

TECHNICAL UPDATE

Thatched roofing: Interactions with modern construction techniques



Introduction

This article provides additional guidance relating to how the Functional Requirements in our Technical Manual can be satisfied. The 'Provision of information' section below indicates the information we need and this is followed by guidance on how our Functional Requirements may be satisfied.

Provision of information

The roof design, construction of the supporting roof structure and the roof covering installation methodology, should be in accordance with the established building practices set for this specialist type of work by a relevant authority on the building technique e.g. Thatching Advisory Services.

A full set of design drawings and specifications shall be made available to the Warranty Provider and all other interested parties prior to the associated works starting on site. These should include:

- A statement of expected material durability for the chosen thatching material from a supplier holding membership of an industry recognised association e.g. National Thatching Straw Growers Association (NTSGA).
- A structural design for the Roof structure with supporting calculations that include the additional loadings a thatched roof creates.
- Relevant independent 3rd Party product conformity certification or product testing to a recognised test standard, to be provided for any fire resisting products used. These products must be confirmed by the manufacturer as suitable for use within thatched roofs e.g. sarking board, fire stopping.
- Clear design details showing the ventilation strategy for the pitched roof voids should be provided, notably due to the inherent lack of ridge ventilation created by thatched roof ridge detailing.

An AVCL must be incorporated on the warm side of insulation as a means to combat vapour movement into roof voids and the thatch material. AVCLs must be used alongside all roof configurations and their associated ventilation measures.

- Evidence shall be provided to demonstrate that the Building Regulation requirements for thatched roofing have been satisfied and include, details for any proposed passive and active fire protection measures contained within the roof voids.

Thatch materials

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

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used extensively in ridging. For those seeking greater depth of knowledge on these different materials, leading organisations such as Thatching Advisory Services and National Thatching Straw Growers Association (NTSGA) have a wealth of accessible information.

Durability

For the purpose of Warranty, roof covering materials are considered to be an external building element not forming a structural function, but part of the waterproof envelope. A roof covering carries a service life requirement of 25 years.

Typical service life for thatching material when supplemented by a regular maintenance schedule which is carried out by an experienced thatcher, are considered to be:

Water Reed - 25 to 40+ years.
Combed Wheat Reed - 25 to 35 years.
Long straw - 15 to 25 years.

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 roof areas, however, water reed may be considered too stiff and brittle. As a result, the ridge of a water reed roof is often made with sedge.

Where the Warranty surveyor is concerned that the specified material is at risk of not achieving a minimum service life requirement of 25 years, they may request that the appointed thatcher provide a documented strategy to prove and demonstrate how any apparent risks can be mitigated. Such strategy documents should be based on the guiding principles of a recognised authority e.g. Thatching Advisory Services.

Typical situations where the Warranty surveyor may have concerns, may be prompted by:

- A thatching material with a potential service life range below 25 years (e.g. Long straw).
- The quality of the thatch material being used on-site.
- The roof configuration e.g. pitch, complexity, humidity levels, ventilation and breathability.
- The geographical location of the building – e.g. elevation, exposure to prevailing winds, etc.
- The proximity of trees and other environmental factors.
- The potential for damage in service e.g. from wildlife, pollution, etc.

Weather resisting performance

A common misconception with thatch is that it absorbs large amounts of water, however this is not the case. Water is transferred down the roof from stem to stem until it drops from

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the eaves. The steep pitches associated with thatched roofs allow for water to be shed at a very fast rate.

The design must incorporate appropriate designed measures to ensure rain water is discharged from the roof as intended e.g. to guttering, or via deep overhanging eaves and water projection. Where the intention is to project water clear of the building, ample allowance should be made for the projection of the eaves and gables and the ground should be well drained. The Architect must provide design details to demonstrate rainwater is adequately discharged to a suitable outfall and avoid water logging of the ground around the foundations.

Structure

A Structural Engineer shall take the loading of the proposed thatched roof covering and the associated components, e.g. roof battens and fire resisting sarking board, (required to meet the Dorset model design approach) into account as part of their structural design, and this should be provided to the Warranty Surveyor.

The installation and formation of the main structural roof elements should follow the guidance given within the Roofs section of our Technical Manual.

Fire: The Dorset Model

The use of the Dorset model to comply with Building Regulations requires the rafters to be overdrawn with a micro-porous fire resistant boarding to increase fire resistance. For Warranty purposes, the boarding must have appropriate third party approval and be suitable for use in that situation.

Chimneys should conform to Building Regulations, particularly in relation to their proximity to thatch due to its combustible or conducting properties. The chimney should terminate at least 1.8m above the height of the ridge – this measurement is inclusive of any chimney pots, which should have a limited unit height of 600mm.

Where following the Dorset Model guidance it is noted that the guidance recommends ceilings beneath a thatched roof need to be capable of supporting access to fight fires from inside the roof via a fire resisting hatch of 900mm x 600mm. Where this is required by Building Control, the Structural engineer must include this in the design.

Services

Electrical fittings such as recessed lighting into ceilings below thatched roofs should be avoided, with any lights within the loft space enclosed with a fire resisting bulkhead. External lighting should not be mounted under the eaves of the thatch.

Television aerial and communication cabling should not pass over or under the thatch. External aerials should be fitted to a free standing pole at least 7m from the roof.

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Any plumbing within the roof space should utilise flame free jointing.

Junctions

Junctions between the thatch and other building elements should be made weather tight using lead flashings. Sizing and detailing should follow recognised lead work practice.

Moisture management and ventilation

Air and vapour control layers (AVCLs)

An AVCL should be incorporated on the warm side of insulation as a means to combat vapour movement into voids and the thatch material. AVCLs must be used alongside all roof configurations and their associated ventilation measures.

Ventilation

The intricate and unique detailing of thatched roof coverings can result in requiring more complex solutions to providing adequate ventilation to the roof.

For example, the projection of the eaves can lead to difficulty in providing adequate eaves ventilation. The requirement for cold pitched roof construction is to have 25mm of continuous eaves ventilation, and any insulation employed at ceiling level for an improved thermal performance must include provision to allow for unobstructed air flow at the eaves e.g. eaves ventilation strips fitted under the fire resisting sarking board at the eaves location.

In warm pitched roofs, rigid insulation installed in-between the rafters e.g. room in a roof space situations, must allow for airflow to the 50mm ventilated void required between the insulation and the underside of the fire resisting sarking board. Again this ventilated void should be served by a 25mm continuous eaves ventilation strip at the eaves.

Additional complexity is brought about by ridge constructions such as the 'wrap-over' which is formed by folding a thick layer of material over the apex of the roof and fixing it on both sides. Alternatively, the 'butt-up' ridge may be used. This technique sees the butts of the material forced together from either side to form an apex. These techniques do not lend themselves to conventional approaches to ridge ventilation and the promotion of cross ventilation to the roof voids.

As a consequence of the type of roof covering, it is essential that a Condensation Risk Analysis is carried out to identify the potential risks of condensation build-up within thatched roof construction. This should then be used to inform and shape a designed ventilation strategy for the roof.

Reducing the transfer of water vapour from occupied spaces

A combination of good workmanship on air and vapour control layers, the assessment of occupancy levels, and moisture management within occupied spaces via the use of a designed ventilation system such as use of background ventilation or mechanical

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extraction systems may provide options in reducing the transfer of water vapour into the roof voids.

Definitions

Long straw is a thatching material that is placed into position, then raked – it is often said this approach takes on a ‘poured onto the roof’ look. Overall thickness for new work is 400mm.

Combed wheat reed is a thatching material that has a much neater, trimmed look and during installation it is dressed and knocked into shape by the thatcher. Overall thickness for new work is 300-450mm.

Water reed is a thatching material that has water reed, reed mace and wild iris mixed together so may often be referred to as mixed reed. Again a trimmed look, dressed and knocked into shape by the thatcher. Overall thickness for new work is 300mm.

Yealms are bundled tight compact layers of straw which are 450mm wide and 125mm thick.

Bottles are slightly wider bundles used to create eaves and gable detailing.

Wadds are small bunches of combed wheat reed used to create the eaves and gables.

Sway is a split round hazel rod 1-3m long which is placed horizontally across each course of thatch.

Spar is a 750mm long hazel or willow rod with a twist at its centre driven through laterally, bundle to bundle, like a skewer.

Crook is a 6-10mm rod, 200-300mm in length with a point at one end and a turned head at the other. It is used to secure the sway.

Dolly is a roll tied bundle of reed or straw with a 100-200mm diameter and varying length and is used in the ridge construction.

Liggers and cross rods are split hazel or willow rods of 1-1.5m – these form the familiar hall mark signatures of the installing craftsperson, often found around the ridge.

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Warranty position

For Warranty purposes, the Functional Requirements within the 'Roofs' section in the Technical Manual must still be applied to thatched roofs.

At practical completion of the roof, a thorough recorded visual inspection should be carried out with representation from the General Contractor and the specialist Roofing Contractor in attendance.

As this is highly specialised work, it would not be unreasonable for the Warranty surveyor to request evidence of experience of the specialist Roofing Contractor, which may be proved and demonstrated by membership of an appropriate trade association that sets a Code of Conduct for the service e.g. Master Thatcher's Association.

Every care was taken to ensure information in this article was correct at the time of writing (March 2023). Guidance provided does not replace the reader's professional judgement and any construction project should comply with the relevant building regulations or applicable technical standards. For the most up to date LABC Warranty technical guidance please refer to your risk management surveyor and the latest version of the [LABC Warranty Technical Manual](#).