift, and BS 5950-5 : 1998 is used to verify the adequacy of the truss members and connections.

5.4 The Certificate holder's Design Department provides a detailed design taking due consideration of the relevant factors and ensure that the components and connections comply with the requirements of BS 5950-5 : 1998.

5.5 The purlins are designed as multi-span members. Typical load/span data by purlin type roof load and purlin span are given in Table 2.

Table 2 Purlins — Load/span data⁽¹⁾

Purlin type	Load (kN)									
	Maximum spacing of trusses (m)									
	1.2		1.5		2		3		4	
+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	
P40	4.96	5.66	3.41	4.53	1.92	3.40	—	—	—	—
P40/65	6.99	7.99	5.51	6.39	3.10	4.79	—	—	—	—
Zed 90	—	—	—	—	—	—	6.48	4.38	—	—
Zed 120	—	—	—	—	—	—	10.97	8.33	8.23	5.49
Zed 140	—	—	—	—	—	—	12.51	9.38	9.38	6.79
Zed 177	—	—	—	—	—	—	—	—	11.25	8.13
Zed 200	—	—	—	—	—	—	—	—	14.73	11.05

(1) All loads are working loads. Figures are derived from steel of Z39 material, a maximum deflection of span/200 (download) and span/90 (uplift) and an ultimate bending stress based on a load factor of 1.6 (download) and 1.4 (uplift).

6 Hygrothermal performance



6.1 The use of the system will not increase the risk of interstitial or surface condensation in the roof construction.

6.2 The use of additional insulation with the system will reduce the risk of condensation in the existing roof deck. The risk of condensation in the refurbished roof system can be evaluated in accordance with BS 5250 : 2002, Section 8.4. Any penetration to the existing roof waterproofing layer, or vapour control layer should be carefully detailed to reduce water vapour transmission into the roof space.

6.3 Ventilation should be provided in accordance with the requirements of BS 5250 : 2002 for pitched roofs, whether additional insulation is used or not. Alternatively, ventilation may be provided at the gable spandrels, at the same rate as stated in BS 5250 : 2002. If the roof waterproofing is not intact, a condensation risk assessment in accordance with BS 5250 : 2002 should be carried out.

7 Weathertightness



The weathertightness of a roof incorporating using the system is dependent upon the detailed construction of the roof and is outside the scope of this Certificate.

8 Fire

Consideration should be given for the need to install cavity barriers within the new roof void. These barriers do not form part of the system, but where necessary should be installed in accordance with the appropriate Building Regulations.

9 Durability



9.1 The components have a zinc coating (see section 1.2) giving adequate protection against corrosion in normal internal

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situations, provided that roof coverings are kept in good repair and remain weathertight.

9.2 Materials not specifically stated in this Certificate coming into contact with the galvanized steel framework, ie roof fixings and clips, should be approved for this use.

Installation

10 General

10.1 All installations must be carried out by the Certificate holder's own personnel or by approved installers under the direct supervision of the Certificate holder.

10.2 Assembly must be carried out in accordance with the Certificate holder's installation instructions.

10.3 The existing support walls/structure must be prepared to cope with the additional load from the trusses by using pad stones as necessary in accordance with the structural engineer's details.

10.4 The components can withstand normal site handling and usage but if any are significantly damaged they must not be used.

10.5 The steel components must not be cut or otherwise altered on site.

10.6 All roofing materials should be hoisted up to the roof using nylon or similar slings.

10.7 The addition of the system and overcladding to an existing flat roof will change the requirements for roof drainage. A check should be carried out to ensure that existing guttering and downpipes are adequate and, if not, provision must be made before installing the system.

11 Procedure

11.1 The trusses are delivered pre-assembled as full units or in two sections. On arrival at the site, the trusses are lifted into position and fixed into the end anchorage detail.

11.2 The end anchorage supports are designed individually for each site. Examples are shown in Figures 3 and 4.

11.3 Fixing details can be:

- sleeve or chemical anchors into concrete
- Tapcon screws into pre-drilled holes in brickwork
- special self-tapping and self-drilling screws into timber and steel.

Figure 3 Example end anchorage — 1



Figure 4 Example end anchorage — 2



11.4 The number of fixings required is determined from the results of site pull-out tests.

11.5 During erection, temporary bracing may be required to maintain stability and vertical plumb. Purlins are fixed to the top chords and longitudinal ties to the bottom chords. Lateral stability bracing is installed in accordance with the Certificate holder's specifications.

Technical Investigations

The following is a summary of the technical investigations carried out on the Ashjack Spanning Truss System.

12 Investigations

12.1 Calculations in accordance with BS 5950-5 : 1998 were examined for the props, rafters and purlins.

12.2 Test data was evaluated in relation to the strength of the connections.

12.3 An assessment was made of the practicability of installation and condensation risk.

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

12.5 Existing information relating to the durability of the system and compatibility of materials in contact has been examined.

12.6 Site visits were carried out to establish the practicability of installation.

Bibliography

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5950-5 : 1998 *Structural use of steelwork in building — Code of practice for design of cold formed thin gauge sections*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 6399-3 : 1988 *Loading for buildings — Code of practice for imposed roof loads*

BS EN 10326 : 2004 *Continuously hot-dip coated strip and sheet of structural steels — Technical delivery conditions*

BS EN 10327 : 2004 *Continuously hot-dip coated strip and sheet of low carbon steels for cold forming — Technical delivery conditions*



On behalf of the British Board of Agrément



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Chief Executive

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