



Documenting maintenance and repair works

It should be noted that buildings move, sink, bend and weather with age and may not need to be straightened or kept in “as new” condition.

Introduction

The aim of documentation is to give those carrying out the works the information they need. Documents are also used to prepare cost estimates and to obtain tenders from potential contractors.

Documentation should be prepared by qualified specialists. The key to good documentation is to correctly identify the problem to be solved, and hence to specify an appropriate solution. The nature and extent of the work must then be clearly conveyed to those who will do it. This information sheet discusses firstly **what** to document and secondly **how**.

Understand the building

It is a principle of conservation that work on a significant building should be based on a proper understanding of the building and its problems.

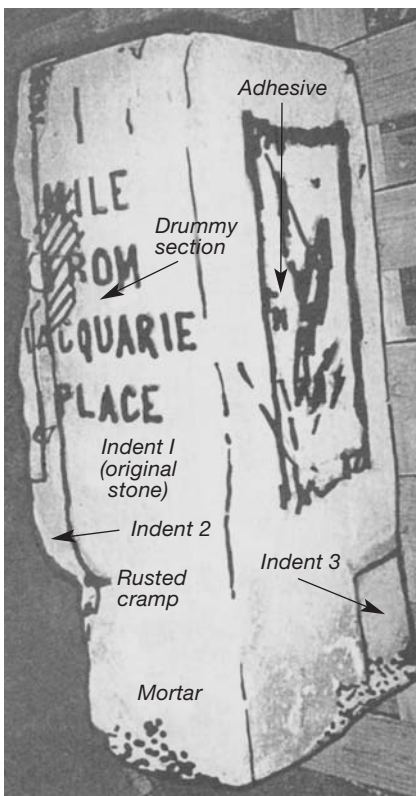
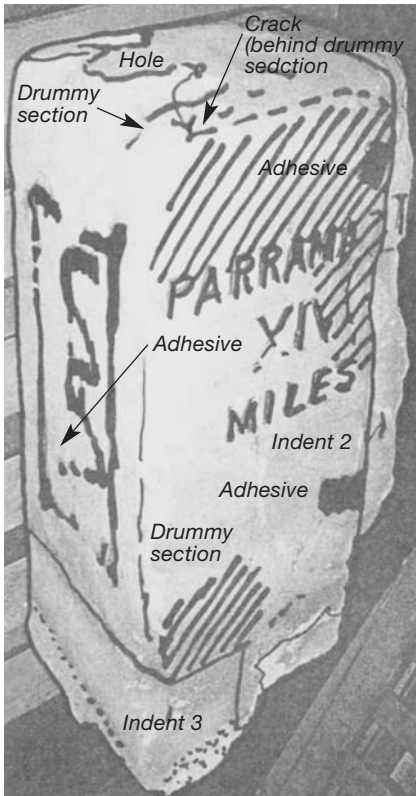
It should be noted that buildings move, sink, bend and weather with age and may not need to be straightened or kept in “as new” condition.

History and cultural significance

The history of the place with all its alterations and additions and repairs needs to be known. The significant elements of a building must be identified so that informed decisions can be made on whether an element would be preserved rather than replaced. For example, every effort should be made to preserve original stone carvings. A conservation management plan for the building, which includes a survey of the building fabric and a condition report, will answer most of these questions. Further information on this subject can be found on the Heritage Office website at www.heritage.nsw.gov.au

Information about the history of the building should be available to those tendering to do the work, possibly as an appendix to the specification.

Drawings prepared by marking up a copy of a photograph for stone repairs.



If the history indicates that the site is likely to contain archaeological relics, the documents will need to provide for an archaeological watching brief. This requires the contractor to notify an archaeologist when excavation works are to begin, or if items of potential archaeological significance have been uncovered.

Construction methods

The performance of a building depends on the materials from which it is made, and the way they are put together. If a building has held together for a hundred years or more, it may be unwise to instigate a whole new repair regime, such as installing a dampproof course, which can result in new problems such as excessive drying out. It is better to work *with* the building, doing *as much as needed and as little as possible*.

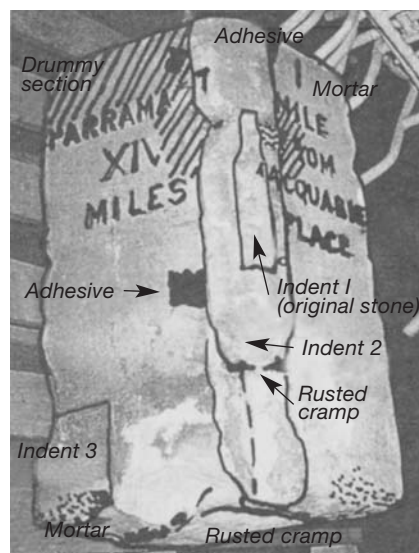
Often a full understanding of the building construction and condition will only become apparent after detailed inspection from a scaffold.

Understand the problem

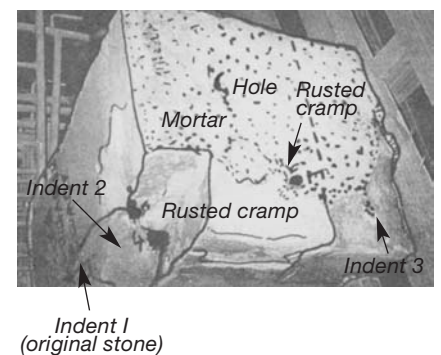
Old buildings can have all sorts of problems, such as:

- damp and drainage
- lead paint
- asbestos
- fire and safety.

Having identified a problem, don't analyse it in isolation. Consider the problem in the context (and significance) of the building as a whole. Most symptoms of building problems arise from more than one cause. If a building shows signs of damp, for example, look carefully to see that all the likely reasons for the damp have been identified. The **cause** of the problem should be treated, as well as repairing the damage that has resulted.



Underside of Milestone



Photographic overlays courtesy of Heritage Group, Department of Public Works and Services.

Types of documentation

Contract conditions

If the works are being carried out by a contractor, some kind of contract will be necessary. There are several standard forms of contract available. Make sure that the contract gives you and the building adequate protection if something goes wrong.

Even if a building has been closely inspected from a scaffold, additional problems can be revealed during the project. There will always be unforeseen problems and extra works in repairs to a building. The contract should thus allow for further inspections to confirm the extent of work.

Allowances

Lump-sum contracts may be inappropriate unless a large contingency sum is included. A more flexible form of contract, with a schedule of rates, can be better suited to conservation work.

Drawings

Drawings are usually the most efficient way to convey what something looks like, how big it is and how it fits together. Drawings for stone repairs, for example, could range from a simple sketch or marked-up photograph to a complete set of computer-drafted plans at various scales showing the location, size and shape of every stone in the building.

Specifications

A specification is a written description of the materials and techniques to be used in the work. Most project specifications incorporate references to standard specifications such as those published by Standards Australia.

Extract from a specification for woodwork

6.8 Durability – Woodwork

Natural durability: use timbers having natural durability appropriate to the conditions of use, or preservation-timber of equivalent durability.

Classification: TO AS 1720.2.

Minimum requirements:

- Class 1: Timbers in contact with ground.
- Class 2: Timbers above ground, not in continuous contact with moisture, well ventilated, protected from moisture but exposed to the weather.
- Class 3: Timbers above ground, not in continuous contact with moisture, well ventilated, protected with a finish and well maintained.
- Class 4: Timbers fully protected from moisture, indoors, above ground, and well ventilated.

Traditional specifications are arranged in trade sections. Each section includes a brief scope of works, descriptions of the required materials and techniques to be used, and a detailed description of specific elements. Performance specifications may not be adequate for achieving the desired standard of work on a historic building. Simply specifying functional requirements will not cover the replication of original details such as rainwater heads, or indicate how much existing fabric is to be maintained.

Make sure that the contract gives you and the building adequate protection if something goes wrong.

A basic rule for good documentation is that the specification describes what needs to be done and the drawing shows where.

Schedules

Most documents contain lists (known as schedules) of components such as windows or floor finishes. For conservation work, schedules of repairs are commonly prepared for each room or other element. Schedules are an effective way to summarise the works to be done.

Samples

In many cases, the best way to document conservation work is to require that it match existing work. Samples of workmanship, materials or components can be identified and used as a reference. Make sure that the approved samples are properly marked and retained throughout the job.

Most maintenance and repair jobs will be documented using a combination of methods. For example, plaster repair documents could include a drawing showing repair locations, a specification with standards for plaster mixes and application, and a schedule listing the works required to each wall and ceiling, with a marked area of wall plaster on site used as a sample of the finish to be achieved.

A basic rule for good documentation is that the specification describes what needs to be done and the drawing shows where. There is potential for conflict and discrepancy between the two where a note on a drawing overlaps a specification clause.

The final set of documents to be used should be appropriate for the job. More documentation is not necessarily better. The same rule applies to documentation as to the work: *as much as necessary and as little as possible*.

Extract from a schedule of repairs to windows

General works – repairs and repainting to windows

To remove rust and defective paint, extent shown on drawing 01, and to dispose of toxic waste according to all statutory requirements	\$_____
To remove putty around number of glazing pins as nominated and to re-putty	\$_____
To remove broken glass as nominated and reglazing, including glazing pins and re-puttying	\$_____
To apply initial primer coat as specified to all external faces and reveals	\$_____
To apply two finished coats as specified to all external faces and reveals	\$_____
To clean and lubricate all windows, externally and internally	\$_____

The order of works

A number of interrelated repairs may be necessary to solve a problem and should be carried out in the appropriate order. Don't apply finishes until the repair of underlying problems such as damp is complete. You can nominate a program in the documents, or ask tenderers to submit one showing their proposed order for the works and proposed working hours.

Preparing the documents

Two basic questions need to be answered before documents can be prepared for repair work.

Are tradespeople available to execute the work?

Documents need to be tailored to the known skills of the tradespeople likely to be working on the project. You must find out what trades will be required and whether these skills are currently available in the marketplace. It is no good specifying tuck-pointing if tuck-pointers are not available.

One solution is to ask tenderers to list recent projects, and nominate the staff who will be working on the project. Another is to ask them to do test panels as part of the selection process. If possible, discuss proposed works on site with experienced craftspeople before preparing the documents.

Some types of repair work are relatively new and there are few skilled in doing them. In these cases, your documents should contain background information on the reasons for the repair technique, and detailed instructions on how to do it, and how it should look when finished. For example, desalination of stonework by applying a weak sacrificial plaster mix may need to be explained to tradespeople who otherwise may be reluctant to apply what appears to be a 'poor mix' that 'won't last long'.

There is no substitute for a conservation architect to supervise the work, for an experienced project manager to coordinate the works and for reliable, experienced, specialist sub-contractors.

Are materials available for the repair work?

The materials originally used on the building may no longer be obtainable. You will need to find out about replacement materials and their limitations and methods of application. For example, is matching stone available? If so, the size of quarry blocks and correct methods of bedding, jointing and fixing may need to be discussed with an experienced banker mason. If not, rather than using new stone you may choose to repair with synthetic stone (a mixture of blended sand and epoxy resin). In this case, you need to know the consequences of using non-matching materials so that the new mix does not cause future damage to the surrounding stone.

Document with care

Poorly documented repair works could result in the work making matters worse rather than better.

Documents should include a description of site conditions, such as potential noise problems, access times and work areas for the contractor and special protection of heritage fabric. Generally, the requirements of the occupants and the users of the building should be documented where they conflict with the contractor's work. Note that some work may need to be done "out of work hours".

The materials originally used on the building may no longer be obtainable. You will need to find out about replacement materials and their limitations and methods of application.

Mistakes of the recent past have shown that new materials must be introduced cautiously.

Protecting existing fabric

Make sure the contractor is properly informed about protecting the important parts of the building, and what these are. For example, it may not be acceptable for riggers to break glass panels in order to secure scaffolding ties. The glass may have heritage significance and may be irreplaceable.

The role of new technology

Generally, repairing a building with traditional techniques and materials is consistent with the conservation philosophy of the *Australian ICO MOS Burra Charter*. However, in some cases, new techniques can be appropriate, such as the use of synthetic stone as a means of extending the life of the original stone.

Mistakes of the recent past have shown that new materials must be introduced cautiously. The use of consolidants and waterproofing coatings for Sydney sandstone has not been tested sufficiently to warrant risking heritage fabric with an application of these unproven materials. As a general rule, intervention with new materials should be reversible.

Further information

In addition to the information sheets in this manual, assistance with documentation is available from reference books, industry associations, and heritage organisations. The NSW Heritage Office publishes on their website a list of conservation suppliers and services, and can also provide information on available courses of study for those who wish to learn more about historic buildings and their care and maintenance.

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