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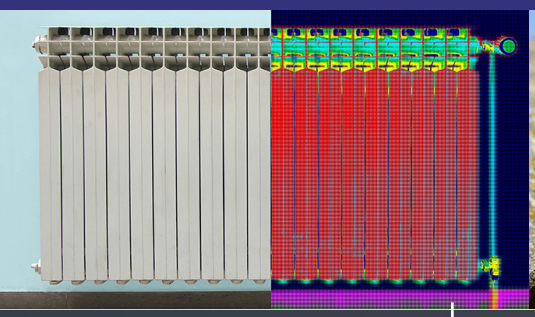

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Customer Details

Client Name:	XXXXX XXXXXXX
Address:	XX XXXXX XXXXXX XXXXXXXXX XXX XXX
Purpose of Report:	ROOF CONDITION SURVEY (Part 35 Compliant)
Report Reference:	RCS/XXX/20XX
Inspection Date:	0X May 20XX
Surveyor Name:	XXXXX XXXXXX BSc, (Hons) MCIOB, CSRT, CSSW, DipDEA, UKAS-P402/P405

Property Image

Type of property: Detached

No of bedrooms: N/A

State of repair: Good Condition

Services: Electricity-Mains Water Supply

Tenure: Freehold

Property Age: 1892

General Description of Property (External)

- The property visited was a traditional stone construction former school now converted house situated on a level site, the property has been extended further to the south east elevation rear.
- The dual pitched roof is of a traditional cut timber truss type supporting structure with a natural slate covering and formed gulleys, and valley water gates with a mixture of clay segmented ridge lines and metal roll top hip and ridge sections.
- The property is of a block brick solid stone construction with stone construction chimney stacks extending upwards through the central main roof and gable end.
- Rainwater is discharged from the roofs into a mixture of metal and PVCU gutter section rainwater systems with outlet down pipes hold fast fixed to the external wall elevations to the front and rear.

Findings

A full assessment of the defects listed below revealed that the works itemized in the recommendation listings within the body of this report will be required to return the areas to an industry standard condition, consistent with Construction (Design and Management) Regulations 2007/2015 & Building (Scotland) Regulations 2004.

Introduction

Qualifications and Experience

- I am XXXXX XXXXX BSc Hons, MCIOB, CSRT, CSSW, DipDEA, P402, P405, a member of the Chartered Institute of Building and an NHBC inspector competent in current building regulation standards of HICH Ltd Roof & Building Consultants, (Registered in Scotland) 11 Ugie Road, Peterhead, Aberdeenshire AB42 1NA. I have specialist knowledge of all aspects of Building Surveying and regulation compliance in and around the XXXX areas, and have worked in the locality from 1995.

Expert Witness Statement of Truth

- I XXXX XXXXXX MCIOB, CSRT, CSSW, DipDEA, P402, P405, understand my duty as an expert witness, and have complied with that duty to the best of my ability.
- I XXXX XXXXXX MCIOB, CSRT, CSSW, DipDEA, P402, P405 am aware of the requirements of Part 35, this practice direction and the Guidance for the Instruction of Experts in Civil Claims 2014.

- I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

- I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

Client Instruction

- HICH Ltd have been instructed by XXXX XXXXX following concerns raised over the competency and workmanship relating to the Roof condition and performance following subsequent works carried out to his home.

- The purpose of the instruction is to carry out a full roof survey inspection to fully ascertain if the works have been carried out in accordance with current building regulation standards consistent with any manufacturer guidance and best practices.

Breach of Duty

- The report prepared sets out the surveyors views and opinions as an independent expert witness on the competency of the contractor, the materials used and whether the contractor has complied with their duties as set out within the agreed contract.
- The survey report has been prepared taking into account the following considerations.
- The existence and extent of any physical defects externally and internally that may or may not be associated to the presence of poor workmanship or materials.
- If the defects are consistent with poor workmanship, gradual process loss or negligence.
- If the defects are consistent with poor quality materials.

Remedial Works

- Provide a comprehensive defect listing
- Provide an appropriate course of remedial action.
- Provide a guidance cost for any remedial works.

Observations & Findings

East Facing Bay Window

- An external inspection has highlighted cracking to the mortar roof abutments of the front bay window junctions consistent with Thermal and Differential movement, this is due to a combination of poor workmanship during previous repairs and water penetration through the window frame seals located above the roof, the cracks detected are consistent with expansion of the build materials with the combined effect of changes in the temperature and moisture content within the building.
- Further inspection revealed poor quality slate repairs noted to have been secured in situ with silicon due to the incorrect cut size of the slates resulting in open and incomplete roof areas that inevitably is enabling water penetration.
- Recommend that the roof area is stripped and reslated with now formed code 5 lead abutments installed and mortar finished to the stone construction, consideration should also be given to the replacement of the window frame seals located above the bay roof to ensure water tightness.

Silicon seal applications detected to the bay window roof slates and lead flashing

Mortar abutment fillet cracks with age related decay also noted to window frame seals

Mortar abutment fillet cracks with age related decay also noted to window frame seals

Lead abutment flashing in sufficiently dressed or rebate attached to masonry above bay window roof

Main Roof

- The main roof at the property was found to comprise of a traditionally constructed cut timber roof structure with a network of traditional trusses, purlins and rafters supported on load bearing walls.
- Inspection of the roof timber supporting structures was restricted however inspection revealed no physical evidence of deflection, sagg or roof spread with no visible wood decay detected to any of the structural timbers, all appeared to be in satisfactory condition.

Main Roof Coverings

- The property has a pitched slate roof (natural slate) this appears to be in good condition but requires maintenance to the mortar areas with missing and damaged slates detected in isolated areas.
- The abutments and ridge tiles require of maintenance where cracking/missing mortar is evident and common problem with a property of this age.
- Recommend damaged slates are replaced to maintain the water proof values of the roof coverings.

Slipped slates and ridge mortar decay detected to the east facing main roof

Missing and slipped slates detected to the west facing main roof

Missing and slipped slates detected to the west facing main roof

Missing and slipped slates detected to the west facing main roof

Several debris build up detected to the east facing main roof gulley

Severe mortar decay detected to the east facing masonry at roof line finish

Secondary Pitched Roofs

- The property has west and east facing secondary pitched slate roofs (natural slate) these appears to be in good condition but require maintenance to the mortar areas with missing and damaged slates detected in isolated areas around the valleys.
- The mortar abutments and ridge tiles require maintenance where cracking/missing mortar is evident and common problem with a property of this age.
- Recommend damaged slates are replaced and mortar areas are improved to maintain the water proof values of the roof coverings.

East facing secondary roofs show evidence of mortar decay and slipped/missing slates

Ridge mortar decay and slipped valley slates detected to the east facing secondary roof

Mortar decay and erosion detected to the secondary roof stone tabling

Slipped and insecure slates with noted mortar erosion detected to the stone tabling on the east facing secondary windows

Rainwater System

- Water is discharged from the roof via a Mixed Material gutter section rainwater system with outlet downpipes hold fast fixed to the external elevations.
- The gutter section rainwater system shows physical evidence of blockages with debris causing restrictions to the water flow leading to the rainwater outlets.
- Recommend these are cleared and repaired to prevent water penetration to the building.

Vegetation detected to gutter section

Debris build up detected to bay window

Debris detected to west facing sloping roof gutter section

Minor debris build up detected to the west facing main roof

Flat roof Areas

- The felt flat roof areas showed no physical defects adversely affecting the water proof values of the roof coverings at the time of the inspection, inspection did reveal that a section of abutment flashing appeared loose or insecure fixed which may lead to a degree of water penetration.
- Recommend the flashings are repaired in the short term with consideration given to the replacement of all the perimeter flashings in the long term.

Felt roof area

Felt flat roof areas

Felt flat roof area

Slight de bonding of the abutment flashing with a loose section of un related lead section detected

Felt flat roof covering

Chimney Stacks

- The roof had a Stone Built chimney stacks with chimney pots, mortar flaunching and leaded abutments to the main roof covering.
- Inspection revealed evidence of decay and deterioration at the time of the inspection therefore refurbishments will be required to maintain conditions and prevent water penetration going forward.

Mortar decay detected to the central chimney stack

Gable end lead capping is noted to be insecure fixed with open unsealed areas

Debris build up detected to chimney stack back gutter

Age related decay detected to the central chimney stack

Recent Repair Area

- The property has underwent some recent repairs to a section of pitched slate main roof (natural slate) this was found to be in poor condition and requires maintenance to the mortar areas with missing and damaged and incorrectly fixed slates.
- The ridge tiles require of maintenance where cracking/missing mortar is evident and should have been repaired correctly at the time of the repair.
- Recommend the slates are removed and replaced to maintain the water proof values of the roof coverings.

Recent repairs

Poor quality workmanship

Poor quality workmanship

Poor quality workmanship

West Facing Elevation Sloping Roof

- The property has a west facing pitched slate roof (natural slate) this appears to be in good condition but requires maintenance to the lead flashing joint
- Inspection revealed that the lead flashing jointing piece was insecure fixed and slipped from situ exposing the roof joint
- Recommend damaged the lead flashing is replaced to maintain the water proof values of the roof coverings.

Lead flashing

Slipped lead flashing

Conclusions

- A full assessment of the defects outlined within the body of the report revealed Visible Roof Defects, therefore it is recommended that restoration of the roof coverings will be required to return the roof to a serviceable industry standard condition, consistent with Construction (Design and Management) Regulations 2007/2015 & Building (Scotland) Regulations 2004.

- It is our considered opinion that general maintenance to the existing defective areas would not be financially responsible in their present state and would represent a significant risk to the buildings insurer who potentially may reject any claim made that could be attributed to the gradual process loss prejudicing the policy cover opted for by the property owner.

Recommendations

1) Refurbishment of all Roof Coverings, Rainwater System, Water Gates and Flashings to a standard consistent with current BS 5534, BS 8000-6 Code of Practice.

Algorithm Guidance Budget: £11,985 (the guide cost relates to any defect repairs outlined)

Expert Witness Statement of Truth

- I XXXX XXXXXX MCIOB, CSRT, CSSW, DipDEA, P402, P405, understand my duty to the court, and have complied with that duty to the best of my ability.

Surveyor Expert Witness Signature

- XXXX XXXXXX BSc Hons, MCIOB, CSRT, CSSW, DipDEA

XXXX XXXXXX

Changes to the British Standard for Slating and Tiling BS 5534

As a code of practice, BS 5534 sets out guidance and makes recommendations for the installation of slates and tiles, and all aspects of pitched roofing above the rafters. It applies to new-build pitched roofs and vertical cladding and has undergone several updates since its publication.

What is BS 5534

BS 5534 is the code of practice for installing slates and tiles to new-build pitched roofs and vertical cladding. It was the first guidance of its kind to provide recommendations on the design, performance and installation of new-build pitched roofs using slates, tiles, shingles and shakes. It also covers normal re-roofing work and repairs.

Installing to BS 5534 isn't required by law, but its inclusion in a specification can be upheld in court if necessary and following its guidance aids compliance with building regulations. The British Standard's contents include batten selection, methods of fixing, wind uplift formulas and a means of calculating fixing specifications. Product manufacturers in the roofing industry typically make sure their installation guides are aligned with BS 5534, with any deviation requiring documented evidence to prove suitability. Third-party warranty providers like the NHBC and Zurich expect installations to comply, and the standard is also a foundation for competency schemes like Competent Roofer.

What changes have been made to BS 5534 - and when

In recent years, updates to BS 5534 have aimed to raise the standards in roofing. In 2015, changes were driven by extreme weather, which was putting more strain on roofs and increasing insurance claims. There was also a need to align with European Standards and equivalent Eurocodes.

The 2015 amendments made it clear that mortar could no longer be relied upon as the only means of securing the roof covering. Single-lap roof tiles and hip and ridge tiles all had to be mechanically fixed regardless of the use of mortar, while tiles to the perimeter of a roof had to be fixed twice. Higher wind loads were assumed, requiring more fixings generally and improved guidelines on the installation of underlays. These changes led to the widespread adoption of dry-fix pitched roof systems. Roof tile manufacturers looked to capitalize on the shift away from traditional mortar bedding to mechanical fixing, while contractors enjoyed the promise of faster and easier

installation. However, two main issues occurred because of the rapid expansion of the dry-fix market:

An increased range of products became available - they were of variable quality, and there was no defined way to compare them.

Site work problems, such as confusion over the installation of breathable membranes and underlays over rafters and the appropriate drape.

These issues led to problems with finished roofs. The most common included verge systems not providing sufficient mechanical restraint and failing to shed water from the roof verge without staining the gable wall.

To combat these problems, the standard was again updated in February 2018, and a second amendment was added. This new set of changes was intended to:

Combat the poor installation quality of dry-fix pitched roof products that had become more prevalent

Increase confidence that building owners were being provided with durable, weathertight roofs, both new and refurbished.

Expand on previous revisions and clarify points of uncertainty.

The amendment, BS 5534:2014 + A2:2018, aimed to further improve the security, durability and weather-tightness of new and refurbished pitched roofs. It does this, in part, by referring to BS 8612:2018, which supports BS 5543 by setting out fixing and roof ventilation standards for dry-fix ridge, hip and verge systems for slating and tiling. Other significant changes included:

Updating the scope to include normal re-roofing work, including repairs.

Clarifying the standard's scope in relation to heritage roofs, noting that its recommendations may not be appropriate. Fixing methods for traditional roofing materials often conflict with BS 5534, and consultation with local planning authorities and conservation experts is advised so that a suitable approach can be agreed.

Support for BS 8000-6:2013 (now BS 8000-0:2014), covering workmanship of slating and tiling on site.

Further guidance on roof underlays, including the classification of their wind uplift resistance by prescribed test methods; changes to the definitions of low water resistance (LR) and air-permeable underlays; and a maximum drape of 15mm. There is also a revised clause about temporary weather protection, before the installation of the primary roof covering, aimed at protecting them from exposure to UV light.

Improved interpretation of test results determining the wind uplift resistance of roof tile clips.

New definitions relating to the continuity of ceilings.

The full document can be purchased from the BSI website.

What are the new and updated definitions within BS 6229:2018?

BS 6229:2018 describes best practise for designing, constructing, and maintaining roofs with a flat or curved surface. It is limited to roofs with a pitch no greater than 10 degrees to the horizontal and a continuously supported flexible waterproof covering.

After four years of development, the latest version of BS 6229 came into force in 2018 as the new standard in flat roofing, replacing the 2003 version.

What are the new and updated definitions within BS 6229:2018?

Some of the existing definitions have seen updates, but there have also been some additions that help clarify roof design and product use. Here is an overview of the new and updated definitions:

- **Breather membrane** – a continuous layer of highly vapour permeable material to permit the movement of water vapour in cold roof constructions. Definition of the required vapour permeability level can be found in BS 5250.
- **Air and vapour control layer (AVCL)** – a continuous layer of low permeability material to control the movement of air and water vapour.
- **Water flow reducing layer (WFRL)** – a vapour permeable layer restricting water flow down the waterproofing in an inverted roof system.
- **Blue roof** – a roof designed to attenuate the rate at which rainwater is drained from it and allowed to enter the drainage system.
- **Zero fall roofs** – now defined as roofs with a slope between nil and 1:80.

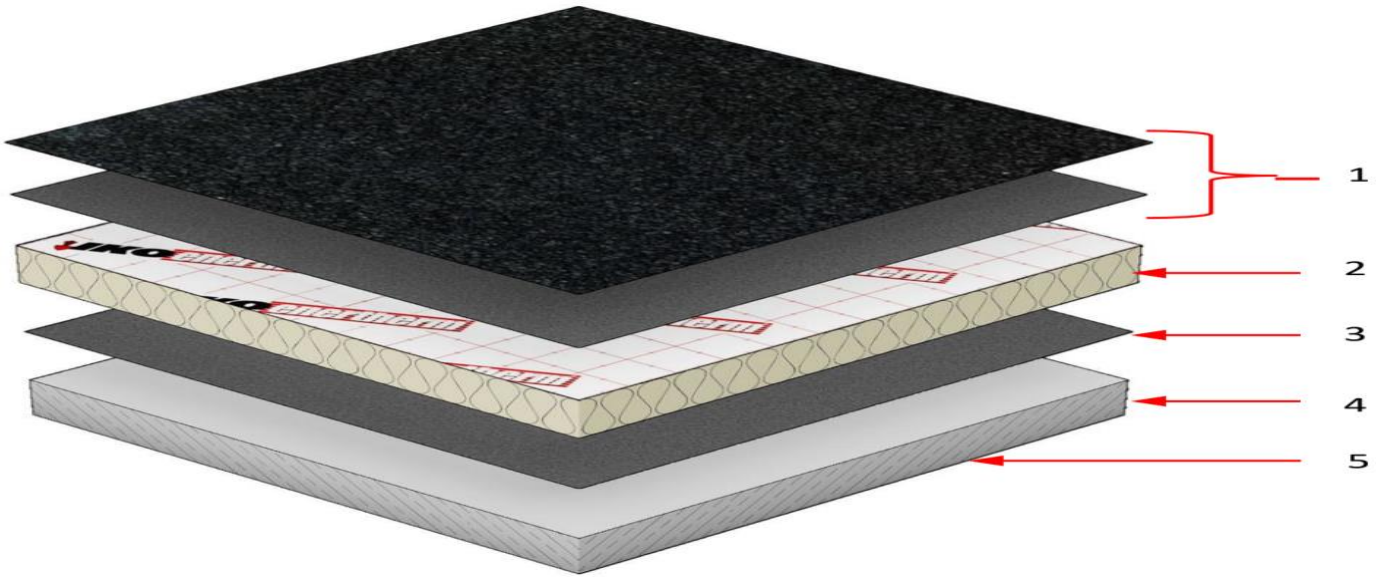
Aside from definitions, the standard contains many changes compared to the 2003 version.

What are the changes to BS 6229:2018 Design, section 4?

Most of the sweeping changes in the 2018 edition of BS 6299 can be put down to technological advances and improvements in installation techniques. It is worth noting that some types of discontinuous metal roof coverings (i.e. zinc, aluminium, lead) are not included within the *BS 6229:2018 – Flat roofs with continuously supported flexible waterproof coverings – Code of practice*. As the title gives away, fully supported metal roof coverings fall outside the scope of *continuously* supported flexible waterproof coverings.

Types of flat roof systems – section 4.2

BS 6229:2018 mentions four types of roofs; warm roof, cold roof, inverted roof and hybrid roof. The standard does not recommend the use of cold roofs.



Key

1. Waterproofing layer with optional surface protection 2. Rigid thermal insulation
3. Air and Vapour Control Layer (AVCL)
4. Structural slab/deck
5. Internal finish

Cold roof system – subsection 4.2.3

Cold roofs place the principal thermal insulation below the roof deck. Whilst the standard does not recommend the use of cold roof design, it accepts this may not always be possible. If unavoidable, cold roofs should adhere to construction principles such as the provision of a cross-ventilated void above the breather membrane, the use of a fully waterproof breather membrane and the use of battens to create a 25mm service void below the AVCL.

Roof falls to achieve drainage – section 4.4

The standard defines a zero fall roof for the first time. We already mentioned that this describes a roof with a slope between 0 and 1:80.

A design fall of 1:80 should prevent back falls and ponding and achieve a finished surface with zero fall. A structural analysis should detail settlement or deflection under load and construction tolerances. Negative falls should be remedied.

Rainwater disposal – section 4.5

Adequate provision for rainwater disposal is a requirement of Building Regulations Part H. BS 6229:2018 contains good practise concerning the rapid clearing of surface water.

Green roofs are designed to control water disposal to support vegetation. Blue roofs, similarly, are designed to a flow rate that restricts rainwater discharge.

In either case, waterproofing should reach the height of 150mm for all abutments and upstands. An exception is made for door and balcony thresholds to enable the design of level access.

Thermal performance – section 4.6 and cold bridging

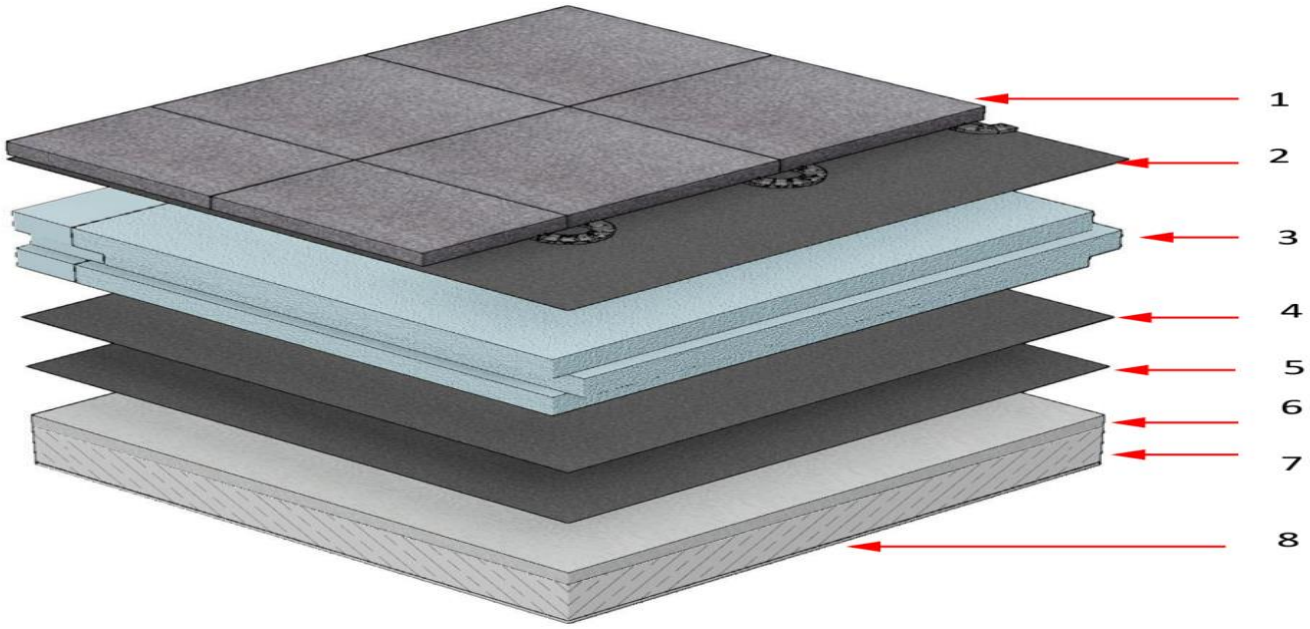
The thermal performance section of the standard has seen a lot of changes. Cold bridging and air leakage in roof junctions, at penetration points and where gaps in insulation occur can account for significant energy loss in a building. Cold bridging and air leakage also pose a risk of condensation and mould forming as these areas tend to be colder than the rest of the building.

Thermal bridging should be avoided wherever possible, and guidance is given to calculate cold bridging.

H3 – Inverted roofs – sub-section 4.6.2.2

The insulation layer in an inverted roof is positioned above the roof deck and the waterproofing layer. Correctly installed WFRL is required to prevent water from reaching past the insulation to the waterproofing. This helps to reduce the cooling effect on the building.

This section of the standard notes that the design thickness of the thermal insulation layer is increased by no more than 10%, where the design relies upon the WFRL.



Key

1. Ballast or slabs on supports
2. Water Flow Reducing Layer (WFRL)
3. Rigid thermal insulation
4. Drainage layer (optional)
5. Waterproof layer
6. Screed to falls
7. Structural slab/deck

Blue inverted roofs – sub-section 4.6.2.4

We mentioned that the design of the blue roof seeks to attenuate stormwater and control the release into drainage systems. This means that instances of water coming into contact with the waterproofing are likely to increase. The use of WFRL may not be sufficient as the test methods do not account for the head of water generated. Increasing the design thickness of insulation to achieve the required thermal performance may be impractical.

Control of condensation – section 4.7 and surface condensation – sub-section 4.7.2

BS 5250 covers control of condensation fully. Regarding interstitial condensation, an external temperature of -5°C over 60 days during the heating season should be used to assess the risks.

BS 6229:2018 reflects the Approved Documents C, section 6, that requires a roof of a heated building to achieve a U-value that doesn't exceed 0.35W/m²K. This removes the risk of surface condensation in roofs with continuity of insulation layer at roof penetrations and upstands.

What are the most distinct changes in BS 6229:2018 that affect flat roof design?

In summary, four areas within BS 6229:2018 seek to improve the way we design roofs:

- Better understanding of zero fall design and elimination of zero falls in gutters that impeded thermal performance
- Addressing the design of blue roofs and inverted roofs to eliminate instances of inaccurate thermal performance
- Improvements to cold roof design and performance and acknowledging the area where this isn't practicable, and other roof designs are preferable
- Elimination of zero falls in gutters that impede thermal performance and design of level thresholds

The above details the main changes to BS6229. We have however created a much more in-depth technical guidance document to support you in better understanding BS6229: 2018 which can be downloaded for your convenience. You can also contact out team should you need to talk to us about a specific project.

Buildings Policy Cover Recommendation

- Buildings Cover (standard cover)
- Accidental Damage Cover (additional cover option)
- Trace & Access Cover (additional cover option)

Follow the link below for help with Buildings Insurance

https://www.moneysupermarket.com/home-insurance/guide/

Please see Ref note: fig 1, Ref note: fig 2 below

Ref note: fig 1

https://www.ashbrookroofing.co.uk/blog/key-changes-to-bs5534-code-of-practice-for-slating-and-roofing/

Ref note: fig 2

Introduction to lead sheet in roofing

Lead sheet has long been a key component of roofs. According to the Lead Sheet Association (LSA), about 70% of the lead sheet currently produced is used for flashings and weatherings - the common construction details that protect vulnerable joints in buildings, such as where roofs abut walls.

Of the remainder, about half is used as the main roofing material on new developments and the rest is used on restoration projects.

The advantages of lead sheet as a roofing product are that it is long-lasting, weather-resistant and malleable, which is important as flashing and other details need to be formed around the contours of the roof and movement joints in buildings.

To optimise the performance of lead sheet, however, it is essential that it is correctly specified and installed. Housing warranty provider the National House-Building Council (NHBC) estimates that claim costs relating to pitched roofs on new-build homes are in excess of £16m a year.

The Lead Sheet Association and NHBC have collaborated to develop this CPD, which will focus on some of the common problems and concerns that can occur when using lead in house building, conversions or extensions.

Further explanation of the best approaches to using lead sheet on roofing applications can be found in the LSA publication Rolled Lead Sheet - The Complete Manual, as well as the NHBC Standards 2013.

ABUTMENTS AND CHIMNEYS

Roofs can be particularly vulnerable to damage and water ingress at junctions such as where walls meet pitched roofs or bay window roofs. Careful detailing can ensure high-quality performance.

Flashings and soakers

All abutments should be weathered using lead. Lead flashings should be a minimum of code 4 and should not exceed 1.5m in length, with laps of not less than 100mm.

Soakers are used where a slated or double-lap plain tiled pitched roof abuts a wall. They are normally made from code 3 lead sheet, colour-coded green (see image A below).

Flashing should be tucked into a mortar joint with a minimum depth of 25mm and at least 100mm above the roof tiling level for step flashing. To avoid damage to damp-proof courses (DPCs) and cavity trays, the joint for lead flashings should be raked out as work proceeds.

The joint should then be pointed in cement mortar or using suitable exterior-grade sealant in accordance with the manufacturer's recommendations.

As an alternative, the flashings can be built in as the work proceeds. They should be built in to a depth of 50mm and a welted edge should be provided to form a key with the mortar.

Cutting out the joint once the mortar has hardened is likely to cause damage to DPCs and cavity trays, leading to water penetration.

When installing flashings around chimneys, it is important that they should link with the chimney DPC trays. A chimney DPC is especially necessary where moisture penetration would be visually unacceptable and could damage the structure below, or both (see image B and C).

All lead DPCs should be coated with black oil-based bitumen paint on both sides to protect the lead sheet from the corrosive elements in Portland cement and lime mortar.

Flashings or soakers should also be used where there is a change in roof slope of 5° or more, for example at mansards and sprockets. A saddle flashing should be used where a ridge meets the main roof.

Soakers or a secret gutter should be installed at abutments where slates, flat interlocking tiles or plain tiles are used.

Image A: This image shows a tiled roof with soakers, used where a slated or double-lap plain tiled pitched roof abuts a wall

Image B: A chimney DPC is especially necessary where moisture penetration would be visually unacceptable and could damage the structure below

Image C: This image shows a chimney DPC, with correctly detailed step flashing, a back gutter and a front apron

Cavity trays

Cavity trays are designed to divert water within a cavity wall out through the external skin. They should be linked and dressed over the flashing at abutments to prevent water penetrating the enclosed area. This is necessary in situations where:

- a flat or pitched roof over an enclosed area abuts a wall
- a balcony abuts a wall.

Where a pitched roof abuts the wall at an angle, a stepped cavity tray linked to a stepped flashing should be used. Stepped flashings should be cut from a strip of lead at least 150mm wide.

Where a bay window roof meets a wall, horizontal cavity trays with stop ends should be used above the abutment. The trays should link with vertical DPCs to the window reveals or any stepped trays below. Where the wall is fair-faced masonry, weep holes should also be provided at maximum 450mm intervals.

Preformed stepped trays should be provided to each sloping roof abutment with the lowest tray extending beyond and linking with the vertical DPCs to the window reveals. The lowest stepped cavity tray should be fitted with two stop ends and a weep hole in all cases.

Bay window with stepped cavity tray

Thickness of lead sheet

Lead sheet is supplied in standard widths of 3m and 6m to builder's merchants, and other sizes are available to order. The BS EN 12588 codes for lead sheet thickness are shown in the table below:

	Code 3	Code 4	Code 5	Code 6	Code 7	Code 8
Weight per m2 (kg)	14.97	20.41	25.40	30.05	35.72	40.26
Thickness (mm)	1.32	1.80	2.24	2.65	3.15	3.55
Colour coding	Green	Blue	Red	Black	White	Orange

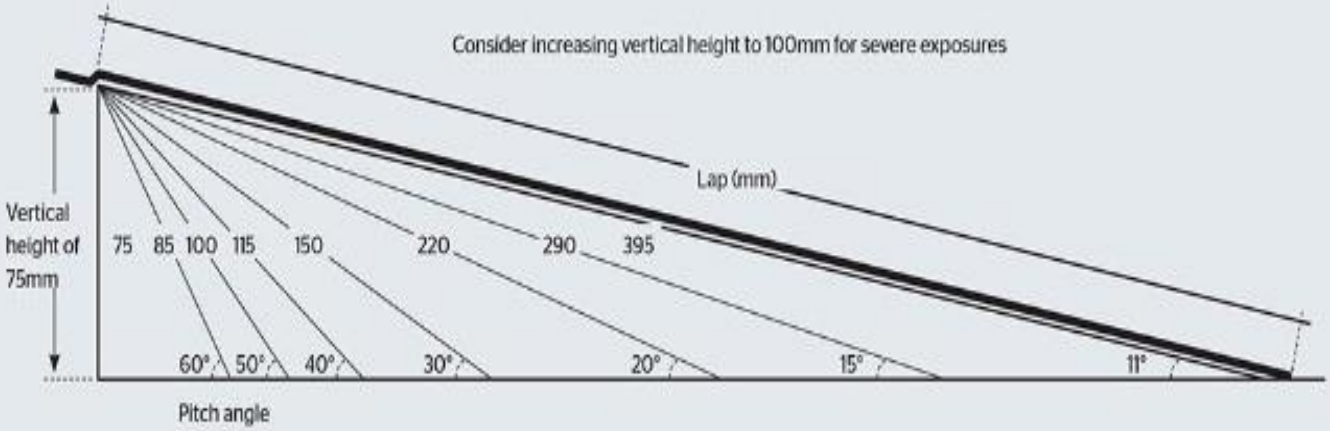
PITCHED VALLEYS AND GUTTERS

Valleys are formed at the junction between two pitches to carry water off the roof. The size of the valley should be calculated in relation to the roof area that it is drawing water from.

Lead-lined valleys can be code 4 (colour-coded blue), 5 (red) or higher if required, depending on exposure. Code 4 or 5 lead in valleys should be laid in lengths not exceeding 1.5m; higher codes may be laid in lengths of up to 2m, where the valleys are not bedded and fitted in code 7 and above. Laps between pieces are

related to the valley pitch - for example, 150mm for gutter pitches of 30°, increasing to 220mm when the gutter pitch is 20° (see figure 1, taken from the Rolled Lead Sheet Manual, below).

Figure 1. Recommended laps of different valley pitches



An example of a pitched valley gutter to a slate roof fitted in 1.5m lengths

If tiles are be cut and bedded, it is important to leave a clear 25mm channel behind the bedding to allow any water that may penetrate to run freely and discharge into the eaves gutter. The mortar should be bedded on an under cloak (for example, slate) to prevent direct contact between the lead and the mortar. Mortar should not bridge the welt detail.

For un-bedded valleys the cut edge of the tiles or slates should extend not less than 50mm over the tilting fillet.

Lead saddle flashings and other weatherings should be used at intersections and abutments. Lead flashings should be a minimum of code 4.

DORMER WINDOWS

Lead sheet is widely used to weather dormers. As designs vary considerably, the detailing of the lead-work used to clad them needs careful consideration in order to avoid water ingress into the roof.

A fully projecting dormer is the most common type, although there can be many variations in design. For all dormers, leadwork will broadly comprise the weathering of the sill, jambs, in some cases the soffit, the cladding of the cheeks (including the junction with the roof covering) and the weathering of the dormer top.

For roofs covered with single lap tiles, the lead side flashings should not exceed 1.5m in length and be lapped to suit roof pitch.

Where the roof is covered with double lap plain tiles, soakers are used with up stands a minimum of 100mm. For lead covered roofs, the narrow bay on each side of the dormer is turned up against the cheek.

Full details on the weathering of dormers can be found in the LSA manual from pp172-191. You can also find more information at:

- www.leadsheet.co.uk
- www.nhbc.co.uk

Potential for Insurance recovery.

The faults noted and detailed within this report may be viewed in a negative manner by your home insurance provider and could potentially prejudice any claim or future claim made, resulting in your claim being rejected, if the proximate cause of any loss can/could be associated to poor workmanship/materials or gradual process loss (wear & tare)

Buildings Policy Cover Recommendation

- Buildings Cover (standard cover)
- Accidental Damage Cover (additional cover option)
- Trace & Access Cover (additional cover option)

Health and Safety

Asbestos fibres were included in many different types of building materials, and may be released when these materials are damaged, disturbed or otherwise exposed. These fibres can cause a hazard to health when inhaled. If there is a risk that any work activity that intrudes beyond the surface finish of this building may potentially expose or disturb asbestos fibres and thereby create a potential health hazard. Persons or organisations carrying out these activities are advised to conduct appropriate risk assessment in order to identify and control these hazards.

For Example:

- Corrugated roofing, tiles, 'slates', soffits, gutters, downpipes, walls, and panels.
- Insulation under the roof, on beams and stanchions.
- Boards and panels, and any insulation between these.
- Insulation around pipes, on a heater, boiler, calorifier, in storage heaters.
- Decorative coatings on walls or ceilings.
- Insulation around windows.
- Water cistern.
- Flues, waste water pipes.
- Plastic floor tiles.
- Textured Coatings (ARTEX) etc.
- Bitumen

If instructed, we will take a representative sample of a potential Asbestos containing material for analysis.

This Roof Survey is produced by a Qualified Surveyor who has written this report for you to use. If you decide not to act on the advice in this report, you do this at your own risk.

The Roof Survey aims to:

- Help you make a reasoned and informed decision when purchasing the property, or when planning for repairs, maintenance or upgrading of the property.
- Provide detailed advice on condition.
- Describe the identifiable risk of potential or hidden defects.
- Where practicable and agreed, provide an estimate of costs for identified repairs.
- Make recommendations as to any further actions or advice which need to be obtained before committing to purchase.
- Where estimated repair costs have been given, these are very basic estimates based on my experience in dealing with these types of repairs and the costs involved.
- It is always recommended that you engage the services of at least three contractors to ensure you receive value for money.

- No below ground investigations have been carried out and no drainage survey has been undertaken.

Limitations to Survey/Terms & Conditions

These Terms and Conditions govern the provision of building survey reports supplied by MyHICH Ltd/ HICH Ltd to the client. By engaging our services, the Client fully accepts these Terms and Conditions.

Scope of Services

The Company prepares building survey reports utilising information provided by the Client. Such Reports may contain data relating to building conditions, valuations, and potential risks or issues. The Company endeavours to ensure the accuracy of the Reports; however, the reliability of such data is dependent upon the quality and completeness of information supplied by the Client.

Client Responsibilities

It is the responsibility of the Client to furnish accurate, comprehensive, and timely information necessary for the preparation of the Reports. The Client acknowledges that failure to do so may

adversely impact the quality and accuracy of the Reports. Furthermore, the Client is expected to verify any information or conclusions presented in the Reports prior to making decisions that rely upon them.

Limitations of Liability

The Company shall not be liable for any loss, damage, or expense arising from reliance on the Reports, including, but not limited to, any information contained therein.

Our report on the services installations will be based on a cursory inspection only in order to include a general description. We will not test any installations. Unless otherwise instructed, we will not commission the inspection or testing of any installations by specialist contract engineers.

If we find visual evidence to suggest that there may be problems with any installations in part or in whole, or if they are particularly sophisticated or complex, we will advise you accordingly and make recommendations for further investigations or testing by specialists.

This was a non-intrusive inspection and limited to commenting upon the extent of damage noted and inspected during the visible inspection at that time.

Based on an inspection as defined below, the surveyor will advise the client by means of a written report as to his opinion of the visible condition and state of repair of the subject property.

The surveyor will inspect as much of the surface area of the structure as is possible but will not inspect those areas which are covered, unexposed or inaccessible.

The surveyor will inspect the roof spaces if there are available hatches. The surveyor will have a ladder of sufficient height to gain access to a roof hatch or roof area not more than 5m above ground level.

It may therefore not be possible to inspect roofs above this level without a suitable scaffold or access platform. In such cases pitched roofs, may be inspected with the aid of zoom Optics. The surveyor will follow the guidance given in surveying safety issued by RICS in April 1991.

This incorporates the guidance given in Guidance note GS31 on the safe use of ladders and step ladders issued by the Health & Safety Executive.

The Company assumes that the property is not subject to unusual or exceptionally onerous restrictions or covenants affecting its structure or reasonable enjoyment. It is further assumed that all relevant bylaws, building regulations, and required consents have been obtained.

The Company will not undertake verification of such consents; the Client and their legal representatives are advised to make all necessary enquiries. Drawings or specifications will not be inspected by the Company.

Additionally, it is presumed the property is unaffected by matters that would be revealed through a local search (or equivalent), replies to standard enquiries, or statutory notices, and that neither the property nor its condition, usage, or intended usage is or will be unlawful.

The Client agrees to remit payment for the agreed fee associated with the Report, along with any expressly agreed disbursements.

Survey Reports

All building survey reports issued by MyHICH Ltd/HICH Ltd are valid for a period of three (3) months from the date of issuance.

After this period, the findings and recommendations contained within the report may no longer be deemed reliable or applicable due to potential changes in building condition, regulations, or other relevant factors.

Clients are encouraged to seek a new survey if more than three months have elapsed since the report's issuance.

The Report is intended solely for the use of the named Client and remains confidential to the Client and their professional advisors. Any reliance by third parties is entirely at their own risk.

The Report is not to be shared or reproduced, in whole or in part, with any third party without prior written consent from the Company.

Note:

A building survey report does not automatically include advice concerning valuation or reinstatement cost assessment/replacement for insurance purposes. Should such opinions or assessments be required, arrangements must be agreed upon with the company in advance.

Caution in Open-Source Data Application

While integrating open-source data into our survey reports provides valuable insights and enhances our analyses, it is vital to approach such data with caution. Open-source datasets can be incomplete, outdated, or may exhibit biases that could skew interpretations and results.
Users should be aware of the context in which the data was collected and exercise careful judgment in assessing the relevance and reliability of the sources utilized.

Verification and Validation of Sources

The credibility of open-source data can vary significantly based on its origin and methodology. Before incorporating such data into our reports, it is imperative to conduct thorough validation of the sources to ensure accuracy.
We recommend that users cross-reference with other reliable datasets or literature to substantiate findings derived from open-source material, thereby enhancing the overall integrity of our survey results.

Transparent Limitations in Reporting

It is important to explicitly state the limitations posed by the use of open-source data within our reports. Readers should be informed that while the data can inform trends and patterns, it may not fully capture the complexity of the investigated topic.
We will include specific disclaimers addressing potential limitations and the context of the data used, fostering an understanding that our conclusions are grounded in the quality and nature of the available information.

Ethical Considerations and Compliance

Adhering to ethical standards when using open-source data is paramount.

When incorporating open source data into building survey reports, adhering to ethical standards is paramount to ensure accuracy, transparency, and respect for privacy. It is essential to verify the

credibility and reliability of the open source data used, acknowledging the original sources and adhering to any associated licensing agreements.
Additionally, sensitivity to privacy issues is critical; data should be anonymized where necessary to protect individual identities. Engaging with stakeholders and communities affected by the data is also vital for maintaining trust and responsibility. By prioritizing ethical guidelines, we not only uphold the integrity of our reports but also contribute to a more respectful and informed use of publicly available information.

Maintaining ethical standards when using open source data in building survey reports is essential to foster trust and uphold integrity in our work. Firstly, it is crucial to ensure that the data is sourced from reputable platforms to guarantee its accuracy and validity. Proper attribution must be given to original creators, respecting copyright and licensing terms associated with the data.

Additionally, ethical considerations include the responsible use of data, particularly concerning sensitive information that could compromise individual privacy. To enhance transparency, survey reports should clearly disclose the types of data used and their sources. By adhering to these ethical principles, we not only enhance the quality of our reports but also support the collective effort to promote ethical data practices within the broader community.