

STONE SLATE NATIONAL BRIEFING 1998  
THE ROOFS OF ENGLAND CAMPAIGN - STONE SLATES 1994 TO 1998  
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In 1993 a conference was held in Derbyshire to discuss the problems of stone roofing in the region. One outcome of this was research into the status of stone roofing in the South Pennines, a model area of England. The objectives of the study were to -

- 1 produce a database of historical sources of stone slates in the region including a description of the slates and a photographic record of slates and roofs;
- 2 review the state of the industry, the causes of cessation of production and the potential for its re-establishment;
- 3 review the market for stone slates, the sources of competition, restraints on its development and sources of support including grant aid;
- 4 review the mineral and conservation planning environment to determine how present policies were assisting with or contributing to the problem;
- 5 review the training needs of manufacturers, roofing contractors, architects and planning and conservation officers in order to support and control the use of new and reclaimed stone slates
- 6 develop a methodology which would be applicable to investigations of similar traditional building products in other regions.

The work was reported in The Grey Slates of the South Pennines in 1996 and will be published in English Heritage Transactions during 1998.

Concurrently a DoE funded geological study was carried out with the School of Construction and Earth Science at Oxford Brookes University. This reviewed the stone slate geology and attempted to characterise the stone slates of the region. This work has provided the beginnings of a basis for assessing the suitability of stones without a known history for use as roofing and an understanding of factors affecting their durability. There is much more work to be done in this field and in other regions. The work was reported in Roofing Stones in the South Pennines in 1995 but is unpublished. It may be possible to make it available through the Stone Roofing Association website in the future.

As a follow up to the South Pennine work, research into the status of stone roofing throughout England was carried out in 1997 and will be published later this year or early 1999.

This paper presents some of the outcomes of the work done so far and areas in which further work is needed.

#### QUARRIES

In the South Pennines 190 quarries were examined and ranked on a range of production and impact criteria to help potential manufacturers select the best opportunities for quarrying. This is now beginning to show results with a number of mineral planning applications in the pipeline.

In other regions of England where there are stone slate supply problems and where the history of stone slate production is not readily accessible there is a need to carry out similar research. As a first step, in the 1997 study an attempt has been made to bring together all the historical and geological information in each of the stone roofing regions. This work will now have to continue at a local level and areas which stand out for action include Somerset/Dorset, Horsham and the Welsh Marches.

#### INDUSTRY

The supply situation is improving but the industry is still vulnerable and to a large extent dependent on building conservation grants for its economic viability. The majority of companies are small some are literally one-man-bands. This is both a strength and a weakness. Self employed people will work in conditions and for long hours that would be generally unacceptable. However, illness or other unforeseen problems can be very disruptive. This happened in 1997 when a quarry owner became ill and re-roofing plans for the region were thrown into disarray. The outcome was that several buildings were re-roofed with other products instead of stone. These are probably now lost forever.

Where the production of a particular stone slate is dependent on a single quarry it is important to co-ordinate supply and demand when establishing conservation schemes. It is all too easy to overwhelm the supply and to inadvertently promote the destruction of stone roofs outside the area to make up the deficit. Good communications between conservation departments, architects and quarries are essential before large schemes are established.

Some structural changes are taking place within the industry and a number of larger companies are entering the market. Hopefully this will improve the stability of supply but it is bringing with it novel manufacturing techniques mainly based around sawing. If these are not introduced with care they have the potential to pose both aesthetic and technical problems.

Detailing is important to the appearance of roofs and it is variable and regional. The ways in which the edges of stone slates are dressed provides one example. They may be more or less bevelled, or may be square edged and butt up tightly or even be opposite handed producing an overlap.

It is a fundamental fact that we are losing stone roofs because they are expensive. The grants which are available to make up the difference in the cost of a stone roof are agreed by all concerned to be wholly inadequate to achieve the objectives of roof conservation. If this is the case (and there is no reason to think it will get any better in the future) it may be necessary to accept an element of mechanical manufacture albeit at some detriment to the appearance of the product in order to achieve lower product costs. The conservation bodies need to debate the costs and benefits of these initiatives and closer communication between manufacturers and specifiers is needed to reach agreement on what is aesthetically acceptable. In the case of new build however, it may be that the introduction of sawing is simply another step along the road of technical development and we may be seeing the creation a new 'tradition'.

Technically stone slates sawn to thickness may not be durable if they are made out of unsuitable stone or because they are sawn off the bed. Because there are no durability tests for stone roofing it is currently impossible to control this issue. Some roofs have already failed because of errors in stone selection. Unfortunately an application to the DETR for funding to research stone slate durability was unsuccessful and we are left in the doldrums on this fundamental issue.

Specifiers and builders often have great difficulty finding a supply of appropriate stone slates. To try to overcome this and to help the industry to promote itself the Stone Roofing Association has been formed for manufacturers. It is too early to say whether this initiative will be successful.

#### MARKET

At present most stone slate markets are unsophisticated. In a situation where you are lucky to be able to find any new slates you are unlikely to be able to be too discriminating about how closely they match the subtleties of local slates. But most regions have used a variety of stones for roofing and ideally all local types should be available for roof conservation. This is rarely the case and in extreme instances limestones and sandstones have even been substituted for each other. This aspect of stone roof conservation was investigated in the South Pennine study and out of the 34 named stones which have been used for roofing in the region it was proposed, using only appearance criteria, that seven generic types might be sufficient for conservation purposes.

The criteria for defining generic stone slates can include -

- Geology
- Grain size
- Colour
- Surface features
- Presence of certain minerals
- Size range and mix
- Thickness
- Worked features such as tooled surfaces or edge treatments
- The plant life which they support affects the ultimate appearance

Different stones have different market sizes. Naturally the size depends on how precisely we define a specific stone type. However some will inevitably be too small to justify ongoing production. The Magnesian limestone of East Derbyshire is one example where only a few roofs remain and there are many others. In such situations there are two options: occasional manufacture or substitution by another stone slate. The entry of larger companies into the industry increases the likelihood that stone slates with smaller markets could be manufactured intermittently and at a reasonable cost.

At Harnage in Shropshire we are in the middle of an attempt to quarry enough stone for one and a bit roofs; on Pitchford Church and Pitchford Hall. It has been a long hard road even getting to the point of

having planning consent to quarry and the difficulties are as much to do with people as they are technical. It remains to be seen how difficult the manufacture and roofing will be for this most unpromising stone slate.

Where a stone slate is simply unavailable some alternative has to be found. Around Brandsby in East Yorkshire the traditional limestone slate is often replaced with a sandstone from the nearby Carboniferous stones of the Pennines. This radically changes the appearance of the roof as can be seen on these slopes and a limestone from the Cotswold, for example, would be more appropriate.

This points up the need for better and more readily accessible information to support the decisions on substitution.

Some stone slates are very distinctive as this example from the New Red Sandstone in the Eden Valley illustrates and where the same rock is used in Dumfries it has an even more distinctive, and ancient, roofing method. A debate is required within the conservation field to decide which stone slates need to be manufactured because they are important and distinctive and which could be substituted from other sources. This requires at the least a detailed description, including pictures, of each of the stone slate types and their localities. Eventually a protocol and handbook of stone slate types could be produced to aid decision making.

### CONSERVATION PLANNING

One of the outcomes of the South Pennine study was a review of the application of building conservation grants. English Heritage policy now directs grants towards the use of new stone slates and away from reclaimed except those from off the same building or group of buildings. It is hoped that this will support the manufacturing industry and reduce the deliberate dismantling of roofs simply to sell the slates. Whilst the recycling of slates claims to be environmentally sound there is no doubt that the best thing to do with reclaimed stone slates is to put them back on the roof they came off rather than replacing them with other products which will have a shorter life and whose production will probably have a higher environmental impact. To continue to rely on reclaimed slates for the conservation of roofs is quite simply not sustainable. It will inevitably undermine the viability of the manufacture of new slates and without new slates to feed into the re-roofing cycle, it will result in the disappearance of all stone roofs.

English Heritage policy now has the following objectives

Wherever possible, new stone slates rather than second-hand should be used.

Reclaimed slates should be used only on the building or group of buildings from which they were removed.

Substitute materials, such as artificial slates made of fibre resin, concrete tiles, 'reconstituted stone' and so on, are inappropriate alternatives to real stone slates and are not suitable for use on historic buildings. New stone slates should match the existing ones as closely as possible in terms of geological type, colour, texture, size, and thickness. It is important to recognise the slates particular to your area. Sandstone and limestone slates should never be substituted for each other, nor should they be used together. Stone slates which have been sawn to thickness, rather than split, can be technically and aesthetically unacceptable and, if they fail to meet these criteria, should not be used on historic buildings.

### MINERALS PLANNING

Minerals planning policy is supportive of stone slate quarrying. Most local plans recognise the need for minor products and mineral planning officers are enthusiastic and helpful. Difficulties do arise however where individuals, inexperienced in the planning process, make errors in preparing their applications. This can result in unnecessary extra costs and delays or even rejection. A guide to preparing an application is badly needed.

In most quarries only a small part of the rock will be suitable for roofing. Whilst the establishment of a supply of stone slates may be the motivation for the opening of a quarry it makes neither economic nor environmental sense to restrict production to roofing alone. The rock which cannot be used for roofing should be permitted to be used for the full mix of products; flagging, walling etc, which also contribute to the local distinctiveness and visual harmony of the region.

## TRAINING

This is a problem at all levels.

For professionals some training is available through architecture or conservation courses but these cannot provide the practical details which are so much a part of a roofing technique which relies so heavily on experience, an understanding of how top hung double lap slating works and keen judgement of how to place every slate on a roof. Stone roofing evolved in response to the rock and the weather and techniques vary quite widely across the country. The English Heritage stone slate technical note tackles the issues but it cannot provide guidance on the specific, local aspects. This must come from local people and I hope the conservation departments of each of the stone roofing regions will now develop their own, specific, guides.

Some technical days have been provided jointly with SPAB and the Technical Advice Note and the Roofs of England exhibition are useful supports for training events. Lecturers are available for courses and the stone slate website is a useful source of information.

Roofing continues to evolve and new problems arise. Insulation and ventilation is one example where the application of new regulations can be problematical. Much of the development of roofing design and construction is driven by product manufacturers who always promise the solution to all your problems but who may not understand conservation policy or the full implications for stone roofs. Care is needed when deciding whether, or how best, to adopt modern roof construction techniques. It may also be that a more precise statement of conservation policy in this respect needs to be articulated and disseminated.

The provision and quality of craft training is very worrying. The standard of roofing workmanship in the UK is so low that an initiative, the Roofing Industry Alliance, has been established to try to improve the situation. However the combination of misdirected funding for training provision through the colleges, low uptake of roofing courses and the need to give priority to the simpler roofing forms such as concrete tiles does not auger well for stone slating.

The recently revised NVQ scheme for roofing includes traditional top hung random slating at level three but the fact is that most trainees drop out at level two. This means that most craft training for random slating is carried out within roofing companies. Sometimes this is excellent, especially where there is a continuity of knowledge and experience within a family business. Unhappily the opposite is often the case and where there has been a break in the tradition often bad practice is adopted and perpetuated. Obviously, in this unstructured situation there is no way to assess or control the quality of the trainers or the training given.

Much of what is done on stone roofs today may not be based on genuine knowledge. Stone roofing is a seriously under-researched field and there is an urgent need for the construction of older stone roofs to be thoroughly researched before the disappearance of the remaining examples from the time when the techniques were well understood. There is also scope for work on the industrial archaeology of stone slate quarrying. The problem for researching roof construction is that it can only happen when a roof is being taken apart and what is needed is a programme to bring in specialists as opportunities present. Archaeological recording techniques should be used but the people carrying out the work need to understand what is significant about roof construction so that they will record the correct details.

When I wrote the South Pennine report I concluded that there were reasons to be optimistic about the future of stone roofing. Four years on that optimism has been justified and in some regions the supply problems are being resolved and much useful experience has been gained which will help further the work. However, one lesson learned is that success is only achieved with a committed, adequately resourced and sustained local effort. Help is available through English Heritage but ultimately success will only be achieved by hard work within the regions.

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