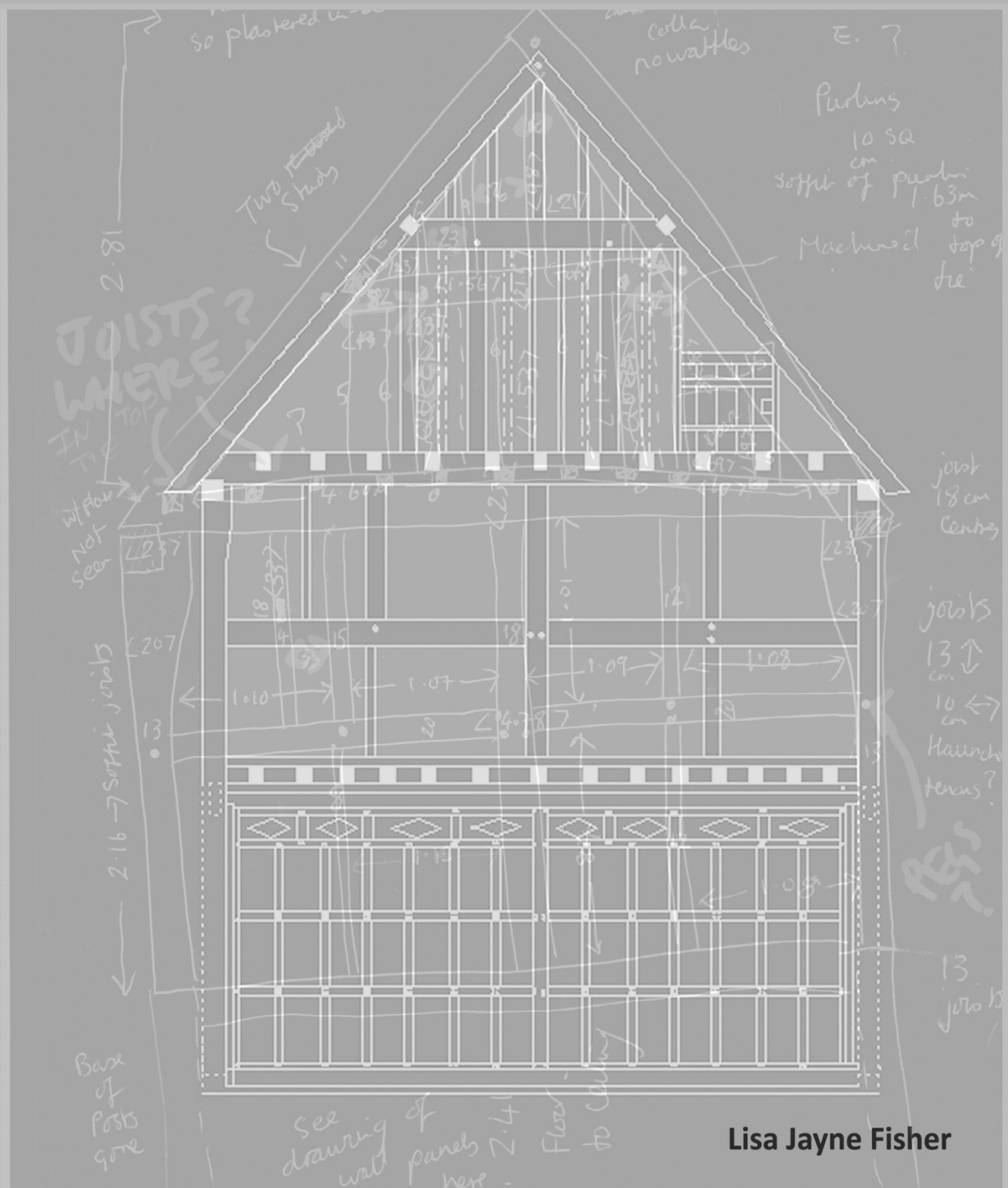


# Guidance for Historic Buildings

## No.1. Measuring and Drawing tips



Lisa Jayne Fisher

# Guide No. 1: Measuring and drawing tips

Making precise, detailed drawings of historic buildings is generally considered to be something normally undertaken by professionals. However, this can be approached by amateurs with some guidance and background research. First of all, reasons for making precise measurements will need to be ascertained and may include the following:

- Measurement of timbers to ensure they are suitable for a program of Dendrochronology.
- To ensure the building is fully understood and recorded
- Comparison of frame timbers to ascertain if they match or may have been re-used from elsewhere.
- As an aid to assigning dates for different building phases; often different sized timbers (also known as scantlings) can indicate separate phases and feeds into other commissioned reports.

Once a scheme has been decided, some basic equipment needs to be gathered:

- A drawing board
- A pencil; soft is best such as 2B so mistakes can be easily erased
- Eraser
- Pencil sharpener
- Highlighter pens
- 5m tape measure
- Laser measure
- A digital inclinometer or a pitch gauge for measuring pitches (Fig. 1)
- A powerful torch



**Fig.1. Manual inclinometer**

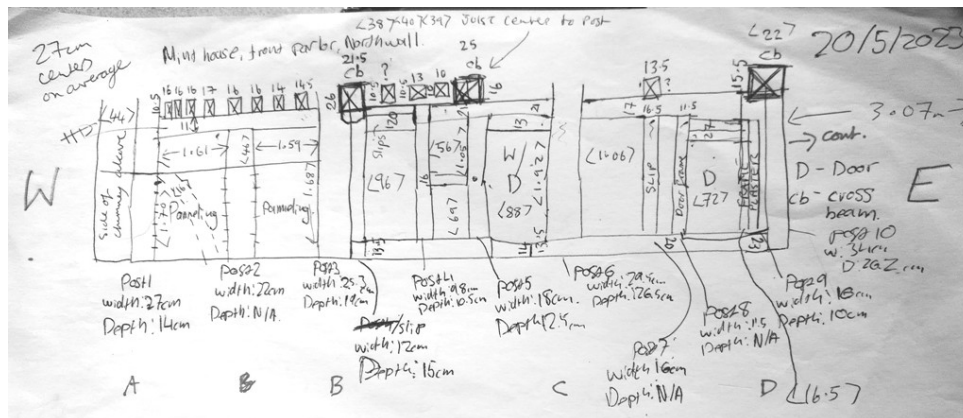
Understanding the different phases of evolution of a building goes hand in hand with measuring and drawing and the results, whether sketched or precisely drawn on CAD, will help aid interpretation. It is essential that the building is inspected and discussed in detail first (Fig. 2), in order to decide which elevations or cross sections need further investigation before picking up a drawing board. Think about the reasons why you will be drawing it and what you are trying to show.



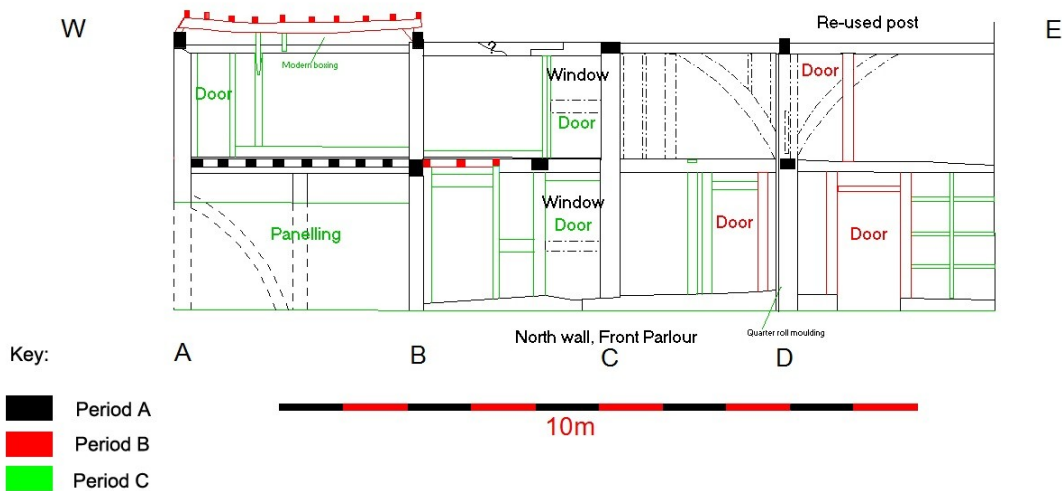
**Fig.2. The author and Linda Hall discussing frame details of an aisle at the Mint House in Pevensey (reproduced courtesy of Harriet Tait).**

Start by deciding what type of sketch to produce; a floor plan, a cross section or an elevation? Sketch all the construction elements and differentiate building materials by use of hatching, dots or coloured pencils, which won't need to be drawn with a ruler or even in the right proportions. The drawing can either be tidied up later or can be drawn up by those experienced in Computer Aided Design (CAD) on a computer. However, for general purposes, a sketch may suffice. Fig.3 is a sketch produced by a 16 year old volunteer at the Mint House, which encouraged a detailed study and aided further understanding. All timbers were drawn and measured in two planes and then inspected in detail to identify which timbers were later replacements. Some guidance is needed in such situations but

community volunteers can certainly make careful sketch drawings such as this, which can then be worked up in Computer Aided Drawing (CAD) programs by professionals (Fig.4). The sketch is simple and was produced by a series of measurements with horizontal widths measured first and vertical ones turned sideways to differentiate the different planes. Measuring is generally done in mm for smaller elements until you get to over 1m when you can switch to cm. Mark details such as doorways, windows and chimneys/stairs, and timbers which run through a building longitudinally can be marked by a cross or filled in black.



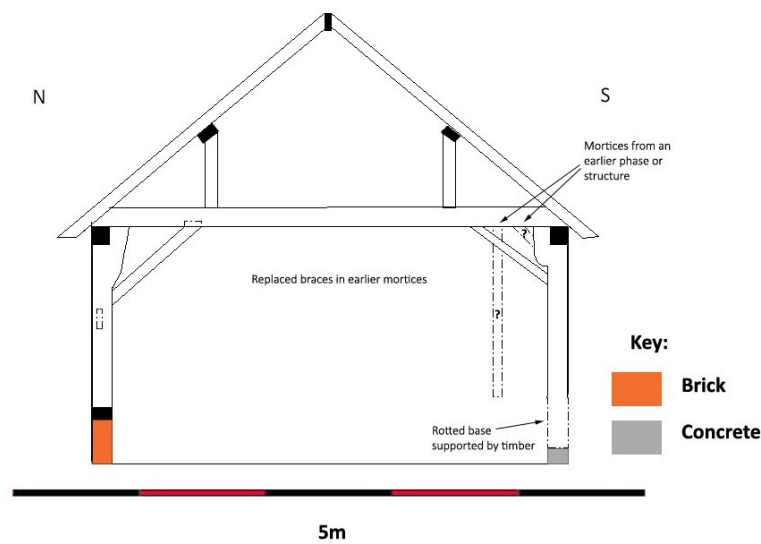
**Fig.3. Sketch of the ground floor north elevation of the Mint House.**



**Fig.4. The sketch was worked up into a CAD drawing and colour coded.**

The use of colour for the different phasing makes for an instant and effective way of communicating the complexity of the building. The resulting drawing is useful in determining which are the most significant and earliest timbers and can also be useful if a Dendrochronologist is being employed to date the different phases. Other ways of producing similar data in CAD programmes includes 3-D modelling, which SPAB use as a tool to understand the evolution of a building prior to establishing a Conservation Management Plan.

It should also be noted that these drawings are not the same as architect's drawings; archaeological drawings look at a building in its present incarnation, then highlight the different phases and precisely measure in the 'ghost' elements that have been removed but leave identifiable traces. For example, a thorough study of the empty mortices in a timber frame can reveal the presence of former walls or removed timber beams, with missing elements defined by a dot and dash line to denote its former presence (Fig.5). Such drawings though will need to be produced by a professional buildings archaeologist. Further guidance can be found in *'Measurement and Recording of Historic Buildings'* by Peter Swallow, David Watt and Robert Ashton (1993). London; Donhead Publishing. Also see free downloads: <https://historicengland.org.uk/images-books/publications/drawing-for-understanding/> as well as <https://historicengland.org.uk/images-books/publications/understanding-historic-buildings/> and <https://www.buildingconservation.com/articles/records/records.htm>.



**Fig.5. Cross section drawing showing missing timbers as dot-dash lines.**

Laser scanning, by contrast, can pick up extremely detailed information (Fig.6) which can be interrogated to produce varying sets of drawings such as cross sections at different axial points. However, the ‘human’ element is missing and so interpretation, such as the identification of mortices for missing timbers, will not always be understood which is why drawing by hand will always be important.



**Fig.6. 3-D laser visuals to aid understanding of phases and building details ©Terra Measurements reproduced courtesy of SPAB.**

The flip side of this process is that the least significant elements are also identified, which will help inform the repair schedule by highlighting intrusive, modern elements with no special character which can be altered or removed. Detailed interpretation aided by the production of carefully measured drawings will then feed into a Condition Survey and Heritage Statement with regards to identifying the most significant parts of the building and what needs to be fully conserved where possible. For community groups, the value is in stopping to look carefully at a building which can only inform and educate.