

# Water Reed Thatching Guidance

This guidance note has been prepared for thatching apprentices, home owners, architects, builders & developers, and historians for a better understanding of water reed thatch and it's potential environmental benefits for the 21st century.

Guidance for understanding the materials to hand for suitable construction specifications of Water Reed Thatch fixed new to a roof frame.

| <b>Thatch material:</b><br><br><b>Water Reed fixed direct to roof frame</b> | <b>Regular length (single wale) Reed</b><br><b>Circa: 1500mm to 2000mm</b><br><b>Single bunch method</b>   | <b>Long coarse (single wale) Reed</b><br><b>Circa: 2000mm to 2500mm</b><br><b>Single bunch method</b>   | <b>Short fine (single wale) Reed</b><br><b>Circa: 1000mm to 1500mm</b><br><b>Single bunch method</b>  | <b>Double –Triple? wale reed of various lengths, shapes, textures and qualities</b><br><b>Single bunch method</b>   |
|---|--|---|---|---|
| <b>Recommended position on roof for selected bunches</b>                    | <b>Bunches of reasonable taper shape:</b> Main body of thatch, gables, hips, eaves and eyebrow dormers.<br><b>Bunches full body and bushy tops:</b> Limited use on main body, valleys, top courses and backfill.                   | <b>Bunches of reasonable taper shape:</b> Main body of thatch, gables, hips, eaves and eyebrow dormers.<br><b>Bunches full body and bushy tops:</b> Limited use on main thatch body, valleys and backfill.  | <b>Bunches of reasonable taper shape:</b> Limited use on main body of thatch, eaves and gables on small tight features, top courses and backfill<br><b>Bunches full body and bushy tops:</b> Limited use on main thatch body, eaves and backfill.                                   | Best used for backfill, top course and setting eaves (not brow).<br>Can be used for main coat work if a low content of possible brittle previous years growth is present. |
| <b>Optimum thicknesses of thatch coat (mm) For good durability.</b>         | <b>280mm to 330mm</b><br>Recommend decreasing thickness of coat with decrease in lengths of reed bunches   | <b>330mm to 380mm</b><br>Recommend decreasing thickness of coat with decrease in lengths of reed bunches  | <b>250mm to 300mm</b><br>Recommend decreasing thickness of coat with decrease in lengths of reed bunches, Crucial.  | Ditto: Left columns, if fair reed is used for weathering coat.  |
| <b>Backfill reed requirements</b>   | <b>Average requirement</b><br>More backfill is required on each course for the more tapered reed bunches and/or increases in thickness of coat.<br>Extra backfill is needed for filling where dips occur in undulating roof frame. | <b>Minimum requirement</b><br>Some backfill required, as well as for the secondary backfill purpose of stopping the reed tops catching underneath the battens.<br>Extra backfill is needed for filling where dips occur in undulating roof frame. | <b>Major requirement</b><br>Far more backfill is required with short reed to avoid 'stacking' of reed courses and the loss of the necessary natural kick tension along the length of fixed reed.<br>Extra backfill is needed for filling where dips occur in undulating roof frame. | Ditto: Left columns, if fair reed is used for weathering coat.  |

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| <b>Thermal Resistance</b> of any given thickness of reed thatch.<br><br>(U-Value)<br>Conductivity 0.09 W/mK                                   | Between R3.11 and R3.66  | Between R3.66 and R4.22  | Between R2.77 and R3.33  | Ditto: Left columns               |
| Embodied energy<br>KWh/m <sup>3</sup>   | 5  | 5  | 5  | 5                                 |
| Negative Carbon footprint<br>Carbon Dioxide stored in an average sized thatched property  | 2 tonnes   | 2 tonnes   | 2 tonnes   | 2 tonnes                          |
| <b>Optimum Depth of fixings from surface of thatch.</b><br><br><b>Fixing spacing and positioning between reed courses.</b>                    | Between 115mm and 130mm<br><br>Between 460mm and 560mm<br>Optimum positioning of fixings relates to length of reed to help ensure the best natural kick tension for each course, avoiding clamping the reed down tight nearer the surface. | Between 115mm and 130mm<br><br>Between 560mm and 610mm<br>Optimum positioning of fixings relates to length of reed to help ensure the best natural kick tension for each course, avoiding clamping the reed down tight nearer the surface. | Between 115mm and 130mm<br><br>Between 400mm and 460mm<br>Optimum positioning of fixings relates to length of reed to help ensure the best natural kick tension for each course, avoiding clamping the reed down tight nearer the surface. | Ditto: Left columns<br><br>Ditto: |
| <b>Fixings:</b><br>Steel sway<br>Hazel or other suitable wooden sway<br>Iron hooks, stainless steel screw fixings, tarred cord, bramble rope. | Yes  | Yes  | Yes  | Ditto                             |

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| <b>Thatch tension for fixings</b>   | Reasonably tight<br>Difficulty in getting one finger under the sway.<br>Check with palm pressure that the reed courses are under the correct tension either side of the fixed sway.  | Reasonably tight<br>Difficulty in getting one finger under the sway.<br>Check with palm pressure that the reed courses are under the correct tension either side of the fixed sway.  | Reasonably tight<br>Difficulty in getting one finger under the sway.<br>Check with palm pressure that the reed courses are under the correct tension either side of the fixed sway.   | Ditto   |
| <b>Thatch surface tension</b>   | <b>Important</b><br>Must not be 'concrete tight', slight give in the surface helps with surface breathability and avoids retention of moisture wicking up the stems towards the fixings. Avoids inner fungal decay establishment | <b>Important</b><br>Must not be 'concrete tight', slight give in the surface helps with surface breathability and avoids retention of moisture wicking up the stems towards the fixings. Avoids inner fungal decay establishment | <b>Very Important</b><br>Must not be 'concrete tight', slight give in the surface helps with surface breathability and avoids retention of moisture wicking up the stems towards the fixings. Avoids inner fungal decay establishment | Ditto   |
| <b>Dealing with higher than normal proportions of shorter and longer reed bunches delivered/ purchased.</b> | Double bunch technique:<br>Not really necessary.   | Double bunch technique:<br>Use available shorter regular bunches with a surplus of longer bunches (main body).   | Double bunch technique:<br>Use available regular bunches with a surplus of short reed (main body).<br>It is possible to double bunch short and very long reed together but is not pleasing to the eye.                                | Ditto   |
| <b>Life-cycle performance and durability:<br/>50 degree plus pitch roof frame</b>                           | 50-70 years depending on other smaller contributing factors such as aspect etc   | 60-80 years depending on other smaller contributing factors such as aspect etc   | 40-60 years depending on other smaller contributing factors such as aspect etc  | Less likely to perform quite as well as single wale reed, but reasonably good if thatched well. |
| <b>Life-cycle performance and durability:<br/>Slack pitched roof frames</b>                                 | Poor<br>Performance reduces incrementally with slacker pitches.  | Fair<br>Performance reduces incrementally with slacker pitches.  | Very poor<br>Performance reduces incrementally with slacker pitches.  | Poor to very poor<br>Performance reduces incrementally with slacker pitches.                    |

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| <b>Uniform thatch coat depth specification for each course of reed fixed.</b> | Ensure that each course is dressed to within 10mm of specified depth before fixings are secured. Overfull coatwork courses <b>must not</b> be rectified by using a leggatt to dress up the extra thickness to the bindings, as this will effectively over tighten the thatch surface and leave the bindings/fixings incorrectly positioned (unintentional stack and clamping of reed). | Ditto | Ditto | Ditto |
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**Note: single wale refers to reed harvested every year on any given area of marsh, where as double wale the reed is harvested every other year (two seasons growth).**

Historic Notes and thatching techniques employed:

Much of England's marshlands had been drained by the early 17<sup>th</sup> century for use as pastureland, this would have led to reduced availability of water reed for localized thatching purposes leaving areas such as the Norfolk Broads as the main suppliers of water reed to local thatchers, transport of reed was far too costly in the days before rail transport so it's unlikely that reed traveled more than 5 miles from source.

With this in mind we can assume that reed thatchers were rare outside areas such as the Broads and that in the past they were possibly not as experienced as the thatchers that thatched solely with water reed.

During the late 19<sup>th</sup> century a number of factors led to the lack of confidence in long straw thatch, thatched property owners either stripped the straw thatch for tiles or in some instances water reed thatch, this was made possible by the much reduced cost of transportation with the railways.

A number of straw thatchers at that time took up thatching with water reed, many were self taught and developed their own techniques for thatching with reed, they generally thatched by the single (reed) bunch method that we now see throughout the UK, this method was not used by the old Norfolk Broads thatching families who generally used the double (reed) bunch method of thatching.

There are some advantages to thatching to the double bunch method in so far that it is possible to correctly secure the shorter reeds without the risk of slippage or risking overly tight surface tension through 'stacking' up the roof, another advantage to double bunching is that there are less fixing sways required up the roof, double bunching always employed an approximate 600mm spacing between sways whereas with single bunching the fixings may be as close as 450mm apart to ensure some reasonable fixing of shorter stemmed reeds.

The single bunch method appears easier and possibility quicker to thatch with for thatchers not accustomed with the old double bunch technique, either technique is fine as long as the thatcher understands the available material to hand.

Generally the supplies of local UK water reed tend to come as a mixed load of long to short reed bunches, the percentage of each can vary, a reed thatcher in East Anglia will generally ask the reed cutter for a much higher proportion of medium to longer reed whereas thatchers from much further West mainly prefer short fine reeds as they are more used to combed wheat reed for thatching, in areas outside East Anglia shorter reed is sometimes used as a spar coat on top of old long straw and combed wheat reed roofs.

Reed cutters in Norfolk are only too happy to be able to sell short reed out of the region, this export trend has been going on since the 1960's.