CAREFUL CONSERVATION

It is better to preserve than to repair, better to repair than to restore, better to restore than to reconstruct.

A. N. Didron, 1839

Conservation activities

Every definition is dangerous.
Erasmus, "Adagio", 1500

The wide range of conservation

The many types, styles and places of heritage value present many different opportunities and problems — and demand many different solutions, each one tailor-made. Accordingly, conservation has as many dimensions as heritage itself. "Conservation" is used in this book as the most generally accepted and inclusive term to cover the breadth of activities aimed at safeguarding heritage for the future. Conservation means acting to prevent decay. Two characteristics distinguish conservation: wise use and intervention. Wise use means making use of and caring for resources intelligently and conscientiously, recognizing their qualities, vulnerabilities and importance, and protecting them as a matter of course. Intervention means acting deliberately to make changes, or to resist changes, in order to remove or obviate threats to those resources. Successful conservation requires both.

In this book, "conservation" refers generally to many activities at a number of levels. It must be understood in context — if it appears vague in a given context, it should be taken to apply as generally as possible. (American publications may use "preservation" as synonym for this sense of "conservation".)

Because conservation is not an especially strict science or discipline, its terms are used differently by different writers and practitioners. This guide is hardly likely to bring order out of this chaos; critical readers may grind their teeth. As much as possible, the following definitions of activities are based on a consensus from published sources, and they will be followed as faithfully as possible throughout this guide.

Several other old-building activities are not included in this list because they are either subsidiary to these categories or are simply not conservation. Though many "re-" words are used within conservation practice, others may be questionable: redevelopment, retrofit, remodelling, and so on (see "modernization", below). These are not necessarily hostile to heritage conservation, but they are not part of it. Some of the following activities can be considered conservation only under very special circumstances.

Survey

A survey is a reconnaissance, a necessarily superficial overview of possibilities. Whether at the scale of region or single building, it is a cursory examination to determine if there are heritage resources deserving attention and possibly conservation. A survey may be an unguided exploration seeking clues. It may also be a guided, even touristic, activity meant less for initial discovery than for the education of those who follow.

Inventory

Taking inventory of a stock of resources, counting them up, is often the first concerted conservation activity. Conservation requires at some point that specific resources be selected from a larger stock. Thorough inventory will provide vital information on the dimensions and numbers of heritage resources, as well as the scale of problems threatening those resources. Inventory is not a one-time-only activity; since the environment changes constantly, stock must be taken on a regular basis.

Inspection

Careful observation is perhaps the central and most important conservation activity. Every intervention starts with inspection. The full value of any heritage resource cannot be understood without it, and its value depends on the inspector's knowledge and attentiveness. An inspector's ability to see, to understand, and to communicate that understanding is absolutely essential. Inasmuch as conservation may be considered a science, inspection is its scientific foundation. Its importance cannot be overestimated.

Recording

Recording or documenting a heritage resource is integral to conservation's scientific mandate. Some of the information represented by a building or site or artifact can be put on paper and separated from the resource itself, without in any way damaging the resource, and this information may assist a variety of further activities. Much of our understanding of places we have not visited or cannot visit is

based on written or pictorial descriptions, and our ability to compare resources is almost always based on such records.

Research — archaeology, history, architecture

Research is detective work that aims to put together a comprehensive understanding of a heritage resource from its component parts and disciplines. Though it is often a specialized activity, its larger goal must be to establish the whole worth of a resource or collection of resources. Research evidence may be in the form of documents, portable artifacts or the very fabric of a building and its setting. In integrating this evidence, research adds value to the resource, revealing it to be more than the sum of its parts. Publication of research results is an important conservation activity that aids the growth of knowledge and expansion of other conservation activities.

Planning

Planning — making decisions in advance in a rational and strategic fashion — is not exclusive to heritage conservation. Conservation planning consists in marshalling financial and organizational resources to support all the other conserving activities. But in every other aspect of urban, rural, regional or strategic planning there is scope and need to plan for heritage conservation. Indeed, these other more comprehensive vehicles often provide the most effective means of planning for conservation. In Ontario, much of the legal framework that can protect heritage resources is contained not in specific heritage legislation but in environmental and planning laws. Through preparation of municipal plans and environmental assessments a great deal of survey and inventory of heritage resources is carried out.

Financing

Lining up the fiscal resources does not require special conservation knowledge, but it is essential nonetheless. Because heritage conservation has been recognized as having great public benefits, direct and indirect, public funds are available from several sources, even for certain private projects. Some of these programs are earmarked for property conservation; others subsidize the uses for which a property can be conserved. Proving that a conserved heritage resource will be a viable community asset can encourage private and commercial funding, despite the bias of conventional lenders and the tax structure toward new construction.

Acquisition

Since it is the owner's responsibility to maintain and conserve property, it is essential that a heritage resource has a conservation-minded owner. When a property ceases to have a viable use, its ownership and its fate often become vulnerable. Acquiring an endangered building or property may be the first tangible intervention toward long-term protection, but should be undertaken only after careful consideration to maintenance requirements, physical suitability for the intended use, and financial feasibility.

Maintenance

Regular and frequent maintenance of the material and features of a building or site is the most productive and least damaging of all tangible conservation activities. Maintenance *is* wise use. Good property maintenance prevents or obviates the need for more radical intervention, and dramatically extends the useful life of a place. This is demonstrated in reverse, unhappily, by the rapid deterioration of any property not well maintained.

Protection and stabilization

When a heritage resource has already suffered from deterioration, the first priority is to rescue it from further decay and stabilize its condition while longer-term remedies are sought. Sometimes a temporary custodian may take charge of this work while making preparations for more permanent repairs. This aspect of conservation may demand speedy work, with insufficient time to consider alternatives; accordingly, rescue measures must be temporary and reversible without damage.

Cleaning

Removal of dirt and grime is only partly a conservation treatment; its other purpose is

almost emotional, appealing to our desire for newness by "revealing" the "original" look of the building. Unfortunately, aggressive cleaning to serve the latter purpose is not conservation at all, and even may be an agent of erosion and further deterioration. Cleaning, especially removal of dirt or old paint from exterior walls, must be considered very carefully — cleaning for conservation should remove only those pollutants and grime that will attack those surfaces if left unattended and leave in place the protective patina or skin that age has left behind.

Preservation

In its specific rather than general sense, preservation consists of stopping (as permanently as possible) processes contributing to deterioration of a building or site and making essential repairs to keep it in its existing state. Certain types of new work may be considered part of preservation in this restricted sense: structural reinforcement, drainage repairs, and so on. Indeed, preservation is primarily hidden work, to keep a property as it was found, but permanently stabilized.

Rehabilitation

Rehabilitation returns or upgrades a property to a useful state through repair (and in many cases alteration), combining an efficient use for the future while preserving and maintaining its important historical and architectural attributes. Though the preferred use for conservation purposes is normally the original one, rehabilitation often provides for change or adaptation of uses and spaces. In combining intervention and wise use, it often allows conservation of properties whose original uses are no longer viable. Some properties are more adaptable than others, and rehabilitation may require less-than-ideal compromises.

Recycling/conversion

Recycling is a rehabilitative strategy that involves changing the use of a place; indeed, the change in use may motivate a project even where the existing building is in good repair. Particularly in towns and cities, the property market may suggest changing the use and economic base of perfectly sound older buildings, perhaps "threatening" them by virtue of their speculative potential as "empty" space. Recycling is conservation only inasmuch as it preserves and maintains important historical and architectural attributes. Special caution is needed to prevent unacceptable destruction or removal of valuable heritage features. Careful juxtaposition of skilled new work with heritage features may enhance both old and new.

Restoration

Restoration is the recovery of the forms and details of a property as it appeared (or may have appeared) at a particular time by removing work of intervening periods and, where necessary, replacing or reproducing missing elements. Restoration can be especially controversial because it is supposed to respect original materials as well as archaeological and authentic documentary evidence, and these may be incomplete, requiring informed conjecture about the gaps. Though it may be possible to reproduce an original feature exactly, restoration is often (and should be) distinguishable from the original so as not to falsify history, architecture or archaeology.

Modernization

Most of the "re-" words are types of modernization: "retrofit" for energy conservation, "remodelling" for new interior fashions, "redevelopment" for completely new buildings, and so on. Installing modern appliances and utilities, improving the comfort of a building's interior, and making modifications to conform to legal requirements are not conservation treatments as such, but rather treatments requiring conservation responses. Modernization is part and parcel of rehabilitation and enhancement of use — it is essential, but should proceed in a conservation project only under the most careful control and with the greatest respect for the heritage values of the property.

Reconstruction

Reconstruction involves the re-creation of a vanished building or feature on its original

site, based on evidence from historical and literary documents, pictorial records and archaeological evidence. Faithfulness to a vanished original may include even the use of traditional building techniques, but often a reconstruction will be built on a modern framework of structure and utilities. Reconstruction poses the same difficulties as restoration, and though exact replication may be possible, the final result is often (and should be) distinguishable from a genuine work of the period so as not to falsify history, architecture or archaeology.

Interpretation

Interpretation is an educational process intended to reveal to an observer or visitor a heritage resource's information and value, sometimes accessible only to very knowledgeable people who must interpret to a wider audience. The art requires both understanding and the ability to communicate that understanding. Interpretive devices include publications, site markers, commemorative plaques, films and professionally guided tours. Though interpretation may exist apart from the heritage resource it uses, it can spark direct action to safeguard that and similar or nearby resources.

Relocation

Relocation involves moving and re-erecting a building or feature on a new site. Because siting and community context are so vital to a heritage resource's value, moving can be considered conservation only when the alternative is complete destruction. It is difficult and expensive to move a building, and, once moved, an old building may be unstable and subject to even more deterioration. Relocation has been used with some success to re–create the impression of pioneering settlements in artificial parks — a useful interpretive roles — but replicas may be far better suited to such settings than devalued and damaged originals wheeled into place.

Taking notes — a mundane but essential part of just about every activity in every conservation project.

Conservation principles

. . . the architects' moral charter, as it were, includes the duty to work with the real world and its inherited content. It is better to recycle what exists, to avoid mortgaging a workable past to a non-existent future, and to think small. In the life of cities, only conservatism is sanity. It has taken almost a century of modernist claims and counterclaims to arrive at such a point. But perhaps it was worth the trouble.

Robert Hughes, "The Shock of the New" (1980)

Caring for the past using lessons from the past

In the Western world, conservation of architectural remains was a concern as early as Roman times, when imperial regimes sought legitimation by adapting earlier Greek forms and their symbolism. The grandest Greek and Roman monuments were relatively durable works of stone, and we can see how both the forms and their symbolic associations were preserved and used. During the Renaissance, these Classical models inspired renewed appreciation and adaptation of earlier forms, and raised the issue of the conserving old and unstable originals to facilitate this "borrowing". But, until the late 18th century, it proved difficult to repair and restore ancient monuments, even if there was the will to do so. European building technology had barely advanced from Roman times (despite the innovations of the Gothic cathedral construction) and Classical sites had often been pillaged for building stone.

Technical advances in the 19th century, especially the development of structural iron and steel, and the mechanization of the building process pioneered in North America, offered means to rescue and prevent further deterioration of ancient monuments. Widespread popularization of the past followed from the increasing and spreading wealth of the industrial revolution. New popular tastes included growing "romantic" attachments to more recent and modest relics, and many Europeans began to restore or reconstruct churches, castles, and even humble cottages. But romantic and inaccurate restorations and reconstructions defaced genuine (if aged and deteriorated) parts of buildings and entire structures, and replaced them with "better" invented Gothic or Classical features.

Conjectural restoration and its falsification of historical evidence so enraged those concerned with preserving traditions in the face of industrialization that William Morris and others in England formed the Society for the Protection of Ancient Buildings in 1877. SPAB considered erasure of genuine historic material far more sinister than any other threat to historic buildings. But its most enduring legacy, born from its curious combination of romantic attachment to historical artifacts and crafts and its scientific approaches to problem-solving and repair, is the idea that building conservation, preservation and restoration should be *principled*. This stance has developed far beyond SPAB's original mission to prevent "improvers" from despoiling English Gothic cathedrals. The doctrine of "repair rather than replace" that lies at the heart of every national and international charter for conservation comes from SPAB's struggles of more than a century ago.

The first international charter on architectural conservation emerged from the 1931 Athens Conference on the restoration of historic buildings. That document was supplanted in 1964 by the Venice Charter, the basis for every set of statements directing or encouraging conservation and maintenance of historic buildings.

The following conservation principles are founded on these published documents. The principles apply the philosophy embodied in the international charters and in the mandate of the Ontario Heritage Foundation. They reflect ongoing efforts to develop a charter for conserving old buildings and properties to suit the variety of conditions across Canada.

The principles often overlap and refer to each other. They are more comprehensive and more specific than the charters from which they derive, but they remain generally applicable to all heritage properties and their surroundings. They explain and elaborate the "why" of every conservation activity. "Good practice" presents the "what" and "how" of conservation by referring back to these principles as the foundation for its advice.

The principles are presented in a sequence from "beginning" to "end". But conservation is more cyclical than linear, a large loop that circles back on itself, with many smaller loops and connections within the sequence. Some of the more important links are noted on the chart opposite. Those facing especially difficult problems with few reliable precedents should examine these links as they consider potential solutions.

The most comprehensive chronicle of the development of conservation (or preservation) is JOKI99. Architectural conservation in Britain is charted most thoroughly in FAWC76, MADS76 and HUNT96. The American preservation movement may be tracked through MADD85; differing treatments of its history may be found in NATI76a or KEUN84, LEEA92, LIND95, MURT97 and TYLE00. Canadian experience is more fragmented; see FALK77, DENH78, and SYMO97.

There is no single published collection of international conservation charters and guides, though see CONV83 for older UNESCO conventions and recommendations. But all of these texts, including basics like the Venice Charter, specialized charters on historic towns or wood construction, and national documents like Canada's Appleton Charter, are posted on the Internet, particularly through ICOMOS (see Appendices 1 and 6 for directions).

The Ontario Heritage Foundation's standards for building conservation projects are reproduced as Appendix 3.

The organization of the principles here is based on the "pattern languages" of Christopher Alexander and colleagues (see ALEX77). The content of the principles builds on the efforts of hundreds of professionals over many decades.

TASK		PRINCIPLE	Associated principles
PLANNING	1.1	Planned conservation	*1.2 - 2.1 - 3.2 - 3.3 - 4.5 - 9.6*
	1.2	Comprehensive understanding	*1.1 - 2.1 - 3.2 - 3.3*
	1.3	Balance of use and preservation (cautious conversion)	*1.1 - 1.2 - 4.2 - 4.3 - 4.4 - 4.5 - 5.2 - 8.5*
	1.4	Viable use	*1.1 - 1.2 - 1.3 - 4.5 - 5.2 - 8.6 - 9.2*
ORGANIZING	2.1	Co-ordinated work	*1.1 - 2.2 - 2.3 - 2.4*
	2.2	Co-operation among specialties	*2.1 - 2.3 - 2.4 - 5.5 - 6.4 - 6.5*
	2.3	Work in order	*1.1 - 3.2 - 3.3 - 3.4 - 4.3 - 6.4 - 6.5*
	2.4	Work at right pace	*2.2 - 2.3 - 3.3 - 6.4 - 6.5*
	2.5	Appropriate skills	*2.1 - 4.6 - 6.4 - 6.5*
	2.6	Second opinions when in doubt	*1.2 - 2.5 - 4.6 - 6.2 - 6.4 - 7.4*
ASSESSING	3.1	Record of found state	*2.3 - 2.4 - 4.1 - 4.3 - 4.4 - 6.1 - 9.1*
	3.2	Thorough and documented research	*2.1 - 2.3 - 2.5 - 4.2 - 5.2*
	3.3	Informed reconnaissance/inspection	*2.2 - 2.3 - 3.1 - 3.2 - 4.1 - 4.2 - 4.3 - 4.4*
	3.4	Archaeology (site & structure) for reconnaissance	*1.2 - 2.2 - 2.5 - 5.4 - 5.5*
	3.5	Specifics of uniqueness (pattern, ensemble, detail)	*1.2 - 3.1 - 3.2 - 3.3 - 4.4 - 6.4*
	3.6	Maximum information content/conservation of complexity	*1.2 - 3.1 - 3.2 - 5.6 - 6.2 - 9.6*
	3.7	Benefit of doubt in evaluation	*3.2 - 3.5 - 4.2 - 4.4 - 4.6*
DESIGNING	4.1	Respect for (natural) aging process	*1.3 - 3.2 - 3.3 - 6.3 - 8.1*
	4.2	Respect for period/historic continuity, sequence	*1.2 - 3.2 - 3.3 - 3.5 - 4.3 - 6.4 - 8.1*
	4.3	Respect for accumulations	*3.1 - 3.2 - 3.3 - 5.3 - 5.6*
	4.4	Respect for uniqueness (pattern, ensemble, detail)	*3.3 - 3.5 - 6.3 - 6.4*
	4.5	Respect for setting/context in community	*1.1 - 1.2 - 1.3 - 1.4 - 3.3 - 4.4*
	4.6	Minimal conjecture/informed invention	*3.1 - 3.2 - 3.3 - 3.4 - 5.6 - 6.1 - 6.2 - 7.3 - 9.1*
SPECIFYING	5.1	Priorities of features, priorities of work	*2.3 - 2.4 - 5.5 - 5.6 - 6.4*
	5.2	Fitting use of existing spaces	*1.1 - 1.3 - 1.4 - 3.2 - 3.3 - 8.3 - 8.6 - 9.3*
	5.3	Minimal alteration, minimal intrusiveness	*2.6 - 3.6 - 5.6 - 6.2 - 6.4 - 8.6*
	5.4	Archaeology (site & structure) for rescue of artifacts	*2.2 - 2.5 - 3.2 - 3.4 - 9.4 - 9.6*
	5.5	Minimal emergency action/stabilization to buy time	*1.1 - 2.1 - 2.2 - 2.4 - 2.6 - 5.4 - 5.8 - 5.9 - 6.1 - 7.3*
	5.6	Minimal removals	*4.1 - 4.3 - 6.1 - 7.1*
	5.7	Reconstruction for wholeness	*2.6 - 4.1 - 4.2 - 4.3 - 4.6 - 8.1 - 8.2 - 9.1*
	5.8	Moving as last resort	*2.6 - 4.4 - 4.5 - 6.1 - 9.1*
	5.9	Façadism as last resort	*2.6 - 4.4 - 4.5 - 6.1 - 9.1*
PROTECTING	6.1	Record of changes during project	*3.1 - 3.3 - 4.4 - 9.1 - 9.5*
	6.2	Maximum retention	*3.6 - 5.6 - 7.1 - 8.1 - 8.2*
	6.3	Patina preserved	*3.3 - 4.1 - 7.7 - 9.2*
	6.4	Respect for craft	*1.2 - 3.3 - 4.4 - 7.1 - 7.2 - 9.2*
	6.5	Safe working conditions	*2.1 - 2.2 - 2.3 - 2.4 - 5.1 - 7.7 - 9.2 - 9.3*
REPAIRING	7.1	Traditional repair (proven technology)	*1.2 - 2.5 - 3.2 - 6.4 - 7.6*
	7.2	Replacement in kind/recycled materials	*3.3 - 7.1 - 7.3 - 7.4 - 7.6*
	7.3	Reversible repair	*5.5 - 6.4 - 7.1 - 7.4 - 9.2*
	7.4	Cautious high-tech repair	*2.6 - 6.5 - 7.3 - 7.5 - 7.6 - 9.2*
	7.5	Recipes tested before application	*6.5 - 7.1 - 7.3 - 7.4*
	7.6	Maintainable repairs	*4.1 - 7.1 - 9.2*
	7.7	Gentle cleaning	*2.3 - 6.3 - 7.4 - 7.5*
ENHANCING	8.1	Distinctive new work	*4.1 - 4.2 - 4.3 - 9.4*
	8.2	Added value (high quality) in new work	*1.3 - 3.5 - 4.4 - 6.4*
	8.3	Complementary additions	*1.3 - 1.4 - 4.2 - 4.3 - 4.4*
	8.4	Independent additions	*1.4 - 4.3 - 4.4 - 6.4 - 7.4*
	8.5	Energy conservation	*1.3 - 1.4 - 7.1 - 7.3 - 7.4 - 9.2*
	8.6	Aided access	*1.1 - 1.3 - 1.4 - 4.4 - 5.3 - 5.6 - 8.2 - 8.3 - 9.3 - 9.6*
KEEPING	9.1	Record of altered state	*3.1 - 6.1 - 9.4 - 9.5 - 9.6*
	9.2	Faithful maintenance	*1.1 - 1.3 - 1.4 - 5.1 - 5.3 - 6.3*
	9.3	Emergency plan	*5.2 - 9.2 - 9.5 - 9.6*
	9.4	Conservation commemorated	*9.1 - 9.5 - 9.6*
	9.5	Records maintained and accessible	*1.1 - 1.2 - 3.1 - 5.4 - 6.1 - 9.1 - 9.6*
	9.6	Knowledge shared	*1.1 - 1.2 - 3.2 - 9.4 - 9.5*

Planning

Co-ordinate and integrate conservation work with other developments and activities; keep a solid sense of the longer term and the larger picture.

1.1 Planned conservation

Treatment must be planned in advance, and decisions made as much as possible before any irreversible work (which most capital work is). Conservation and planning are both forward-looking activities and need to be co-ordinated. Planning decisions may be taken many years before deliberate physical changes; conservation decisions can and must be taken well in advance of the necessity to conserve.

1.2 Comprehensive understanding

Many skills, trades, materials and techniques are involved in every building project, old or new, and conservation decisions must acknowledge their interrelations. Though detailed knowledge of components and details of a project is essential, so is an overview of how parts of a building fit together, how the building fits into its surroundings physically and functionally, and how the building is important in its larger community, past, present and future.

1.3 Balance of use and preservation (cautious conversion)

Buildings often outlive the function for which they were created, and subsequent adaptation must be balanced with (not necessarily against) their material and symbolic heritage values. Though aspects of a building may need modification to suit new use, the new program or use should be adjusted as much as possible to suit the existing spaces and details. Building programs can be remarkably flexible in adapting functions to non-standard spaces, just as non-standard (old) buildings can add extraordinary delight to the satisfaction of current and future functional requirements.

1.4 Viable use

Every building, historic or not, must serve a viable social or economic use that will ensure maintenance of its physical fabric into the future. Even the most economically "useless" monument must have a role to play (even symbolic) and requires care to mitigate or prevent deterioration caused by time and human activities. Some person or persons must take personal custody and care of the resource. Complex decisions about such a complex thing as a building must be taken frequently, and custodial responsibility must be clear and inseparable from day-to-day and long-term use of the place.

Organizing

Harness the skills and talents of many people, and make the best use of their time and energy.

2.1 Co-ordinated work

Because buildings are complex, care and conservation can be complex and must be co-ordinated in a skilled, knowledgeable manner. Some person or persons need to take personal responsibility for co-ordinating interdependent work, before and during a project. For historic buildings, project co-ordination must take into account not only work to be done, but also the building itself and its vulnerability to inadvertent damage.

2.2 Co-operation among specialties

Every building and conservation project requires the contributions of several disciplines and trades, specialists able and willing to share their knowledge with people in other specialties. Individual workers must acknowledge colleagues' contributions and aid one another, both in understanding specialized languages and techniques and in assisting each other's work.

2.3 Work in order

For any conservation work, planning must precede assessment, which must precede the design and specification, and so on, acknowledging the peculiarity of a specific situation. In general, research comes before design, and rough work before finishing, but this sequence may repeat itself over and over as work on individual portions proceeds.

2.4 Work at right pace

Conservation work must not be unduly rushed. Outdoor work must not be undertaken during inappropriate seasons or without complete protection during weather that would jeopardize ultimate durability of treatment. Some remedies and repairs require curing time which cannot be accelerated. Though "fast-track" techniques may have their place in new construction, repair work cannot be rushed and must follow thorough understanding of the problem and potential solutions; often the most appropriate treatment is the most traditional — quite possibly the slowest.

2.5 Appropriate skills

The range of conservation problems necessitates a corresponding variety of skills. The right skill must be matched to the job, from research to maintenance. Many skills are not specialties and can be learned by anyone with care and patience. But where special expertise (based on experience and training) is warranted, it must be recruited and given resources to do the work properly.

2.6 Second opinions when in doubt

Since solutions to some types of conservation problems require the diagnosis of a situation from partial or vague information, and each project has its own peculiarities, for which previous experience may or may provide useful precedents, more than one person's opinion or expertise must be sought in doubtful or difficult cases. When there is doubt, having more than one qualified opinion will permit a rational decision, based on broad experience and technique, rather than an expedient one based on authority without understanding.

Assessing

Understand fully the things and places to be conserved; make that knowledge useful for immediate needs and the longer term.

3.1 Record of found state

There must be a complete record collected or created for a property, site and buildings that are to be conserved or modified in any way. It should document the state of the place before work begins and, as much as possible, its history. It can include drawings, notes, photographs and any other appropriate form of documentation, and must be good enough to provide the basis for designs, specifications and repairs. Ideally, such a record should be in at least two places — the original with those responsible for custody and care of the project, and a copy in a public repository or archive.

3.2 Thorough and documented research

Whatever the scope of a conservation project, from repair of damaged woodwork to planning a conservation district, research must be thorough, within the requirements of that specific situation. Enough information must be at hand to facilitate the correct decisions. Though every case is different, research must reveal enough background to enable someone other than the researcher to reach similar conclusions based on the same evidence.

3.3 Informed reconnaissance/inspection

Every building or property must be understood fully as a physical artifact and be properly inspected as such. The most important aspect is accurate knowledge of physical condition — siting, dimensions, arrangements, details, and the often subtle traces of previous uses and modifications. Inspection and recording are specialties that improve with education and experience. The sophistication required for a given reconnaissance must be tied to its purpose — cursory inspection may be suitable for community inventories, while major rehabilitation will require inspections and reports from several professional perspectives.

3.4 Archaeology (site and structure) for reconnaissance

Archaeological exploration (irreversible testing for hidden artifacts or clues), where warranted, aids the understanding of the building as an artifact. Direct and indirect evidence of previous occupancies can corroborate doubtful visible evidence. Hidden spaces that are likely to conceal stuctural or other elements of historical importance (as well as present and future utility) should be opened up only in the most careful and delicate manner possible, so that they can be made good without undue long-term damage or loss of historical evidence.

3.5 Specifics of uniqueness (pattern, ensemble, detail)

The uniqueness of any building or site — characteristics that set it apart from others of similar type and configuration — must be analyzed and made explicit in order to evaluate its importance in its community and beyond and to judge the effect of repairs or modifications. For a tract of land, the topography must be assessed and described, according to conventions of geographical and landscape description. For a building, uniqueness must be considered as its combination of individual details, the assembly of those details into simple or decorated surfaces and spaces, and the pattern or rhythm of all the building's features (the most obvious example being symmetry). Only in such a systematic manner can places be compared and relative merits established.

3.6 Maximum information content/conservation of complexity

A building has many secrets to yield, both in material, architectural terms and in associative, historical terms. Conservation must strive to capture and maintain as much of this information as possible, both for the project at hand and for wider goals and other projects. In archaeological excavations, even the most elementary fragment can tell the expert witness a great deal, by virtue of its material, how it may have been broken off from another piece, where it lies in relation to other pieces and to surrounding layers of soil, and so on. A building can yield just as many clues through careful examination, recording, and expert analysis. The complexity of this architectural and historical information is one of the most important differences between the old and the much simpler new.

3.7 Benefit of doubt in evaluation

Because it is often difficult to guarantee that all relevant historical information will ever be available to back up an estimation of a property's heritage value, it is vital to give the property benefit of doubt in assessing its importance. Seldom is it known just who was responsible for the original construction of most buildings, so that those with any sort of biography attached tend to be valued more highly than others with as much intrinsic merit, if not more. Benefit of doubt should be given to properties with high material and architectural value, even where historical associations are generalized rather than specific.

Designing

Match carefully the qualities of what is to be conserved with the needs of the place and the people who will conserve, maintain and use it.

4.1 Respect for (natural) aging process

Every conservation activity must respect the natural aging and change that affect every building. Weathering and other natural processes and human activities produce tangible evidence of the passage of time which cannot and must not be replaced once effaced. In judging what can be left in its aged appearance, one should give benefit of doubt to leaving signs of age alone, either in whole or in detail.

4.2 Respect for period/historic continuity, sequence

Every building, though built to unique requirements in a specific place, more or less represents the fashion of its day and locale. Conservation and modification must not violate this characteristic by giving the impression of periods earlier than the original construction. Where the building is itself a revival of an earlier fashion (not uncommon), conservation must respect it as characteristic of its own period, rather than that of its inspiration.

4.3 Respect for accumulations

Where additions and modifications have altered original appearance, these should be retained as much as possible, as evidence of the passage of time and the contribution of subsequent users. Re-creating an impression of the period of original construction, where appropriate and feasible, must not destroy evidence of intervening modifications that have acquired their own heritage values.

4.4 Respect for uniqueness (pattern, ensemble, detail)

All conservation and modification activities must follow from a thorough understanding of existing details, ensembles and patterns of a building or site, and that understanding must inform both spirit and substance of the proposed work. No standard design recipes must be applied without being filtered through this understanding of existing unique characteristics.

4.5 Respect for setting/context in community

Since much of the present-day and future heritage value of a building or site consists in its distinctive physical presence in its community, conservation and modification must protect this spatial relationship. This requirement applies both to the building or site and to surrounding properties and public roads and spaces; it includes environmental factors such as building height, bulk (density), traffic, noise and greenery, which should be dealt with so as to that minimize alteration of the "fit" of a property in its setting.

4.6 Minimal conjecture/informed invention

There must be no attempt to falsify the historical evidence of a building by reconstructing features in a manner that pretends that they existed despite lack of evidence. But, given our own eclectic tastes and those of much of our architectural inheritance, one may construct features (clearly evident as revivals and not originals) that may have existed in a conjectured past, so long as they are based on an understanding of the history of that community and its characteristic forms.

Specifying

Make clear instructions for translating design intentions into results and understand the tangible requirements of conservation work.

5.1 Priorities of features, priorities of work

Conservation work should proceed in a logical order that deals with serious deterioration, structural weakness, and other high-priority items before less urgent repairs or finish work. Work should also be ordered according to availability of resources and people and to the relative visibility of features requiring work.

5.2 Fitting use of existing spaces

Existing or new uses for historic buildings or sites should be tailored as far as possible to the existing arrangements and dimensions of spaces. This includes rooms as well as means of access — halls, stairs, entrances — together with exterior spaces and access to the overall site. The historic use of the building's spaces should be maintained as much as possible, even if the function behind that use may have changed.

5.3 Minimal alteration, minimal intrusiveness

Conservation should alter as little as possible the existing look and feel of historic buildings. Materials and finishes should be retained wherever modification is not absolutely required. Addition or replacement of damaged materials and features should be unobtrusive and fit in to the existing character both visually and functionally.

5.4 Archaeology (site and structure) for rescue of artifacts

Archaeological exploration to salvage or rescue artifacts must be undertaken if they may be damaged or destroyed in the course of conservation work. Building and surroundings may yield previously hidden materials of importance to the value of the building or artifacts of importance on their own. Such archaeology must be undertaken before phases of irreversible work begin, and the project's resources and personnel must be correspondingly co-ordinated.

5.5 Minimal emergency action/stabilization to buy time

In emergencies, where there is danger of immediate building damage or collapse, one must stabilize the situation so as to provide time to carry out proper systematic conservation. Stabilization may include structural props, temporary weatherproofing and any other measure necessary to protect both the building and those at work within it; all measures must be essentially reversible and cause no further damage.

5.6 Minimal removals

Only materials of relatively little intrinsic interest that conceal more valuable features should be considered removable, and only where underlying features are in relatively good repair. Any material removed must be thoroughly documented in the project's records, and should be made available for re-use as repair materials elsewhere in the project.

5.7 Reconstruction for wholeness

Where the original ensemble or pattern of a building has been disfigured by previous removal of some details, reconstitution of missing details to re-establish the whole should be acceptable so long as originals and copies are distinguishable and there is corroborating evidence of the earlier undamaged appearance or configuration. Where missing material is lost and cannot be replaced in kind, it should be replicated only by techniques and materials of equivalent durability that will not damage surviving building elements.

5.8 Moving as last resort

Removal of all or part of a building to another location destroys much of a building's uniqueness and all relation to setting; it can be accepted only as an alternative to total destruction. Where a building must be moved, its existing location must be recorded in detail; its new location should as much as possible evoke its historic setting but should clearly indicate its former site. Removal and display of building fragments should be similarly constrained.

5.9 Façadism as last resort

Removal of the structural and interior fabric of a building and retention of all or part of its principal façade as a decorative component in a new development violate much of the material value of a building, reducing it to an artifact without context. Such destruction of a building's uniqueness and setting can be accepted only as an alternative to total destruction. In any conservation project, as much as possible of the three-dimensional depth and mass of a building should be retained. In rare instances, the use of façade fragments as artwork, radically transformed, may offer a small compensation for the loss of the building.

Protecting

Work carefully and respectfully, aware always that historic places and materials are fragile and irreplaceable.

6.1 Record of changes during project

All changes made to a building in the course of conservation or modification must be clearly documented in relation to the record of its previous condition, in drawn, written or photographic form, as appropriate. This record must be maintained and updated regularly as work proceeds and compiled at the end of a project.

6.2 Maximum retention

Repairs ought to retain as much historic material as possible in sound condition, for its symbolic or visual heritage values and for its functional utility. Where diagnosis requires partial removal or damage of historic material, this should be done to the most limited extent possible, unobtrusively, and in a manner amenable to repair in kind without further damage or removal.

6.3 Patina preserved

Signs of wear and age evident on the surfaces of exposed materials and features should be retained wherever they do not cause hazards for contemporary uses, except surfaces whose maintenance in polished or cleaned condition is essential to historic authenticity. Surface patina of many materials indicates their true age, prevents environmental deterioration and should not be removed simply to give a "new" appearance.

6.4 Respect for craft

Elegance of forms, marks of tools, slight irregularities of surface and dimension, variation among ostensibly identical features, and any other signs of craftsmanship must be respected in repair work, and damage avoided at all costs. Repairs must employ skills and techniques of a quality no less than those used on the original work. Handwork must be employed to repair handwork. Where possible, these qualities of craft should be revealed to view where previously obscured.

6.5 Safe working conditions

All safety regulations must be followed in conservation work, and hazardous materials and techniques suitably supervised and controlled. Because much conservation work is not standardized, special care must be taken in advance to ensure safe working environments while protecting the historic fabric. Every project should be assessed for unusual hazards, and every worker made responsible for individual safety precautions.

Repairing

Do what is necessary to prolong the life and quality of a place and regard that work as its own legacy for the future.

7.1 Traditional repair (proven technology)

As far as possible, long-lasting repairs to a building or site should employ materials, techniques and formulations used at construction or during its early life. The primary tests of a repair technique are its efficacy over time and its independence from effects on adjacent features. Experience with similar situations over time should guide the selection of appropriate techniques and skills.

7.2 Replacement in kind/recycled materials

Where materials or features have deteriorated beyond repair, they should be replaced in kind, using similar materials and techniques. Where possible, removed materials in sound condition should be recycled within the project. Replicas must be based on surviving features or on incontrovertible documentary evidence (normally photographic) of their earlier existence, form and colour. Replicas must be visibly distinguishable from originals, even where matching is accurate.

7.3 Reversible repair

Where a repair is to be deliberately temporary, whether part of emergency treatment or a longer-term program of progressive actions, it should be removable or replaceable without damage to surrounding historic material. Such a repair must be reasonably accessible for such subsequent work and must not be concealed by more permanent work.

7.4 Cautious high-tech repair

When considering alternatives to traditional repair techniques, use great caution. Modern formulations must be compatible with the physical and chemical properties of surrounding materials and must not cause or promote further deterioration. They must not be used for permanent repairs unless proven durable and fitting.

7.5 Recipes tested before application

A generic repair technique whose effectiveness depends conditions of use on a project must be tested under those conditions, especially when its effects cannot be easily reversed. Tests should be done in inconspicuous locations that simulate overall conditions, especially visibility. All recipes or techniques must be tested as they are actually mixed or used on site.

7.6 Maintainable repairs

Wherever possible, repair techniques should be easily maintainable or adjustable to accommodate movements in the building or changes in environmental conditions. Repair locations must be accessible for subsequent maintenance or adjustment, because all buildings change subtly after construction or repair. There should be some unobtrusive means of access to hidden or difficult-to-reach spaces. Long-term maintenance must be specified as part of every repair treatment.

7.7 Gentle cleaning

Surfaces should be cleaned just enough to remove agents of deterioration, not eroded to a new-looking appearance. Removal of patina inevitably takes away surface material. This is acceptable only when underlying material is deep, strong and coherent enough to stand in for the removed surface. Where periodic cleaning is required, it should be done relatively frequently and gently rather than at long intervals with more radical treatments.

Enhancing

Make any new contributions in full recognition of the spirit and substance of the old, with full regard for sequence and continuity in time and space.

8.1 Distinctive new work

New work should be clearly distinguishable from old in a manner that gives both dignity while not impairing the building's historic fabric. This distinction may be bold or subtle, even perceptible only by a trained or attentive observer, but it must be there and demonstrable in the long term.

8.2 Added value (high quality) in new work

New work should be of high quality, that is, a positive contribution of its own period that enhances the heritage value of the property. New work must be of a standard at least as high as the historic fabric it adjoins, in terms of quality of materials, craft and visual appeal. Even where they are designed to be unobtrusive settings for the old, insertions must demonstrate the best qualities of their own time, since old and new together will much more obviously comparable than in separate buildings. The combination of old and new should be of more lasting value than either on its own.

8.3 Complementary additions

Whether its relation to the old is deferential or assertive, new work must deliberately and intelligently acknowledge the old. Historic details, ensembles and patterns must be explicitly addressed in the design of new work, and no new elements or configurations should clash with or trivialize the old. No addition should be designed by a recipe approach without deferring to the uniqueness of what is already there.

8.4 Independent additions

Additions should be as much as possible structurally and mechanically independent of the historic fabric, so as to permit removal should circumstances warrant. Even where removal is unlikely, physical independence is vital to protect the environment, structure and durability of the historic fabric from less proven and secure aspects of new construction. Stability and integrity of an existing building must not be compromised by additions.

8.5 Energy conservation

No measure that will cause material damage or deterioration should be undertaken simply to conserve fuel. Measures to insulate thermally or alter humidity must be taken only with extreme care, and the equilibrium of internal environment should not be altered unless it can be shown that there will be no subsequent damage due to trapped moisture or other agents of deterioration. Measures to improve comfort should be flexible and reversible, and wherever possible traditional means of energy conservation should be used. The lifespan of energy conservation techniques must not compromise that of the historic material.

8.6 Aided access

Where conservation includes expansion of public use, measures to enhance access by wheelchair or other ambulatory aids must avoid destruction of historic material and offer access in a manner similar to its traditional pattern. Ramps, elevators and similar aids must be inserted or added with great care and respect for the building, and its users. Aided access must not overwhelm unique features of the building. It must be considered as adding to the building and its overall value, not as taking away from the existing fabric.

Keeping

Take proper care of old and new and use the place and the knowledge it contains fully and wisely.

9.1 Record of altered state

There must be a complete record compiled for a property, site or building conserved or modified in any way, documenting its state at the completion of work in relation to its pre-existing state. Such a record, including drawings, notes, photographs and any other appropriate documentation, will provide the basis for any future designs, specifications or repairs, and its standard of documentation must be good enough for these purposes. Ideally, it should be in at least two places — the original with those responsible for custody and care of the place, and a copy in a public repository or archive.

9.2 Faithful maintenance

There should be explicit maintenance and housekeeping specifications and schedules compiled and resources available to execute them in the long term. They should prescribe periodic treatments and inspections and should be assigned to the responsibility of specific people. Maintenance must provide for monitoring and control of environmental factors (primarily humidity and temperature) on daily, weekly and seasonal bases, in a manner best suited to the continued life of the building's fabric, inside and out.

9.3 Emergency plan

Those charged with custody and care should prepare a plan of response to the threat of fire or natural disaster that will minimize damage, safeguard as much as possible of the fabric, and protect its occupants. Fire warning and suppression techniques should be incorporated unobtrusively into major modifications or additions. Environmental monitoring systems should have devices to warn users of changes that may indicate impending problems.

9.4 Conservation commemorated

The work required to conserve a building or site and extend its useful life should be recognized alongside any commemoration of its origin and early life. Every building should be marked in some manner with the year or years when conservation was undertaken, to indicate the historic importance of that effort and to alert observers that there may be old and new work to be distinguished. The marker itself should not detract from what it marks.

9.5 Records maintained and accessible

Records of a building or site before, during and after conservation work, together with more general documentary records of inventory and research, ought to be maintained in a public repository and made available to anyone engaged in conservation work, and to the wider public as well.

9.6 Knowledge shared

There ought to be no restraints on the sharing and circulation of knowledge about heritage conservation. Information for public education, advancement of technical knowledge, and encouragement of good practice must be circulated as widely as possible and should inform efforts at every level to seek out and conserve buildings and sites of heritage value.