

Masonry Support Systems Ltd (T/A IG Masonry Support part of the Keystone Group)

Ryder Close
Cadley Hill Industrial Estate
Swadlincote, DE11 9EU
Tel: 01283 200157 Fax: 01283 223352
e-mail : info@igmss.co.uk
website : www.igmasonysupport.com



Agrément Certificate
15/5250
Product Sheet 1

IG MASONRY SUPPORT SYSTEMS

IG BRICK SLIP LINTELS

This Agrément Certificate Product Sheet⁽¹⁾ relates to IG Brick Slip Linrels for External Masonry, one-piece external wall linrels in powder-coated galvanized steel or stainless steel with a brick slip façade.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Structural performance — the products are suitable for use in walls with clear openings of up to 3600 (see Tables 1 to 3 and section 6).

Thermal performance — opening head junctions can adequately limit heat loss (see section 7).

Condensation risk — the risk of local surface condensation around opening heads will be minimal (see section 8).

Durability — the products should have a working life commensurate with that of the building in which they are installed (see section 11).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 3 September 2015

Brian Chamberlain
Head of Technical Excellence

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, IG Brick Slip Lintels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

| | | |
|--------------|----------|---|
| Requirement: | A1 | Loading |
| Comment: | | The products are acceptable for use as set out in sections 6.2 to 6.6 of this Certificate. |
| Requirement: | L1(a)(i) | Conservation of fuel and power |
| Comment: | | Heads of openings in external walls incorporating the products can adequately limit heat loss and the risk of condensation. See sections 7 and 8 of this Certificate. |
| Regulation: | 7 | Materials and workmanship |
| Comment: | | The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 26 | CO ₂ emission rates for new buildings |
| Comment: | | Heads of openings in external walls incorporating the products can adequately limit heat loss and the risk of condensation. See sections 7 and 8 of this Certificate. |



The Building (Scotland) Regulations 2004 (as amended)

| | | |
|-------------|-----------|---|
| Regulation: | 8(1) | Durability, workmanship and fitness of materials |
| Comment: | | The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 9 | Building standards applicable to construction |
| Standard: | 1.1(a)(b) | Structure |
| Comment: | | The products are acceptable, with reference to clauses 1.1.1 ⁽¹⁾⁽²⁾ and 1.1.2 ⁽¹⁾⁽²⁾ . See sections 6.2 to 6.6 of this Certificate. |
| Standard: | 3.15 | Condensation |
| Comment: | | When incorporated in an external masonry cavity wall, the products can satisfy this standard with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See section 8 of this Certificate. |
| Standard: | 6.1 | Carbon dioxide emissions |
| Standard: | 6.2 | Building insulation envelope |
| Comment: | | Heads of openings in external walls incorporating the products can limit heat loss and the risk of condensation with reference to clauses 6.1.2 ⁽¹⁾ , 6.1.6 ⁽¹⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽²⁾ , 6.2.10 ⁽¹⁾ and 6.2.11 ⁽²⁾ . See sections 7 and 8 of this Certificate. |
| Standard: | 7.1(a)(b) | Statement of sustainability |
| Comment: | | The products can contribute to meeting the relevant Requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. |
| Regulation: | 12 | Building standards applicable to conversions |
| Comment: | | All comments given for these products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic). |



The Building Regulations (Northern Ireland) 2012 (as amended)

| | | |
|-------------|------------------|---|
| Regulation: | 23(a)(i)(iii)(b) | Fitness of materials and workmanship |
| Comment: | | The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 29 | Condensation |
| Comment: | | The products can contribute to satisfying this Regulation. See section 8 of this Certificate |
| Regulation: | 30 | Stability |
| Comment: | | The products are acceptable as set out in sections 6.2 to 6.6 of this Certificate. |
| Regulation: | 39(a)(i) | Conservation measures |
| Regulation: | 40 | Target carbon dioxide Emissions Rate |
| Comment: | | Heads of openings in external masonry cavity walls incorporating the products can limit heat loss and the risk of condensation. See sections 7 and 8 of this Certificate. |

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.2), 3 *Delivery and site handling* (3.1 and 3.3) and 13 *General* (13.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of IG Brick Slip Lintels, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Chapter 6.1 External masonry walls.*

Technical Specification

1 Description

1.1 IG Brick Slip Lintels are one-piece external wall lintels, prefabricated from a standard IG Lintel, a perforated steel soffit (7 mm diameter holes at 33 mm centres in both directions), gusset plates and an adhesively-bonded brick slip façade (see Figures 1 and 2).

1.2 The products are available in three profiles: BSL (see Figures 1–3), HDBSL (see Figure 4) and XHDBSL (see Figure 5). Further details are shown in Tables 1 to 3.

Figure 1 BSL

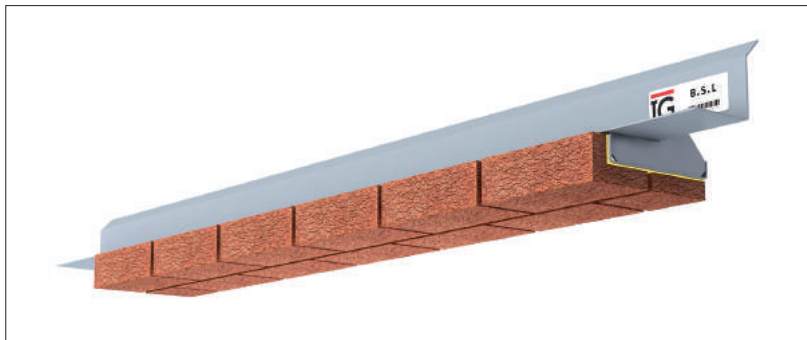


Figure 2 BSL components

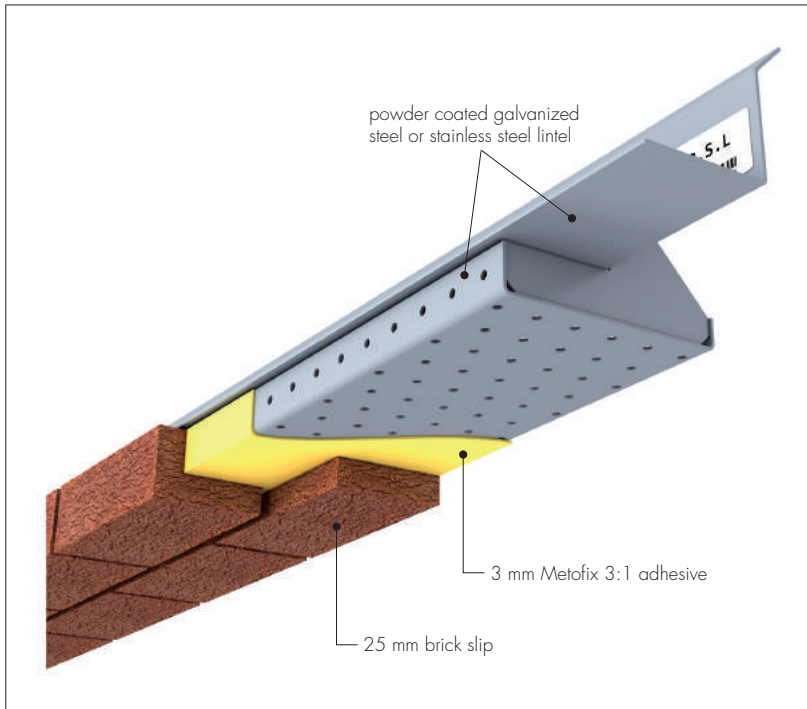


Figure 3 BSL

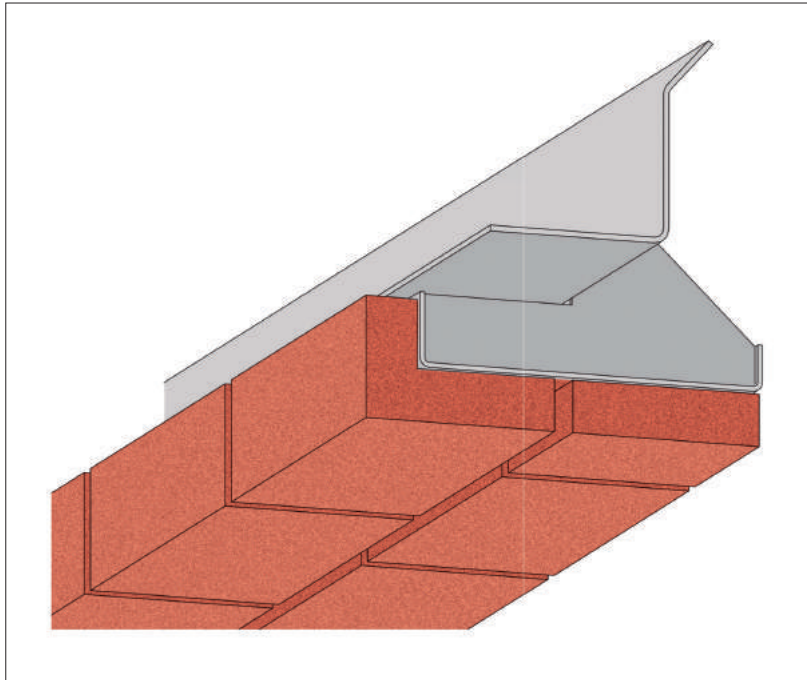


Figure 4 HDBSL

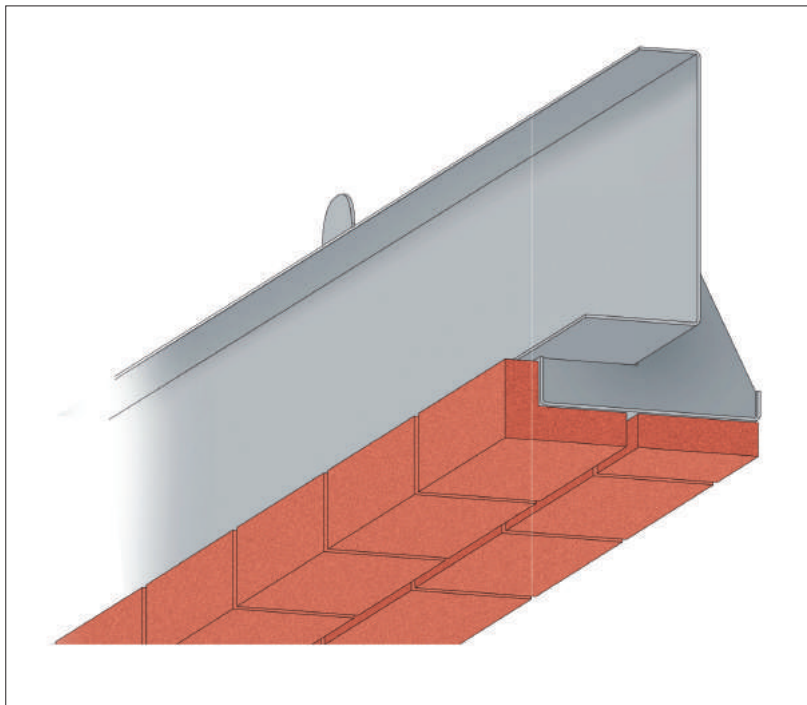


Figure 5 XHDBSL

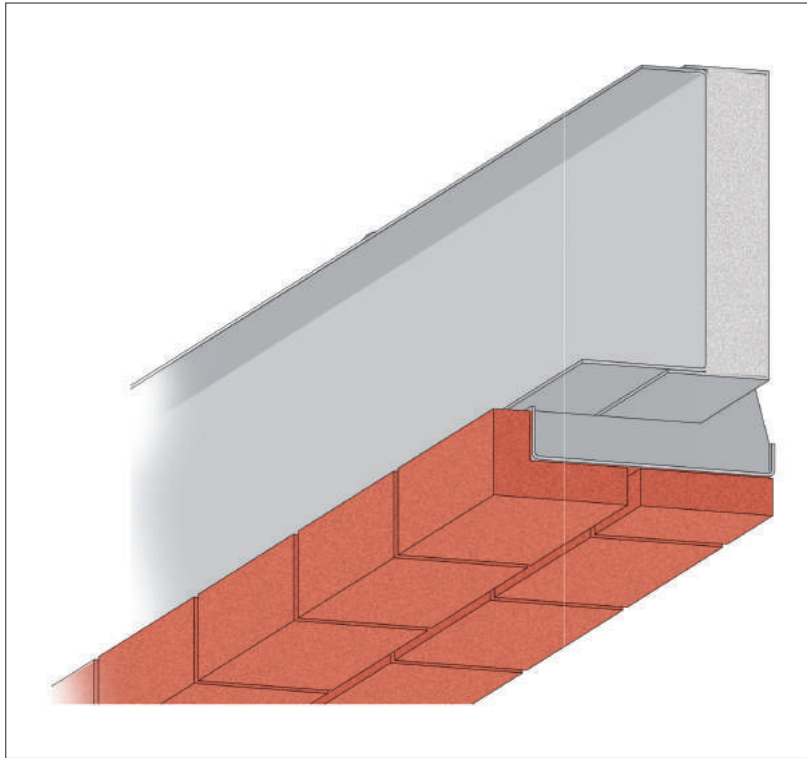
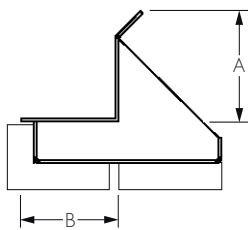
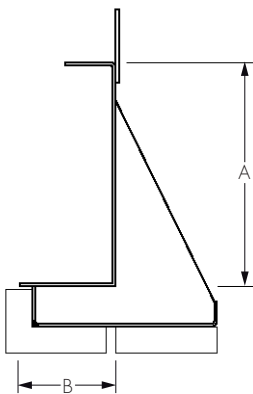


Table 1 BSL Lintel



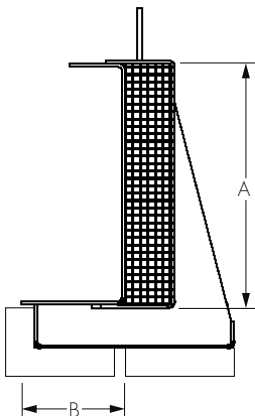
| | |
|--|-------|
| Maximum overall length of lintel (mm) | 1500 |
| Maximum length of brick slip zone (mm) | 1200 |
| Height of lintel (dimension A mm) | 110 |
| Width of lintel (dimension B mm) | 95 |
| Thickness of lintel (mm) | 3.0 |
| Weight of steel ($\text{kg}\cdot\text{m}^{-1}$) | 12.33 |
| Weight with brick slip ($\text{kg}\cdot\text{m}^{-1}$) | 23.73 |

Table 2 HDBSL Lintel



| | |
|--|-------|
| Maximum overall length of lintel (mm) | 2800 |
| Maximum length of brick slip zone (mm) | 2500 |
| Height of lintel (dimension A mm) | 225 |
| Width of lintel (dimension B mm) | 95 |
| Thickness of lintel (mm) | 3.2 |
| Weight of steel ($\text{kg}\cdot\text{m}^{-1}$) | 17.99 |
| Weight with brick slip ($\text{kg}\cdot\text{m}^{-1}$) | 29.39 |

Table 3 XHDBSL Lintel

| | | |
|---|--|----------|
|  | Maximum overall length of lintel (mm) | 3900 |
| | Maximum length of brick slip zone (mm) | 3600 |
| | Height of lintel (dimension A mm) | 225 |
| | Width of lintel (dimension B mm) | 135 |
| | Thickness of lintel (mm) | 3.2 |
| | Insulation block size (h x d) | 228 x 44 |
| | Weight of steel (kg·m ⁻¹) | 28.36 |
| | Weight with brick slip (kg·m ⁻¹) | 39.76 |

Materials

1.3 The lintel, gusset plates and perforated soffit plate are manufactured using either galvanised steel or stainless steel. The galvanised steel is to BS EN 10346 : 2009 grade DX51D + Z600 MAC. After fabrication of the galvanised steel the lintel is powder-coated with matt grey polyester with an average thickness 60-70µ. Stainless steel is to BS EN 10028-7 : 2007 grade 1.4301/1.4307 or grade 1.4301/1.4307 HR.

1.4 The brick slip façade is created from 25 mm thick brick slips cut from standard brick masonry units, normally 215 mm x 65 mm x 102.5 mm, to BS EN 771-1 : 2011 or BS EN 771-2 : 2011, and bonded to the soffit plate using 3 mm thick Metolux Metofix 3-1 adhesive.

2 Manufacture

2.1 The elements of the lintel range are manufactured from galvanized steel coil, which is rolled and formed in the factory. The lintel is fabricated by welding and finished with a zinc coating.

2.2 The brick slips are fixed to the soffit plate with the specified adhesive at specialist fabricators.

2.3 As part of the assessment and ongoing surveillance of product quality, the BBA has

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.4 The management system of Keystone Group has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BSI (Certificates FM 523686, IG, ISO 9001 : 2008; FM 21541, Keystone Lintels Ltd, ISO 9001 : 2008; EMS553955, Keystone Group, ISO 14001 : 2004).

3 Delivery and site handling

3.1 The lintels are delivered to site or to builders' merchants at specified lengths, each carrying a label bearing the Certificate holder's name. The BBA logo incorporating the number of this Certificate is marked on each lintel.

3.2 Reasonable care must be taken during unloading, stacking and storage to avoid damage to the lintels. Lintels that have suffered deformation or major damage to the protective coatings must not be used, and minor damage must be repaired by using the same anti-corrosive paint used for treating cut edges, or zinc-rich paint.

3.3 The lintels must be stored off the ground in such a manner as to avoid the risk of either mechanical damage or contamination by corrosive substances.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on IG Brick Slip Lintels.

Design Considerations

4 General

4.1 IG Brick Slip Lintels are satisfactory for use in cavity walls of brickwork and/or blockwork to provide support to the external leaf of cavity walls above windows or door openings.

4.2 It is important for designers, planners, contractors and/or installers to ensure that the installation of the lintels is in accordance with the Certificate holder's instructions and the information given in this Certificate.

4.3 As with any form of cavity wall construction where buildings need to comply with *NHBC Standards 2014*, specifiers should observe the requirements of these Standards and include cavity trays.

4.4 In Scotland and Northern Ireland and in exposure category 'very severe' the following applies:

- in Scotland, all walls should have a dpc built into the inner leaf
- in Scotland, Northern Ireland and areas of 'very severe' exposure to driving rain the upstand part of the damp-proof protection should be returned into the inner leaf of masonry.

5 Practicability of installation

The lintels are designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Structural performance

6.1 IG Brick Slip Lintels have adequate strength and stiffness to sustain the maximum design loads given in Table 4, subject to the following conditions:

- size of standard masonry units and clear span are not exceeded
- the specified loads given relate to simply-supported lintels laterally and torsionally unrestrained. Therefore, there are no requirements for composite action with, or restraint by, adjacent elements of construction
- where part of the loading is applied as concentrated loads, each concentrated load must be supported over a length of lintel of not less than 200 mm. In such cases, the total applied loading must not produce bending moments, shear forces or reactions greater than those produced by the uniformly distributed loads specified in Table 4.



6.2 Total design loads for different spans (clear opening) are shown in Table 4. The loads have been derived from tests supported by calculations and a deflection limit no greater than span/1000.

Table 4 Brick Slip Lintels: maximum design load/span

| Characteristic | Lintel type (see Tables 1-3) | | |
|-----------------------------------|------------------------------|-------|--------|
| | BSL | HDBSL | XHDBSL |
| Maximum clear span (mm) | 1200 | 2550 | 3600 |
| Thickness of steel component (mm) | 3.0 | 3.2 | 3.2 |
| Total load on lintel (kN) | 6 | 22 | 22 |

6.3 The following limitations apply:

- the load is from the external leaf only; a separate lintel is used to support inner leaf loads
- the end support bearing length should be a minimum of 150 mm.

6.4 In addition to the requirements specifically referred to in this Certificate, structures of brickwork or blockwork in which the lintel is incorporated must be designed and constructed in accordance with BS EN 1996-1-1 : 2005 and BS EN 1996-1-2 : 2005 and the following technical specifications of the national Building Regulations, as appropriate:

England and Wales — Approved Document A1/2, Part C, Section 1

Scotland — Section 1, Small Building Guide

Northern Ireland — Technical Booklet D *Structure*, Section 3.

6.5 The load-span data shown in Table 4 is valid only for the maximum design loads and the lintel clear spans given. For other loading conditions, or spans outside this range, the Certificate holder should be consulted for more advice.

6.6 To avoid excessive eccentricities of loading, the lintel must only be used with standard masonry units.

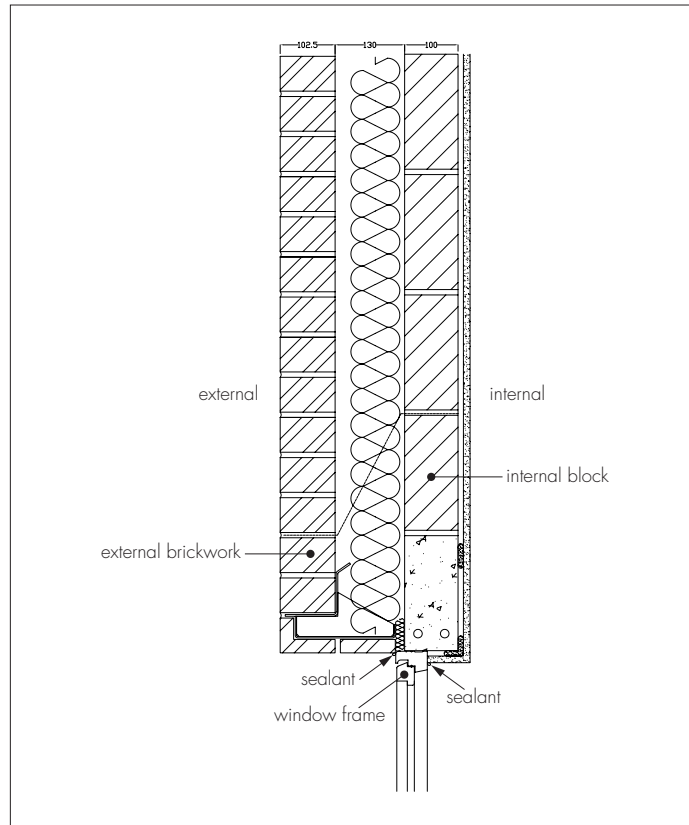
6.7 Guidance for the assessment of loads on lintels in masonry is given in BS EN 845-2 : 2013.

7 Thermal performance



7.1 A typical detail containing the IG L10 Brick Slip lintel, based on commonly-used construction details, is shown in Figure 6. This construction was analysed to establish typical thermal performance.

Figure 6 Installation detail for the Brick Slip Lintel



7.2 Opening head soffits will adequately limit excessive heat loss and allow use of the psi values in carbon emission rate calculations given in Table 5. Detailed guidance in this respect and on limiting heat loss by air infiltration can be found in the documents referred to in section 8.3.

Table 5 Typical psi value for IG Brick Slip Lintels

| Lintel (mm) and construction | Wall U-value ($W \cdot m^{-2} \cdot K^{-1}$) | PSI Value ψ ($W \cdot m^{-1} \cdot K^{-1}$) (full fill cavity) ⁽¹⁾ | Construction details |
|----------------------------------|--|--|--|
| Brick Slip Lintel: Concrete Head | 0.188 | 0.046 | Window set back at least 230 mm into the cavity. Aerated block internal surface of the reveal is covered by 12 mm thickness of plasterboard on 15 mm plaster dabs or material with equivalent thermal resistance |

(1) Based on 130 mm Insulation, $\lambda_D=0.033 W \cdot m^{-1} \cdot K^{-1}$.

8 Condensation risk

8.1 The construction described in section 7.1 will achieve a minimum temperature factor in excess of 0.95 and will adequately limit the risk of surface condensation in buildings of all humidity classes, except 'Special Buildings', eg buildings such as laundries, breweries and swimming pools, as defined in BS 5250 : 2011, Table D.7. The surface condensation risk of other constructions should be established by numerical modelling in accordance with BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*.

8.2 Further guidance on limiting the risk of surface condensation can be found in:

England and Wales — Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings TSO 2002 or Accredited Construction Details (version 1.0)

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

8.3 Under normal domestic conditions, the level of interstitial condensation associated with the product will be low and the risk of any resultant damage minimal.

9 Corrosion protection

The lintels have adequate protection against corrosion, providing the protective powder coating is undamaged or repaired, using ready-mixed touch-up paint, in accordance with the Certificate holder's instructions.

10 Maintenance

The lintels do not require maintenance. However, the brick finish may become soiled over time. For normal soiling, the surface may be cleaned using a hot water/household detergent mix, applied with a suitable cleaning pad or sponge. For more difficult chemical soiling, the advice of the Certificate holder should be sought.

11 Durability

11.1 Providing IG Brick Slip Lintels are designed and installed in accordance with this Certificate, both stainless steel and powder coated galvanized steel versions of the lintel should have a working life commensurate with that of the building in which they are installed, subject to the following conditions:

- the lintels are installed and used in accordance with the surface condensation and humidity conditions described in section 8 of this Certificate
- the galvanized steel profile of the lintel is protected as described in section 1.3.

11.2 The brick slips will have an equivalent durability to the bricks from which they were cut (see section 1.4).

12 Reuse and recyclability

The steel component of the product is readily recyclable.

Installation

13 General

13.1 Typical installation details for the IG Brick Slip Lintels are shown in Figures 8 and 9.

13.2 The products can generally be manhandled, except for the longer span lintels which incorporate lifting lugs for mechanical handling equipment. Protective gloves should be worn when handling the product.

13.3 Lintels must be installed with at least 150 mm end bearing, and be fully bedded on bricklaying mortar.

13.4 Weep-holes should be provided in the outer leaf above the lintel to drain moisture from the cavity. A minimum of two weep-holes should be provided per lintel. For fair-faced masonry, weep-holes should be provided at centres not greater than 450 mm.

13.5 Mortar joints in exposed masonry should be weather-struck in severe or very severe exposure zones.

13.6 Precautions must be taken to prevent mortar dropping through the cavity onto the lintel and obstructing the weep holes.

13.7 The lintels are supplied with one additional brick per opening width. This allows the installer to match the lintel with the brick bonding of the wall (see Figures 7 to 9).

13.8 The brick slips should be pointed using the same mortar as the rest of the brickwork, but only after the full load has been applied to the lintel.

Figure 7 Typical front view of an IG Brick Slip lintel

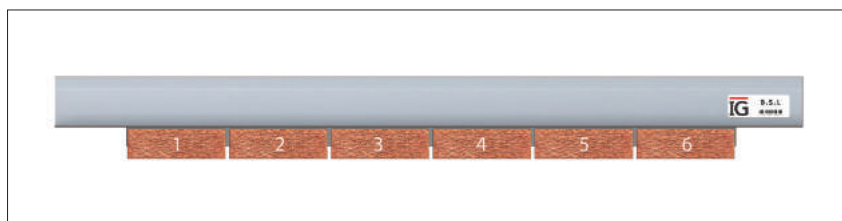
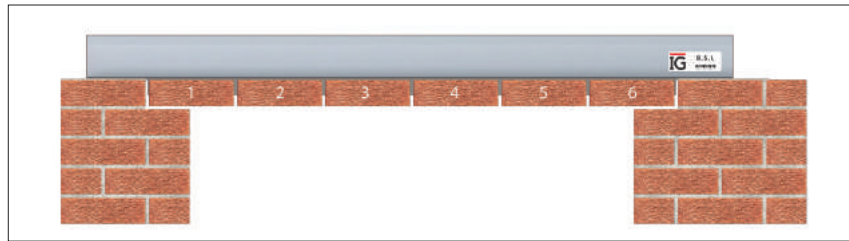


Figure 8 IG Brick Slip lintel installed on full brick coursing



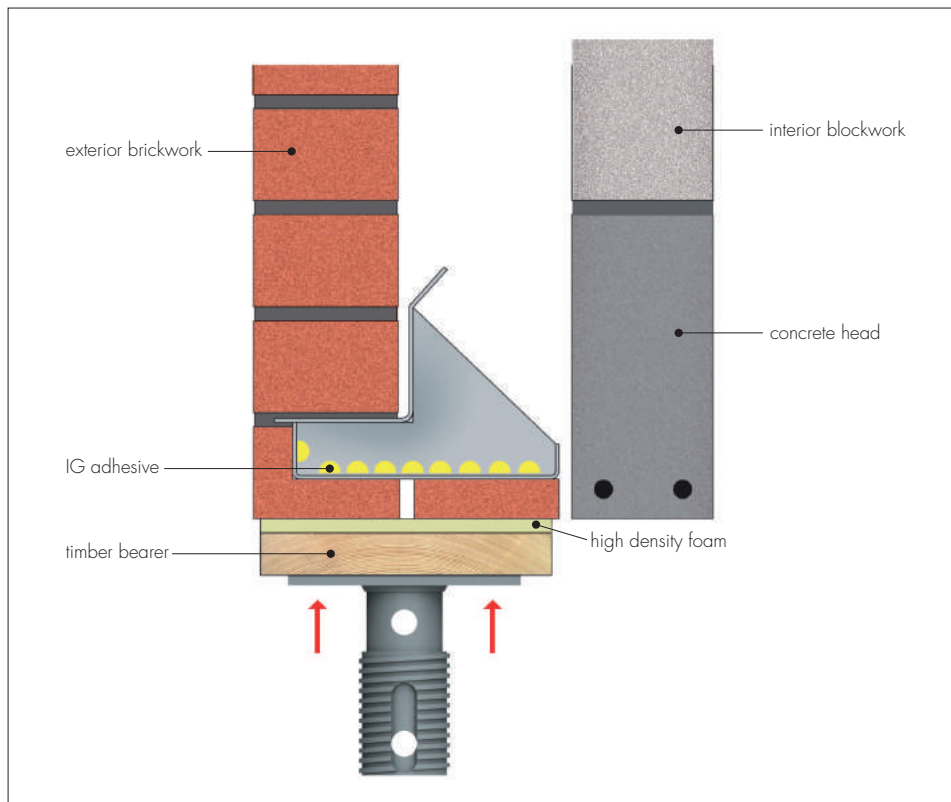
Figure 9 IG Brick Slip lintel installed on half-brick coursing



13.9 Five courses of bricks should be built over the lintel and allowed to cure. Subsequent lifts should not exceed 1500 mm, with 1-2 days curing between lifts.

13.10 Where required, propping of a Brick Slip Lintel should be provided at a maximum of 1200 mm centres using suitable props, such as a horizontal timber bearer faced with dense foam which should be in contact with the brick slips (see Figure 10).

Figure 10 Method of propping an IG Brick Slip Lintel in a typical wall construction



Technical Investigations

14 Test and investigations

14.1 An assessment was made of data relating to:

- load-deflection characteristic to BS EN 845-2 : 2013
- bond strength after accelerated ageing
- integrity of the bond at maximum design deflection
- calculations to establish minimum temperature factors and the psi values of typical constructions incorporating the product, undertaken to IP 1/06
- durability
- practicability of installation.

14.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
BS EN 771-1 : 2011 *Specification for masonry units — Clay masonry units*
BS EN 771-2 : 2001 *Specification for masonry units — Calcium silicate masonry units*
BS EN 845-2 : 2013 *Specification for ancillary components for masonry — Lintels*
BS EN 1363-1 ; 1999 *Fire resistance tests — General requirements*
BS EN 1996-1-1 *Eurocode 6: Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
BS EN 1996-1-2 *Eurocode 6: Design of masonry structures — General rules — Structural fire design*
BS EN 10346 : 2009 *Continuously hot-dip coated steel flat products — Technical delivery conditions*
BS EN 10028-7 : 2007 *Flat products made of steels for pressure purposes — Stainless steels*
BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

Conditions of Certification

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.