

Repairs should use appropriate techniques, methods of construction and high quality materials proven by tradition. This will normally be the same materials as were used in the original construction. Substitute or artificial materials are ineligible and their use is discouraged on grant-aided projects.

Work must be carried out in line with planning guidance, HES guidance and advice, BS 7913: The Principles of the Conservation of Historic Buildings and current Health and Safety legislation.

Scaffolding design

1. When bracing scaffolding, avoid the use of damaging masonry anchors. Consider the use of window openings, window jamb cramps, raking support or fixing into mortar joints that are sufficiently wide to prevent damage to adjacent stone arisses.
2. If anchors are required, they must not be fixed close to edges of carved decorative features.
3. A strategy for the insertion and removal of fixings should be devised before scaffolding is erected. Expanded ferrous anchor sockets left in masonry will cause staining and cracking as they rust and must be removed at the end of the work. Consider rubber sleeved anchors which can be withdrawn on completion of the works.

Roof structure

1. Ensure the roof structure is sound. Where there are significant signs of movement in the roof structure, advice from an engineer experienced in the repair of historic structures may be required. When designing remedial structural repairs, adopt a minimum intervention approach and discuss the proposed repair with Historic Scotland.
2. Clear sarking of old nails and lift the lowest sarking boards to inspect the rafter ends and the wall plate.
3. Inspect timbers for rot, insect attack and structural weakness. Repair damaged timbers using new preservative treated timbers run to the original profile and treat rot or insect attack locally as required. Timbers should be spliced in-line rather than cheek bolted.
4. Where possible, separate timber repairs from damp stonework with a DPC and allow for free ventilation where practicable.
5. Check the provision of ventilation to roof voids. If additional ventilation is required, locate discreetly and create using traditional materials e.g. lead.

Slating

1. Understand the original roof build-up and design the repair, including the use of underfelt where appropriate, to suit the site circumstances.
2. Where different types of slate have been used across building phases or ranges as part of the natural evolution, these characteristics are to be respected.
3. Re-slate using sound original slates recovered from the site together with matching slates brought in as required to make up the required number. Samples of slate to make up broken or unsuitable slates should be agreed before purchase.
4. Slates to be laid to exactly match the original laying pattern using slates of the same shape as the originals.
5. Re-used slates should not be re-dressed as a matter of routine.
6. Slates should be fixed with non-ferrous nails.
7. Replacement lead flashings, secret gutters, ridges and other weatherings to be lead as described below.
8. Mortar fillets at skews may be reinforced with expanded non-ferrous metal reinforcing lath and formed on top of code 4 soakers.

Leadwork

1. Weathering to lead flat roofs to be in new milled or cast lead as follows:

- cupola astragal cover flashings to be a minimum of code 5;
- flashings, secret gutters, dormer cheeks etc to be code 6;
- valleys to be minimum code 7;
- short gutters or small areas of flat roofs without foot traffic may be minimum code 7;
- all other flat roofs or gutters on geotextile underlay to be code 8;
- ridges to be code 8 and fixed with clips of minimum code 8 lead, copper or terne-coated stainless steel.

2. Lead to be laid to follow the recommendations of the Lead Sheet Association:

<http://www.leadsheetassociation.org.uk/>. Complex and details unique to the building should be drawn at a large scale sufficient to illustrate how these areas are to be constructed.

3. Flashings are to be inserted into raggles sufficiently deep to allow the raggles to be pointed. Existing raggles should be used wherever possible. Lead should be isolated from lime mortar by a protective coating.

4. The use of sacrificial flashings where slating discharges into valleys and parapet gutters is encouraged.

5. On flat roofs, hollow roll joints should not automatically be replaced with wood cored roll joints, consideration should be given to the historical context, the roof pitch and any likely foot traffic.

Fired clay roof tiles

1. Understand the original roof construction and repair the timber substructure - including replacement felt as appropriate.

2. Tiled roofs are normally laid on battens and counter battens (over roofing felt).

3. Fired clay roof tiles have a limited life as the tile begins to delaminate, shatter and break down with exposure and age. Consequently, older roofs may require a higher proportion of new tiles.

4. Replace broken or unsound tiles with new tiles of the same colour, profile, size and glaze (if relevant).

Stone slab roofing

1. Record existing stone slab slating noting course heights, lap and peg fixing.

2. Carefully remove existing slabs using best practice and lay aside for re-use. Do not lever out pegs by lifting tails of slabs. Pegs should be removed without splitting slabs or enlarging peg holes. This may require a higher than usual level of skill and workmanship.

3. Re-grade slabs and make up differences in new stone slabs which match the source, colour and texture of the original.

4. Re-fix using newly made seasoned timber pegs of matching species (traditionally oak).

Rainwater Goods

1. Check that the existing rainwater goods are adequate to control and discharge water safely away from the building. If not, the professional adviser should submit proposals for additional installations. Note that alterations may require Listed Building Consent.
2. Where cast iron rainwater goods are sound ensure they are clear and flowing freely.
3. Where broken, damaged, missing or in non-original materials such as uPVC, replace to match original profile and detail in cast iron.
4. Ensure maintenance access exists at ground level.
5. Ground drainage to be checked and made fully operational to ensure water is being conducted properly away from the building. Digging within archaeologically sensitive areas such as graveyards may require an archaeologist.
6. All cast-iron pipework and rhones to be prepared primed and painted in accordance with manufacturer's written instructions using a high performance paint specification. Paint new cast iron goods before site assembly and make good joints, chips and fixings immediately after fixing. The final colour may be selected using evidence gained in the cleaning process or to match the background masonry.

Skylights/ventilators

1. Original cast iron skylights are usually sound and should be repaired and reused rather than replaced. These are to be painted as outlined for rainwater goods above.
2. Where replacement rooflights are required, replace with new rooflights to the same size, detail and materials. Modern skylights of the same size and appearance but incorporating thermal breaks and alloy castings are acceptable.

Safe access to carry out maintenance

1. The opportunity should be taken to ensure there is adequate safe access for maintenance and repair.
2. Where required, provide attic walkways to allow safe inspection and maintenance of these spaces.
3. Locate access ladders and roof hatches discreetly.

Further information:

A wide range of information is available to help you plan your works. HES's guidance publications are available on 'The Engine Shed' website <https://www.engineshed.org/publications/>

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