

# 4

## Surveys of Historic Buildings

### 4.1 General considerations

The survey of an historic building is perhaps more specialised, but is full of interest (Dallas, 2003). The problems which have to be dealt with are of a most intricate nature, but they are often a challenge and a puzzle to be solved. During the examination the surveyor will meet with many forms of construction that are now considered obsolete, but are often the result of native ingenuity and sound practice. It is, therefore, necessary that a surveyor engaged in the examination of an historic building has some knowledge of the traditional methods of construction. From this knowledge the surveyor will be able to make reasonable assumptions as to the condition of the structure behind plaster and rendering and decide whether it is necessary to expose certain areas for examination. The surveyor should always bear in mind, that if restoration work is to be sympathetically carried out it, can only be achieved by a proper understanding of the original construction and finishings. Many of the most common defects found in an ancient building are described in Chapters 5 to 16 (see also Powys, 1995).

Measured surveys of historic buildings are often required to assist the historian or owner of the property who may wish to record the building before it is altered or demolished (Dallas, 2003). It is also useful when an application is necessary under the Town and Country Planning Acts, and planning restraints have to be considered or 'listed' building consent obtained. Measured drawings may also be required to identify a particular architectural style prevalent in a given area and would thus make a useful contribution when matters of conservation have to be considered. The type of measured drawings required to deal with these various issues could perhaps be described as 'superficial surveys' and would normally consist of plans and elevations with sufficient notes describing the internal and external treatment, and any special features.

Generally, the site work will follow the methods described earlier in Chapter 3 'Measurement of Existing Buildings'.

In dealing with 'superficial surveys' the following points should be carefully noted:

- Sufficient sketches to enable all elevations and floor plans to be plotted.
- All walling materials – stone, timber framing, brick or rendering; include colour of materials if considered necessary.
- Type and colour of roofing material, including details of chimney stacks.
- Type of doors and windows, i.e. leaded lights etc.
- Details of any outbuildings connected with the property.
- Any signs of past alterations and extensions, i.e. changes in sizes of door or window openings, roof slopes, eaves, parapet walls, string courses and cornices.
- Check for wall plaques or inscriptions (if any). These often state the date of erection.
- Roof spaces should be examined for any alterations that may have been carried out.

A surveyor is often called upon to advise on the structural condition of a 'listed building' which is considered to be of special architectural or historic interest. A copy of the listings may be inspected at the offices of the local authority or the Department for Communities & Local Government (DCLG). The Town and Country Planning Act 1990, augmented by the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990, contains legislation regarding listed buildings and conservation areas which the surveyor should be aware of. The latter Act describes how buildings of special architectural or historic interest are selected for inclusion in the list. Reference should also be made to circulars 14/97 Planning and the Historic Environment and 01/01 Heritage Applications which amend the guidance given in PPG15 Planning and the Historic Environment. If it is proposed that alterations or extensions be carried out, the surveyor should find out exactly what the client intends to do. It is an offence to demolish a listed building or carry out alterations or extensions without first obtaining listed building consent. This consent is necessary even in the case of minor alterations.

The preparation of a satisfactory report cannot be undertaken without considerable experience in dealing with historic buildings. If a surveyor decides to report that repair work is necessary and considers that they have not the appropriate knowledge, they should advise that a person with specialist knowledge of historic buildings be asked to give a report on the works required.

Figures 4.1, 4.2 and 4.3 show the elevations, plans and notes of an eighteenth century listed country farmhouse and cottage in Kent. This information is sufficient for a superficial layout as described above. Surveys of historic buildings for repair or restoration purposes will require more detailed information (Dallas, 2003). The primary object of this type of survey is to assist accurate diagnosis as a basis for a specification. All available evidence must be collected together and critically examined before conclusions are reached. Measured plans, elevations and sections will be required including all the items mentioned above.

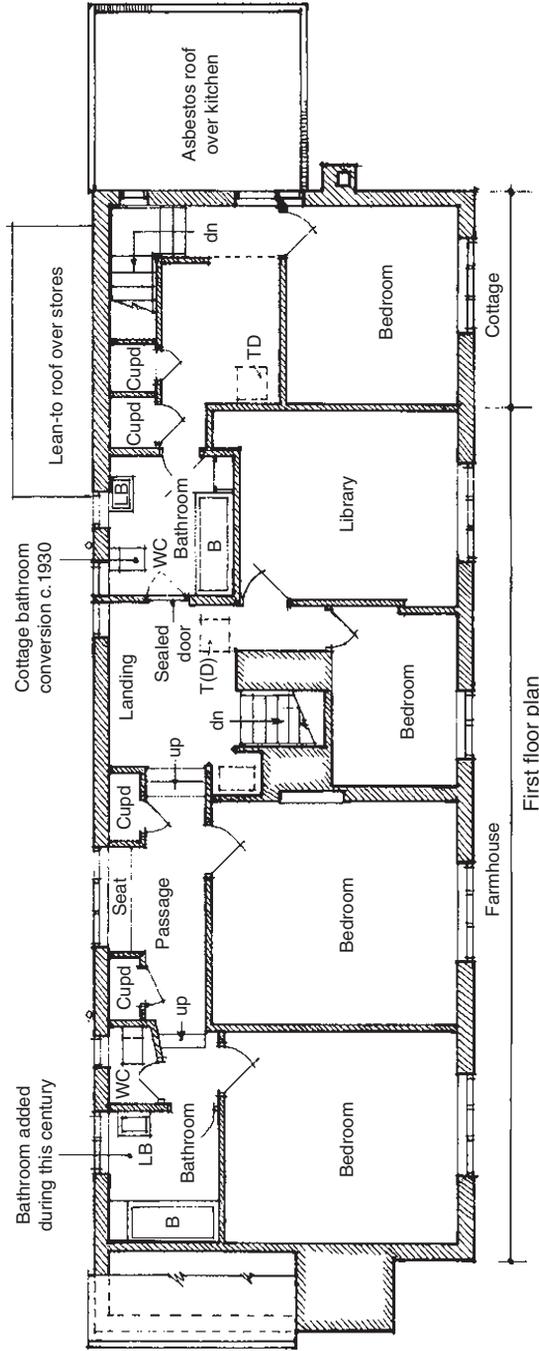


Figure 4.1 Plans

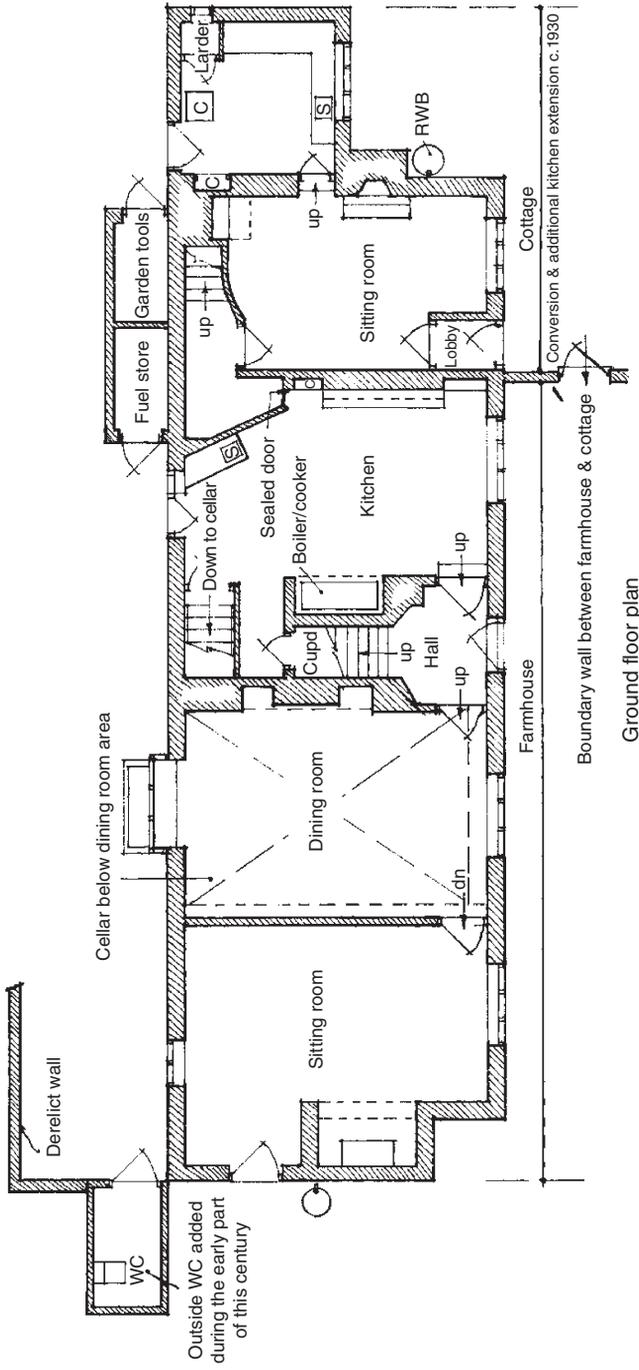
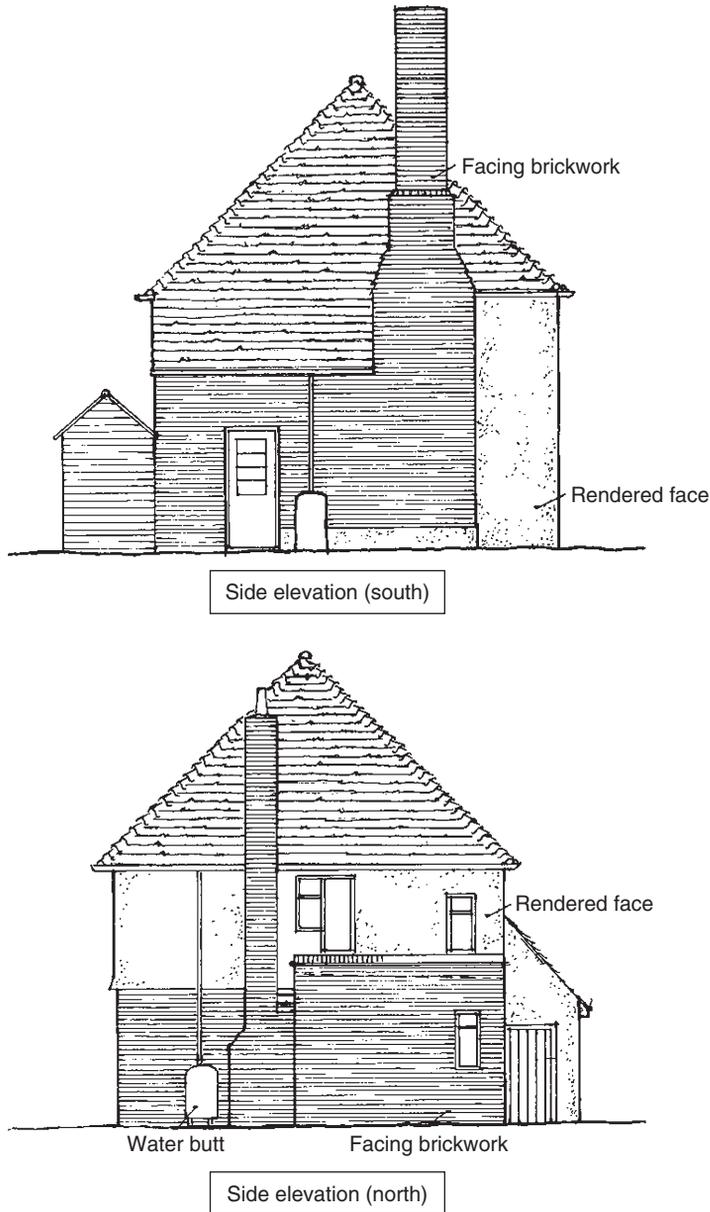


Figure 4.1 (cont'd)



**Figure 4.2** Side elevations

Special attention should also be paid to the following:

- Carefully note the general structural design and condition of the various materials including the position and extent of wall fractures and leaning or bulging walls.
- Prepare detailed sketches to a fairly large scale of all carved and decorative features, i.e. plaster cornices, panelling, timber framing including floor beams and their mouldings.

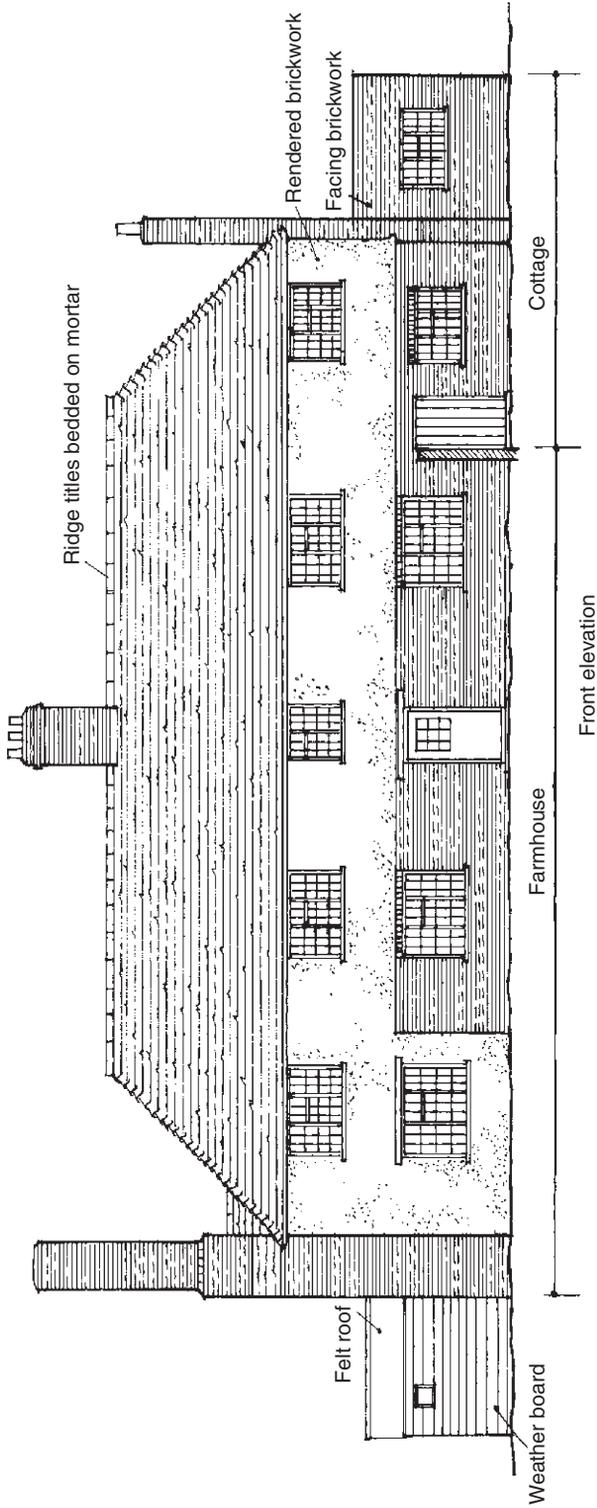


Figure 4.3 Front and back elevations

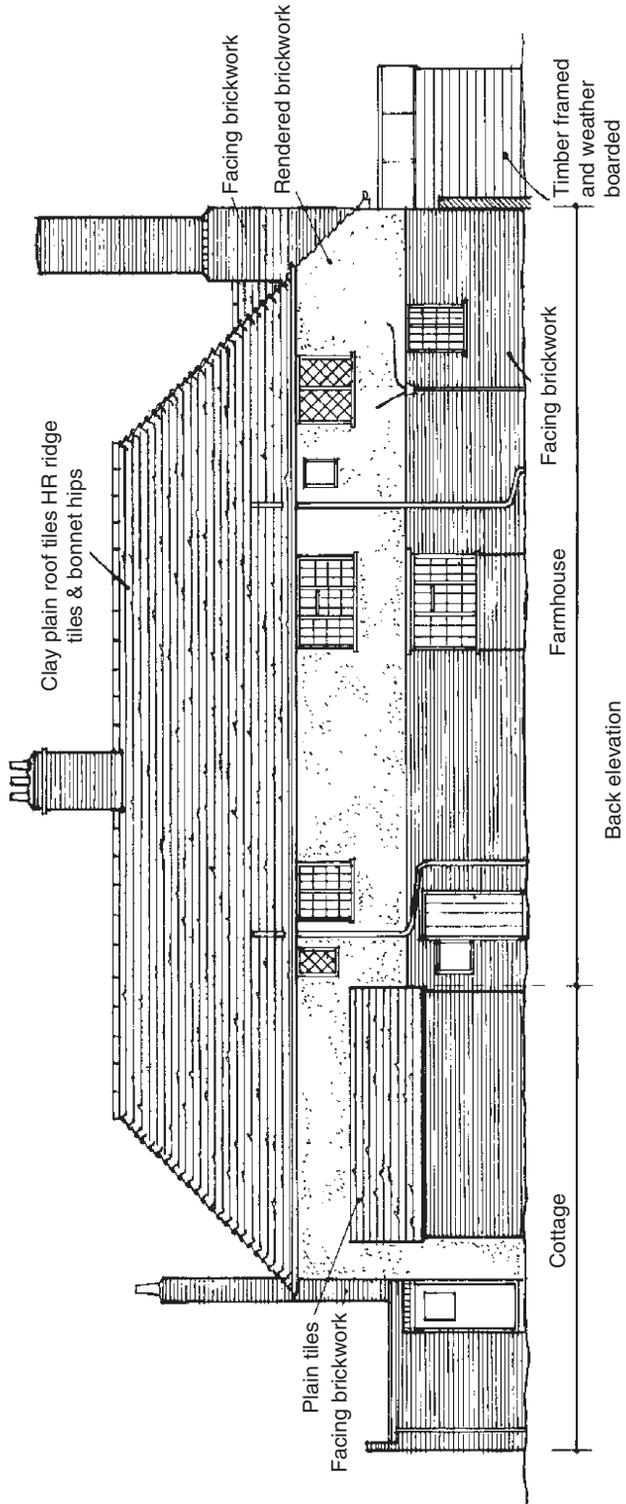


Figure 4.3 (cont'd)

- Variations in the thickness of walls and partitions and changes in floor levels.
- Prepare list of finishings in each room affected by the restoration work.
- Make a note of any straight joints in blocked windows and doors which may indicate a change of use.
- Plot soil and surface water drainage including position of any cesspit or septic tank.
- Finally, the written report should contain a full description of all the defects and causes of failure. (This matter will be dealt with in Chapter 17 'Report Writing'.)

This type of survey is best drawn to a scale of 1:50 and a larger scale, say 1:20 or full size will be required for timber details or decorative plaster. A problem that is often met with during a survey of an historic building is that the walls and the partitions are not always vertical. Measurements can vary according to the height at which they are taken. In such cases it is advisable to work at a uniform height, preferably about 300 mm above the level of the window board. There is also a tendency for plaster to be thicker near the corners of rooms and around door openings. Another problem is trying to obtain information on the construction of external walls which are often concealed by thick plaster or external rendering. The owner's permission is, of course, needed before cutting away plaster or rendering. In the case of unoccupied property, permission is usually given provided it is carried out with the minimum of disturbance. In occupied property difficulties may sometimes arise with the occupier, who would be unwilling to permit an examination which could result in damage to their property.

Many owners of historic buildings often have documents concerning the building's history, together with old photographs which give valuable information to a surveyor. Owners who possess such information are usually willing to cooperate and supply all that is necessary. The direction of floor boards is often misleading, the original worn flooring having been covered over with later boarding in a crosswise direction. In this event it will be wise to lift one or two boards and check the direction of the boards and joists below.

The photographic survey mentioned earlier should include views of all the elevations and close-up photographs of the various points of interest. Where possible the views should be taken obliquely to show two elevations. For interior work a wide angle lens is likely to be needed, complete with flash-gun with adjustable head to match the lens.

## 4.2 Medieval churches

One of the more specialised branches of 'historic building surveys' is the examination of a medieval church. The system of inspection is of great antiquity and there is a considerable amount of legislation on the subject dating from the thirteenth

century. Thus, the church gave a lead in the care and protection of church buildings by pioneering a system of regular inspections by suitably qualified architects and surveyors.

All churches, churchyards and other ecclesiastical buildings are now under the guardianship of the Bishop of the Diocese. Over the past 100 years church law has been regularised by various ecclesiastical measures which have statutory force. The measures are long and complicated, but are worthy of careful study by those interested in the subject. The current measure concerning the fabric of the church is the 'Inspection of churches measure' 1955 which requires that every church must be inspected by a qualified architect (or building surveyor) once every 5 years. The measure states that a copy of the architect's/surveyor's report with recommendations must be sent to the Archdeacon and to the parochial church council (PCC) of the parish in which the church is situated. However, quinquennial inspection does not make examination by the churchwardens any less necessary. Many defects may occur in the 5 years between the architect's/surveyor's visits which can involve the PCC in considerable expenditure if they are not attended to.

The Council for the Care of Churches (1993) recommends that every PCC should appoint a member who will keep the church and its fittings under observation and report to the wardens any defects found.

In order to make sure that nothing is missed, it is advisable to follow a definite system of coverage. The checklist shown in Appendix III could be adjusted and used for this purpose. Although quite a number of typical defects will be described in Chapters 5 to 16, the following points should be given careful attention when carrying out an examination of a medieval church:

- Constant dripping from a defective rainwater head or gutter can damage or discolour stone and brickwork and wash out the mortar joints. Damp seeping through the wall will cause internal plaster to deteriorate.
- Many churches have square down pipes which are particularly difficult to maintain as they are normally fixed close to the wall and are therefore difficult to paint behind. The surveyor should bear in mind that lead pipework is usually of historic value.
- Rainwater pipes should discharge into a drain and not into the foundation of the building. Check that pipes and drains are clear of debris.
- Nature of the subsoil and the disposal of ground water especially if the floor is below ground level, and there is no evidence of a damp-proof course.
- Many medieval roofs were designed without tie beams. With no adequate means to resist the outward thrust it is advisable to make sure that the roofs are strengthened so that only a vertical load is carried on the outer walls.
- The various forms of decay that attack old timber. For example, it is important to notice whether the defects are due to dry or wet rot, woodworm or 'shakes'. Examine carefully the bearing ends of beams and roof trusses.

- Whether the disintegration of stone is due to frost, damp penetration or to a chemically charged atmosphere. It may be advisable to obtain a report from an analytical chemist on this matter. Church buildings often took several centuries to complete and the various movements in the structure were spread over a considerable time. Extensions and alterations were carried out over the years and with the contrasting weights of materials and the many forms of construction the pattern of loading becomes very complex.

During the nineteenth and the first half of the twentieth centuries measured elevations including complicated gothic details were measured and drawn by hand. Clients and contractors today can rarely be provided with elevation details drawn by hand. This is partly because of time delays and also because of the expense involved. As mentioned in Section 2.4 photographs are now increasingly used. In this connection the best results are obtained when specification notes are added on the site by hand. This method is superior to hand measured drawings provided care is taken to identify the photograph accurately and that the notes clearly describe the work to be done. With this method quite small defects can be detected which may go unnoticed if reliance was placed solely on measurements and sketches.

It is not within the scope of this book to make available practical information on remedial works. There are several excellent publications on this subject, and these are described in the Bibliography at the end of the book.

## 4.3 Church towers

One of the problems in the examination of churches is the repair of damage caused by the ringing of bells. Church towers together with bells, cages and beams often require frequent inspections. The surveyor will often find that access is difficult and the belfry very dirty!

If a thorough inspection of the timber is required it is advisable to make arrangements with the PCC to have the belfry thoroughly cleaned in order that special attention can be given to the beams. In fact, the surveyor could suggest to the PCC that they arrange for an annual cleaning contract which could include the bell frame (Council for the Care of Churches, 1993).

The following points should be noted when carrying out an inspection of the tower:

### 4.3.1 Internally

- Inspect all parts for rubbish and birds' nests etc.
- Window openings in bell towers are usually unglazed. Recommend plastic-covered wire netting secured to battens to keep out birds.

- The maintenance of church turret clocks is usually carried out professionally by contract, but it is advisable to check this matter with the PCC.
- Examine all floor boarding and beams including steps and ladders for defects.

### 4.3.2 Externally

- A careful examination should be carried out to the tower roof coverings, gutters, flashings, trap doors and their fastenings. Leaks can cause all sorts of problems in the timbers and if not repaired the damage can be costly.
- Ensure that rainwater outlets and heads are free of debris and sludge etc.
- Check that the lightning conductors are properly fixed and earthed. If suspect, a test should be recommended and carried out by a qualified engineer.
- The exterior of the tower can be examined with the aid of binoculars during the general examination of the walls and roofs. The most common defects are poor pointing, fractured stonework and loose copings.

## 4.4 Church bells and fittings

The repair of church bells and the effect of vibrations on the tower masonry caused by the swinging bell is complicated and full of technical problems (Council for the Care of Churches, 1993). A set of bells can be extremely heavy, often weighing several hundredweight, and when swung in complete circles can cause considerable strain on the tower walls. If in doubt, it is always advisable to consult a firm of bell-hangers. As in most parts of an ancient building, the aim should be to preserve the fine craftsmanship of the bells and bell frames provided all the parts are in sound working order. Some bells are often found to be slightly cracked due to the expansion of the crown staple or corrosion. It is possible to weld a cracked bell, but it is often unsuccessful. Another common defect in an old bell is that the spot where the clapper strikes becomes worn. This problem is easily rectified by giving the bell a 'quarter turn'.

The bell cages or frames are usually frames of heavy oak timbers, braced and cross-braced. These cages usually last for centuries if they receive proper care and attention. The cage should be carried by supporting beams, the ends of which should bear on all four walls of the tower. Thus the forces from the swinging bells may be accommodated in all parts of the tower masonry simultaneously. Usually, if a bell cage is well designed it is unlikely to damage the tower masonry. Problems of vibration and masonry movement arise when the supporting beams are fixed to two walls only. All metal and timber joints should be carefully examined in order to ascertain that all joints are tight. During the examination the surveyor may find it necessary to expose the bearing ends of the timber beams by removing the masonry at one side of each beam end. This

operation will no doubt require the services of a local builder who must be carefully instructed as to what is required.

## 4.5 Measured drawings

Surveyors who care for an ancient church and carry out annual inspections should possess a measured drawing to assist them in their task. The drawings should be to scale say 1:100 and generally follow the details described under 'superficial surveys' at the beginning of this chapter. It is quite remarkable how few surveys exist of church buildings. They are, in fact, of great importance, for example to assist the historian or the PCC who may wish to record the building before restoration or alterations are carried out.