TECHNICAL UPDATE

THATCHED ROOFS
IN NEW BUILDS AND CONVERSIONS

Thatched roofs in new builds and conversions

Introduction: This technical update provides additional guidance on the use of thatched roofs for detached dwellings for low rise new build and conversions. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances.

Background

Predominant thatching material in use in the UK up until the 19th Century was straw - either long straw or combed wheat reed. Norfolk Reed (or water reed) was traditionally used in the counties of East Anglia and other wetland areas.

A diversity of styles had developed over time and, coupled with different materials, distinct regional characteristics became apparent. The combed wheat reed roofs of the West Country for example, are shallow pitched and 'pudding basin' in appearance compared with the steeply pitched long straw roofs of East Anglia. The treatment of ridges, eaves and gables varies in different parts of the country and in those areas where there is a strong thatching tradition a departure in style today would look out of place.

In the early years of this century thatching was in decline. The commercial production of Welsh slate had begun in 1820 and the mobility which the canals and then the railways made possible meant that other materials became far more readily available than ever before. Use of the material declined following the First World War in particular, and with the invention of the combine harvester and the need to develop shorter stemmed varieties of wheat, the long straw once produced was no longer available.

With renewed interest in our historic architecture, thatching is now, once again, in the ascendancy. The three main thatching materials in use today are water reed (often known as Norfolk Reed although a large amount is imported from Eastern European countries), long straw and combed wheat reed. Sedge, a grass-like plant which grows in wetland areas, is also used extensively in ridging.

Types of Thatch

Water Reed:
Water reed is used extensively in parts of the West Country and East Anglia. New properties are almost always thatched in water reed since it is the most durable of the thatching materials, and tends to give the longest life. Many factors influence the longevity of a thatched roof and it is therefore unwise to generalise on the subject. However a Norfolk Reed roof situated in one of the counties of East Anglia where there is a tradition of very steep pitches could be expected to last an average of 50-60 years although there are instances of roofs lasting much longer than this.

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When re-thatching with water reed, the existing material will be completely removed back to the roof timbers, although in the south-west of the country, where roof pitches tend to be less steeply pitched, thatcher's often lay water reed on top of a base coat. The new reed is carried on to the roof in bunches and, starting at eaves level, is fixed directly into the rafters with the butts of the stalks exposed. Each layer of reed is held in place with either steel or hazel sways and once in position it is dressed into shape with the use of a legget.

Longstraw:

Longstraw was once extensively used throughout the main corn crop regions from Dorset northwards, but is now confined mainly to the counties of East Anglia, although examples of it exist up and down the country. It is harvested with a binder. Old-fashioned long-stemmed varieties of wheat are grown and cut whilst still slightly green. After being allowed to dry, the wheat is threshed in a threshing drain and the resultant straw leaves the drum in a fairly mixed state.

Before longstraw can be used for thatching it needs to be made into yealms. A yealm can be described as a tight, compact layer of straw, which has been 'tidied' and is level at both ends. Yealming is a lengthy procedure which takes place on the ground and is basically carried out in order to straighten the straw and prepare it into manageable amounts for use on the roof. When re-thatching with longstraw, it is not usually necessary for all of the old material be removed from a roof. The thatcher will normally only remove existing material back to a base coat and the new straw is then fixed to this with hazel spars.

Longstraw thatch is easily distinguishable from the other two types of material. It has long lengths of straw visible on the surface and has the general appearance of having been poured on, contrasting with the closely cropped look of combed wheat reed and water reed (see above). Longstraw also has exterior hazel rodding at caves and gables - a feature seldom seen on the reed types. As it is more easily attacked by birds, netting is usually fitted to the whole of the roof.

Combed Wheat Reed:

Combed wheat reed, or 'Devon' reed is predominantly used in the south and west of the country. Although very similar in appearance to water reed, it is in fact straw. The grain is removed from the straw through a combing machine which is fitted to the top of an ordinary threshing drum. The straw does not then have to pass through the drum and comes from the machine with the butts all laid in one direction. It is then tied into bundles and stacked ready for use.

Combed wheat reed is applied to the roof in a similar fashion to water reed, dressed into shape with a legget. However, as with longstraw, it is not necessary to remove all the existing material from a roof prior to re-thatching.

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Although there are national average figures quoted for the longevity of each type of material, these are of little use as judgements on performance - or likely performance - can only be made in individual circumstances. The performance of thatch depends on many factors such as roof shape and design, the pitch and its position (geographically and topographically), the quality of the material and the skill of the thatcher.

Details

Ridges:

The ridge of a thatched roof bears the brunt of the weather and, as the fixings are external, it requires attention on average every 10 to 15 years. The material used is usually the same as that used for the main coatwork, however, water reed is too stiff and brittle. As a result, the ridge of a water reed roof is often made with sedge.

The patterned ridges which have become popular allow the thatcher some artistic licence, but they are a relatively new innovation and as such are thought to be unsuitable for the majority of historic thatched properties. Different considerations apply in the re-thatching of an old building and one of recent date and it is probably fair to say that a house built prior to the 19th Century requires good plain workmanship without too much embellishment.

There are two main types of ridge - the 'wrap-over' which is used most widely, and the 'butt-up' which is found mainly in the south-west of the country where its use would appear to have developed from the stiffer nature of combed wheat reed. The 'butt-up' ridge has the butts of the material forced together from either side to form an apex whereas the 'wrap-over' is formed by folding a thick layer of material over the apex of the roof and fixing it on both sides.

Performance:

With greater awareness of the vernacular materials and style of particular regions, conservationists have realised the importance of maintaining (and even returning to) the historically correct thatching style and material pertinent to the area. Local authorities actively discourage the use of a 'foreign' material and in any case, listed building consent is required for alterations to a listed building. Furthermore, the awarding of grants for repairs and re-thatching is often dependent upon compliance with the thatching policy of the local council and consideration of a change of material will usually only be granted for exceptionally strong technical reasons.

A common misconception with thatch is the idea that it absorbs large amounts of water. This is not the case at all. Water is transferred down the roof from stem to stem until it drops from the cave. The steep pitches associated with thatched roofs allow for water to be shed at a very fast rate. When designing for thatch, ample allowance should be made for the projection of the caves and gables to project water clear of the building, and the ground should be well drained.

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Wind damage should not usually be a problem. The experience of the 1987 winds in the south-east of the country showed thatch to be more secure than many other forms of roofing materials. A greater cause for concern is the risk of fire in a thatched properly, although the risk however is probably overstated. Evidence shows that thatch fires are usually caused by the same kinds of hazards affecting all housing and that genuine thatch fires are extremely rare. Figures from the Dorset Fire Brigade indicate that of 3,000 fires each year, only 8-10 of these involve thatched buildings and in the majority of these incidents, the fire will have started within the building itself.

The reality is that all thatched building owners tend to be more careful about the dangers and employ a number of fire prevention measures. Nevertheless, many thatchers' now recommend the installation of a fireboard which is fitted to the rafters and gives at least a half hour's fire resistance. Depending on the material and position of the building, this might then be counter battened to provide air movement between the material and fire retardant.

When alterations to an existing thatched roof are planned or when designing a new thatched roof it is imperative that consultation with a Master Thatcher's Association is sought and in the case of a listed building, with the conservation officer at the local council. Thatcher's have no hesitation in recommending thatch as an ideal roof covering, provided that certain conditions are met. It is only those who work with the different materials and understand the complexities of thatch who are able to advise properly on the way thatch will work.

Recommendations

The use of thatched roof, on either new build of refurbishment/conversion projects is acceptable for warranty purposes.

It is important to ensure that the detailing and materials used are appropriate for the particular site and geographical location.

Some damage and deterioration may arise close to the end of the policy period however the repair of such damage would be expected to constitute maintenance and therefore be excluded from cover by the policy.

The construction of the thatched roof should follow the recommendations of the Dorset Model and the Thatched Property Safety Guide.

With regard to prevention and spread of fire:

- The fire barrier material used to overdraw the rafters should have some form of accreditation to prove that it is fit for purpose and will provide the 60 minute fire resistance as recommended by the Dorset Fire and Rescue Service. (Building regs only calls for 30 minutes).

- The means of smoke/ fire warning for the dwelling complies with Part B of the Building Regulations.
- Any chimneys of flues from solid fuel burning appliances are isolated from transferring heat to the thatch. The Thatched Property Safety Guide suggest 6mm aluminium sheet between the thatch and the chimney/ flue if present.
- Section 10 paragraph 10.9 of Approved Document B (volume 1) the Building Regulations for England and Wales, indicates that Thatch has a designated AD/BC/CD performance class for roof coverings. (the same as timber shingles as a matter of interest) Referring to the table 5; the recommended minimum distance from any point on a relevant boundary is at least 6 m. There is provision to reduce this distance if additional safety measures such as extending the smoke alarm installation to include the loft space. Although it is not specific in how much this separation distance can be reduced.
- The use of flush ceiling mounted downlighters is not permitted in the ceiling below the thatched roof apace.

References:

Dorset Model: The 'Dorset Model' has been jointly produced by the Local Authorities across Dorset in conjunction with Dorset Fire & Rescue Service, the National Society of Master Thatcher's, and after consultation with the National Inspection Council for Electrical Installation Contracting and the Building Research Establishment Ltd on the basis that evidence has shown that thatch can be made sacrificial in the event of fire. Available from Local Authority Building Control (LABC).

Thatched Property Safety Guide. Produced by Hampshire Fire and Rescue Service