

Guidance Note: Pantile Roofs Repair and Replacement



January 2011

Introduction

A pantile is a traditional form of single lap clay-fired tile, with a cross section in the shape of a shallow letter S. When laid on a roof, the curved shape of each tile fits and overlaps the neighbouring tile in the same course. The undersides of the pantiles were usually torched with clay or lime mortar to reduce rain or snow penetration. A pantile can be laid on a relatively low pitch (between 30°-40°). The shape of the pantile means it is best suited to simple roof forms as it is quite hard to form hips, valleys and small roof sections. By using a single lap tile, the roof is relatively light and therefore only requires a light structure, making it an economically viable roof type. Pantiles are generally found in the Eastern regions of England. They were first imported from Holland in the seventeenth century and soon took hold as a widespread roofing material around the Eastern coast and along its major waterways. During the eighteenth century, the first English-made pantiles supplemented the supply from Northern Europe. The size of a pantile was fixed during the reign of George I as 13½ in. by 9½ in. by ½ in.

Construction

A pantile roof has a series of regularly spaced horizontal battens attached to the rafters (on which the tiles are hung). The tiles have a projecting nib on the back. This small projection on the rear of the tile holds it in position when laid on the batten. The battens should be placed evenly to ensure the tiles maintain the appropriate lap over their underlying neighbour. Pantiles are laid so that the downturn of one overlaps the upturn of the next on the same course. This forms a system of ridges and troughs, which concentrates rainwater into the centre of the pan. Rainfall on the flanks of each tile is also deflected away from the side rolls and into the centre. Over a series of courses, this system channels the water down the roof slope. The ridge of a pantile roof is normally also protected by clay ridge tiles. These can either be half-round or 'V' shaped. This provides extra security to the fixing and added protection from the weather by preventing wind uplift.



Historical Accuracy

Dentil Fillers

Dentil fillers are small pieces of clay or cement that are fixed between tiles at the eaves as an engineering solution to help seal the roof. These are **not** traditionally found on historic buildings and can sometimes have a detrimental effect on rooflines and therefore are not a desirable solution.

Tile Ventilators

Due to the method of construction, pantile roofs can sometimes allow more air to enter a roof structure than a slated roof or a modern equivalent. Modern roofing methods often include insulating the roof and adding tile ventilators to the roof covering. Whilst the use of insulation may often be acceptable in a historic building, the use of visible tile ventilators should usually be avoided as they can disrupt the simplicity of the roofline and detract from the building's character. A simple way of overcoming this problem is to line the roof with a breathable membrane that will help to insulate the building but will at the same time allow it to breathe. The District Planning Authority should always be contacted about this matter, as any work done could be detrimental to the historic interest of the building, could affect the health of the historic fabric and may also require Building Regulations approval.

Mortar Bedding and Torching

Traditionally the ridges and eaves would be bedded with mortar to help stop the roofing tiles being blown away by the

wind. A common practice in Bassetlaw is to also torch the individual tiles. Torching is a simple process of applying a **lime mortar** to the sides of the uneven spaces between the tiles or the gaps between the battens to stop wind lift and help to insulate the building.

Cloaking Verges

Cloaked verge tiles provide a neat and mortar-less finish at roof verges. Traditionally this would **never** be seen on buildings and therefore is an inappropriate roof treatment. The use of verge clips should also be avoided.

Ridge Tiles

The ridge of a pantile roof is normally protected by clay ridge tiles. These can either be half-round or a loose 'V' shape, known as a 'hogsback'. York stone ridge tiles are also seen in the District but are less common.

Interlocking Tiles

Interlocking tiles are a modern invention to help with the efficiency of laying roofing tiles. They are machine made and when laid, have a overtly uniform appearance; this is not desirable with historic buildings. **Handmade non-interlocking tiles are the most suitable for historic properties.** Handmade pantiles are often cheaper to purchase than machine-made tiles.

Replace or Re-use

If 50% of the pantiles removed from a roof can be reused again, it is always desirable to do so. The same approach applies if



**Half round
Ridge**



**Hogsback
Ridge**

The above pictures are examples of the permitted ridge tiles. Courtesy of William Blyth

enough pantiles can be recovered to cover at least one full slope of the roof. This slope would preferably be the main streetscape view. This technique allows for a better preservation of the building's historic character.

Colour

When a roof has its pantiles completely replaced, it is perfectly acceptable to have the new tiles the colour of the clay. It is always desirable to allow the clay to age by itself. Artificially ageing or distressing the pantiles is not necessary, it would not be an honest repair and could be detrimental to the building's aesthetics.

Legal Position

When altering a listed building in any way, approval from the District Planning Authority must be obtained in the form of Listed Building Consent. This is due to the fact that any change could be detrimental to the building's character, its special architectural interest or its historic interest. It is a criminal offence to carry out works to a listed building without Listed Building Consent. The offenders (both owner and

developer/tradesperson) could be liable to prosecution and/or the expense of rectifying the change.

For unlisted dwellinghouses and their outbuildings, planning permission is not usually required for repairs to a roof, although permission could be required for buildings with non-residential uses. If major works are carried out, e.g. the roof tiles removed and completely replaced, the District Planning Authority should be consulted and in some cases compliance with Building Regulations may be required. Properties within Conservation Areas may also be the subject of an Article 4 directive; in this case, planning permission may be required. To be sure of the legal position, it is always advisable to check with the District Planning Authority before commencing any works to a historic building's fabric.

Maintenance and Repair

If regularly maintained, a pantiled roof



will remain sound for many decades, but the roofs need to be regularly inspected to identify any problems that may occur - these should be addressed at an early stage. Some common problems are:

- **Loose or broken tiles**

The most common defect is loose or broken tiles. Tiles can become more porous with age and in some cases break apart.

Where evidence of any of these problems is apparent, careful localised patching of the tiled roof will be necessary, taking care not to damage other tiles during the work. Where practical, the original tiles should be retained. This will help keep the character of the building and is a more economic option rather than replacing the entire roof cover.

- **Deterioration of the tiles**

If a tile has deteriorated to point that it needs to be replaced and patching is required, the pantiles should match the

dimension, colour and shape of the originals as closely as possible. This allows the replacement tile to link properly with the existing roof covering and also helps retain the visual appearance of the roof. When using second-hand pantiles, they should be carefully checked to ensure they are compatible with the existing. If second hand tiles are not readily available, new may have to be used. Most of these are machine made but this produces regular sizes, shapes and colours, which will make the replacements stand out from the existing tiles. When introducing new tiles to an existing roof, it is better to try and place these in unobtrusive areas to avoid the visual impact of new against old and by relocating the existing tiles to the more conspicuous areas of the roof. **Concrete replacement tiles should not be used where a roof was originally pantiled.** These are often heavier and thicker than traditional clay tiles and the roof structure may have to be strengthened to support this extra weight. Concrete tiles do not weather or age in the same manner as clay, become porous more quickly and have a more limited life expectancy on the roof.

- **Deterioration of battens and fixings**

Movement in the structure of the roof can lead to the deterioration of battens and fixings. This can dislodge the alignment of the tiles and make the roof vulnerable to water penetration. Where this is a problem, the roof structure should be fully inspected to establish and rectify the cause. Filling the open junctions between the tiles with

Useful Contacts

English Heritage

Regional Office
44 Derngate
Northampton
NN1 1UH
01604 735400

The Society for the Protection of Ancient Buildings (S.P.A.B.)

37 Spital Square
London
E1 6DY
020 73771644

The Georgian Group

6 Fitzroy Square
London
W1P 6DX
020 73871720

The Victorian Society

1 Priory Gardens
London
W4 1T
020 89941016

The Twentieth Century Society

70 Cowcross Street
Bedford Park
London
EC1M 6EJ
020 72503857

lime mortar can help stabilise loose tiles and keep them in place. The use of foam or bituminous type treatments on the internal and external tile surfaces is not advised. These applications make it hard to re-use tiles in the future and can, by reducing ventilation, also hasten timber decay. Problems with battens and fixings that remain unchecked make such roofs vulnerable to further deterioration.

- **Failure of mortar bedding or torching**

Where a roof has been “torched” underneath with lime mortar, this can sometimes fail. When this happens it can lead to loose tiles, draughts and water penetration. A similar lime mortar to the original should be used when replacing deteriorated sections rather than modern cement. A lime mortar has greater flexible properties than cement and is therefore less likely to crack and deteriorate at the rate a modern cement mortar would.

- **Moss growth**

When re-using pantiles, it is important to ensure any moss is removed from their surface as this can promote dampness and hasten deterioration. The easiest way to remove moss is by the gentle use of a bristle brush. The use of chemicals should be avoided as this may damage the tiles.

Advice

If in doubt about the condition of your property, seek professional advice. The District Planning Authority’s Conservation Team can offer advice on traditional roofs. It is especially important that owners of listed buildings discuss the repair or replacement of roofs/roofing materials with the Conservation Team before carrying out any work.

Finally, make sure that anyone promoting or selling roofing materials or associated services knows that your property is in a Conservation Area or whether it is a Listed Building. They could be liable if they advise you to proceed with inappropriate work without planning or listed building approval.



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