Roof Coverings – Traditional Materials, Repairs and Detailing

September 2024

[1st Edition]

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Introduction

Roofs are probably the most important feature to maintain in historic buildings as they provide a first line of defence against the elements, keeping the fabric of a building dry, sound and thus free from decay and deterioration. They also have a considerable visual impact in terms of both colour and texture, affecting the appearance and significance of the building, the setting of adjacent buildings, and the character and appearance of an area.

Most roofs perform their job by shedding water. The traditional methods of roofing that have developed over the years are extremely efficient at this when used correctly but are often let down by poor detailing at their junctions with other elements of the building such as dormers, chimneys or abutments.

The roof structure in historic buildings is of architectural interest and can be very helpful in dating the structure. Often, they show different carpentry techniques, forms of roof structure, phasing, and sometimes smoke blackening – which would predate the installation of a first floor, ceilings and chimney in the same building. It is therefore important that if a roof is stripped and a poor structure is found beneath, then repairs retain as much fabric as possible, and an adequate record is made of the old structure before work begins.

Do Repairs or Replacement need Listed Building Consent?

The need to apply for Listed Building Consent will depend on the extent and type of work proposed and the specific circumstances of the roof in question. The Planning (Listed Buildings and Conservation Areas) Act 1990 states that Listed Building Consent is required where works would 'affect its character as a building of special architectural or historic interest'.

A simple rule is that patch repairs which amount to no more than 50% of one roof slope carried out in materials to match the existing, would not require consent. Anything over this amount or stripping a roof slope and re-laying the existing coverings, would require consent.

There are many factors involved in assessing whether consent is needed and so it is recommended to seek guidance from the Council's Heritage Team prior to starting works. Advice should also be sought from Building Control to find out whether the work also needs a Building Regulations application.

Details of how to apply for Listed Building Consent can be found on the Council's website or via the National Planning website www.planningportal.co.uk

Seeking Advice

It is advised to consult the Heritage and/or Development Management (Planning) Departments to determine if Listed Building Consent and/or Planning Permission are needed to address such issues, at:

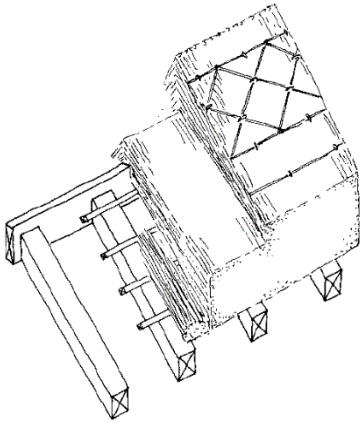
- heritage@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3
- planning@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3

For more specific guidance on the acceptability of works requiring any form of permission, formal pre-application advice can be sought - for more information please see https://www.babergh.gov.uk/planning/pre-application-advice/ or https://www.midsuffolk.gov.uk/pre-application-advice.

Traditional Roof Coverings

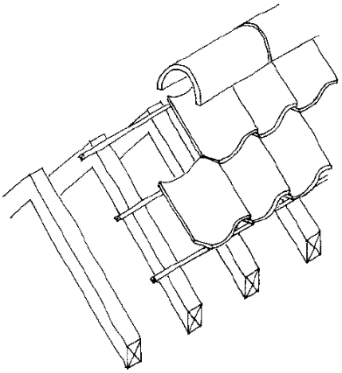
Older timber framed buildings would probably have been roofed originally with either thatch or oak shingles depending on the whether materials were available. Clay peg tiles eventually replaced some of these examples. When it became easier to move materials around the country, clay pantiles would have been used more commonly in the 18th century, being transported by river or canal. In the 19th century, the creation of the railways meant that slate from Wales, Cornwall and Cumbria were often also used in our area.

Thatch



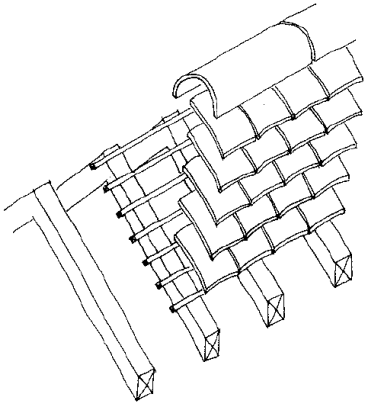
Thatch can still be found on many old buildings, usually those that are detached. Most typical for our districts is long straw thatch which is laid at the steeper pitch of about 50°. In the north of Suffolk along the Waveney valley, water reed, usually capped with sedge, is more common. Whenever possible the traditional type of thatching material for the area should be reinstated on a building when re-thatching.

Pantiles



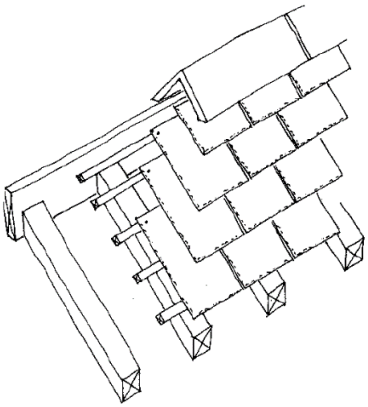
Pantiles are usually 'S' shaped in section but sometimes are found in the 'Roman' style which have a tighter roll and a flat section, or with a double roll. They are usually made of red or orange clay and laid on timber battens. In some areas, particularly in the north of Suffolk, they are finished with a black glaze which weathers better. When found on houses, they are often located on rear roof slopes or on outbuildings. They can also be found on agricultural buildings.

Plain tiles



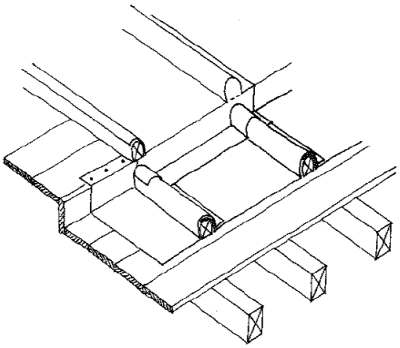
Plain tiles are also made of red or orange clay and are laid on timber battens. Early examples are known as 'peg tiles' because of the oak pegs which were used to secure them. More recent versions are nailed in place. Most plain tile roofs are fairly steeply pitched between 45° and 60°, often replacing a former thatch covering. Traditional hand-made plain tiles are slightly curved along the short and long sides. Machine made clay tiles are far flatter, have a more uniform appearance and are a poor substitute for the hand-made examples.

Slate



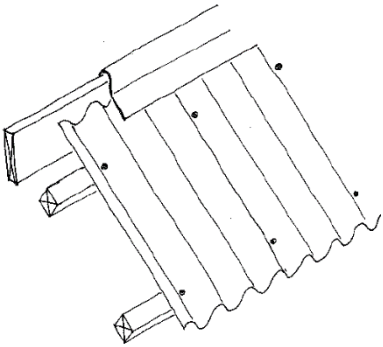
Slate is also on timber battens, but roofs are usually pitched at around 30° and are more effective than other smaller tiles at a lower pitch. They date from the 18th century onwards but are most common in the 19th century. Slates come in a range of traditional sizes, but their width is usually wider than half of their length. A common feature in Suffolk is a plain tile roof with its lower courses above the eaves laid in slate. This is usually where a timber framed building has been refaced in brick. The additional area of roof created over the brick front, which is usually at a shallower pitch, is made up in slate.

Lead



Less commonly, lead and sometimes other sheet metals such as copper or zinc, can be found as a roof coverings, but they were was often used for flashings and gutters too. Metal can be expensive, but if well laid and detailed it can easily outlast other roof coverings. Therefore, lead was mostly used on church roofs. It is usually laid at a fairly low pitch with the sheets joined laterally with lead rolls.

Corregated Iron



Corrugated iron has almost become a traditional material in its own right during the 20th century. It is often used as a lightweight repair material, usually where thatch has failed. It is also found on agricultural buildings and has a semi-industrial character. Corrugated iron weathers over time giving it a pleasing patina, similar to how clay tiles or slate might age over time.

Concrete Roof Tiles

Concrete roof tiles, including interlocking imitation pantiles and plain tiles, artificial slates and other modern imitations, should not be used as alternatives on historic buildings. These machine-made items are often too regular in shape, do not weather well and can be too heavy on traditional timber roof structures. Modern sheet materials such as fibreglass, plastic or asbestos are similarly inappropriate and should not be used.

Repairs to Roof Coverings

Re-Thatching and Thatch Repairs

Generally, Longstraw can be stripped back to a sound base of thatch and does not need to be stripped back to the roof structure. This keeps the lower layers of thatch in situ. If a roof covering can be repaired in this way it can prevent the loss of historic fabric, such as evidence of smoke blackening, which therefore is preferable to complete replacement.

Longstraw generally lasts 20 to 30 years but can be repaired by redressing with new matching material, called a 'spar coat'. Any historic features or fabric such as smoke vents or torching can then be retained and protected.

Reeded thatch roofs generally last 70 to 80 years, but once failed, they need to be completely stripped and replaced, so any underlying historic features would be lost.
The traditional material to the area should be retained and used in any repairs. Thatched roofs often need to be re-ridging every 10 or 15 years.

Lifting and re-laying thatched roof coverings will require Listed Building Consent, whereas small scale ridge replacement or sometimes also the installation of a spar coat in matching materials, does not generally require formal consent.

Tile and Slate Repairs

Slate or tile roofs most often fail due to wind, weathering or frost damage to individual units. Some clay tiles crumble away whilst slate can delaminate, or individual slates can have been repaired previously by a metal clip holding it in place.

Small repairs such as individual tile or slate replacements can be carried out. However, after many repairs, it can be better to strip the roof carefully and relay it making up any small losses with second-hand slates or tiles to match.

Where more than half the existing tiles are damaged and cannot be re-used, careful consideration should be given to re-roofing totally with new, but traditionally made examples. Alternatively, a mixture of old from the building, plus a number of new tiles, can be used, with new tiles positioned on the less visible slope where they will very quickly weather into place. This is often the most sensitive option retaining sound historic fabric and using new but traditional materials in the replacements.

Lifting and re-laying roof coverings will require Listed Building Consent, whereas small scale patch repairs of individual tiles or slate does not generally require formal consent.

Lead Roof Repairs

Lead roof coverings usually fail in either of two ways: by corrosion of the metal due to dampness and acidity in the underlying structure such as an oak timber frame, or by wear from movement caused by heat, often because of a very large sheet size.

Corrosion appears as white salt-like deposits particularly on the underside of the lead, whilst wear appears like lines and eventually cracks.

Modern milled lead can be used to replace old cast lead and unsatisfactory detailing, but the old lead can also be sympathetically improved to meet the standards of the Lead Sheet Association (now called the 'Lead Sheet Training Academy'). On very old and important buildings, the old lead should be taken away for recasting with a small addition of extra metal to make up any deficit. This recast lead will match the old far better in both appearance and performance as it will be a better chemical match to the original.

Lifting and re-laying roof coverings will require Listed Building Consent, whereas small scale patch repairs in matching materials does not generally require formal consent.

Roof Underlay

Stripping a roof allows the structure beneath to be examined and treated, repaired or replaced as needed, in order to help maintain the building. Repairs to the timber structure beneath will typically require Listed Building Consent.

Roofing felt can also be added before the roof coverings are re-laid. This can provide better weather protection and therefore give the roof coverings a longer life. However, it should be remembered that old roofs were fairly airy so there is a danger when felting an old roof that all ventilation will be lost, creating a risk of condensation and moisture damage to the timber structure within. This risk can be limited by careful detailing at the eaves and by using a breathable felt or membrane.

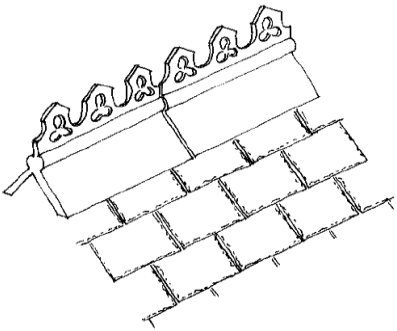
Historic Weather Protection

Historically before felt was introduced, better weather protection was achieved with the use of reeding or lathing, typically found on pantile roofs. The space between the battens was plastered, usually from above, onto a reinforcing bed of reeds or wooden laths. Whilst this was not waterproof, it restricted air flow through the roof, therefore reducing the risk of wind driven rain and snow penetration. When this material is found in an old roof, care should be taken to keep it in situ.

Pantiles were also sometimes torched, where a mortar bedding was applied from within the roof space. This gave a similar result and also stabilised the tiles. This detail should also be retained in situ when found.

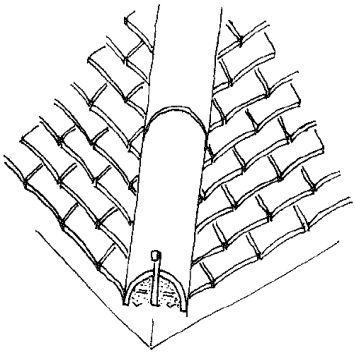
Traditional Roof Detailing

Ridges



Clay ridge tiles butted together are usually used over the top courses of slates or tiles. Traditionally red clay half-round ridge tiles are found with red clay plain tile or pantile roofs. Upturned 'V' shaped ridge tiles became more common in the 19th century, more often with slate roofs, either in a matching blue clay or as a contrast in red. These were sometimes decorative. Any re-bedding of ridge tiles should be carried out with a lime-based mortar which is more flexible than cement and so will not damage the clay. Whenever possible, existing ridge tiles should be re-used, with any replacements chosen to match.

Hips

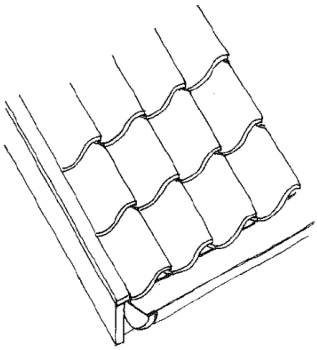


Hips are usually the same as pitched ridges. They are finished with ridge tiles mortared on top of the tile junction, and usually need a metal strap at their base to prevent them from sliding off.

Pantile roofs tend not to have hips because they are uneven. Plain tile hips sometimes have specially shaped hip tiles that sweep over the hip and bond in with the plain tiles either side.

Lead rolls are sometimes used for both ridges and hips. This is more often seen with a slate roof which is flatter and the same colour as lead.

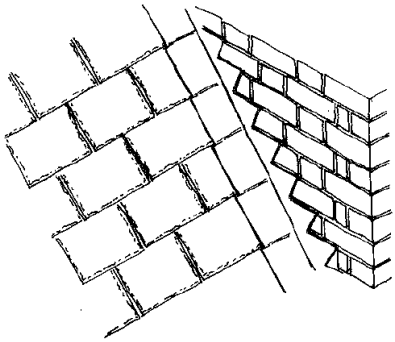
Verges



Verges are the sloping edges of roofs and can be detailed in various traditional ways. When only the edges of the tiles or slates project beyond a gable wall, the battens are usually trimmed short and the tile edges pointed up with lime mortar, often over a tile undercloak. Sometimes a timber bargeboard is used, which traditionally in Suffolk would have a capping strip along the top and over the tiles to help it weather.

Bargeboards and cappings are particularly prone to rot and need frequent replacement. If bargeboards are decorative, care should be taken to reproduce the original detail in any repairs or replacements.

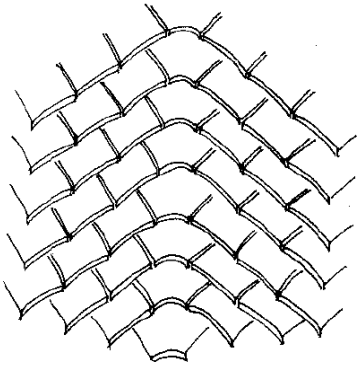
Abutments



Abutments or roofs against walls are probably best detailed with lead. A lead flashing can be dressed up under a drip to a rendered wall or into a stepped groove in the brickwork mortar. Below this, a junction to slates or tiles can be made with either a continuous lead gutter or a series of lead soakers interleaved between the slates or tiles.

Lead is preferable to the commonly found cement fillet haunchings which often crack and fail, causing leaks to roofs. However, these types of haunchings can be detailed with lime mortar and a tile slip, which can look nice too.

Valleys



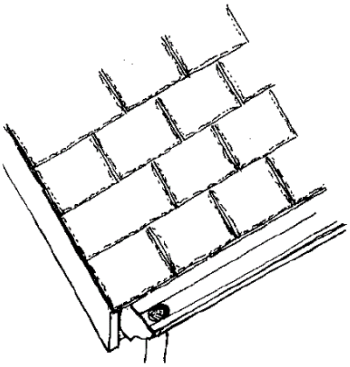
Valleys are usually best detailed in lead, with a simple valley gutter, although the traditional swept valley with clay valley tiles found on plain tile roofs should be retained where found.

A horizontal valley gutter between two pitched roofs is like a miniature lead roof and may require upgrading to modern

standards with adequate falls, drips and rolls to avoid the use of large sheets of lead that may fail due to movement. Regular inspection, maintenance and cleaning will extend the life of valleys.

Eaves

Eaves run along the bottom edge of roof slopes and help to shed rainwater. Timber wedge-shaped sprockets on the rafters near the eaves give a shallower pitch which helps to reduce the force of run-off.



Traditionally gutters were made of cast iron, either ogee or half-round in section, and should be repaired and refurbished wherever possible. Often a simple clean out and realignment is all that is needed to return them to working order.

On newer buildings, gutters tend to be mounted on short brackets on an eaves board, usually with a filled in soffit, which is sometimes another board or is sometimes rendered. The more traditional version with longer brackets mounted on open rafter feet is still found. These details also need regular maintenance to ensure water can be efficiently removed from the building.

Typical Roof Build Up

Traditionally, roof structures consist of rafters running up the slope, which are supported by horizontal purlins across the slope, which are supported by trusses. Battens are then usually laid across the top of the roof slope to provide fixing points for the roof coverings, which are laid at the appropriate gauge or spacing for their type.

Useful Resources

Emails

- heritage@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3
- planning@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3

Websites

- Legislation for Designated Heritage Assets – HM Government. *Planning (Listed Buildings and Conservation Areas) Act 1990.* - Planning (Listed Buildings and Conservation Areas) Act 1990 (legislation.gov.uk)
- National Planning Policy – HM Government. *National Planning Policy Framework* - National Planning Policy Framework (publishing.service.gov.uk)

- Heritage Asset Search – Historic England, 2024. *Search The List* - https://historicengland.org.uk/listing/the-list/
- Babergh and Mid Suffolk Conservation Area Appraisals – Babergh and Mid Suffolk District Councils, 2024. *Conservation Areas.* - https://www.babergh.gov.uk/conservation-areas / https://www.midsuffolk.gov.uk/conservation-areas
- Listed Building Consent Process – Historic England, 2021. *Listed Building Consent Historic England Advice Note 16.* - https://historicengland.org.uk/images-books/publications/listed-building-consent-advice-note-16/heag304-listed-building-consent/
- Curtilage Listing – Historic England, 2018. *Listed Buildings and Curtilage: Historic England Advice Note 10.* - https://historicengland.org.uk/images-books/publications/listed-buildings-and-curtilage-advice-note-10/
- Detailing and Conservation of Vernacular Slate and Stone Roofs, Terry Hughes – The Building Conservation Directory, 2013. -

https://www.buildingconservation.com/articles/vernacular-roofs/vernacular-roofs.htm

- Repair or Renew the Roof in an Older Home – Historic England, 2024. - https://historicengland.org.uk/advice/your-home/maintain-repair/roofs/
- Guidance on Planning Permission Requirements – Planning Portal, 2024. - https://interactive.planningportal.co.uk/
- Ecology Advice – Chartered Institute of Ecology and Environmental Management, 2016. *A Householder's Guide to Engaging an Ecologist Key Considerations.* - https://cieem.net/wp-content/uploads/2019/02/A_Householders_Guide_to_Engaging_an_Ecologist_Jan_2016.pdf
- Further Ecology Advice – Bat Conservation Trust, 2024. *Getting Personalised Advice.* - https://www.bats.org.uk/advice/im-working-on-a-building-with-bats/getting-personalised-advice

- Archaeology Advice – Suffolk County Council, 2024. *Suffolk Archaeological Service.* - https://www.suffolk.gov.uk/culture-heritage-and-leisure/suffolk-archaeological-service