To take up . . . an 18th-century brick floor, once considered a sign of poverty, but whose surface, reinforced by innumerable layers of wax and polished by use, is infinitely more dignified and durable than the glazed tiles which take its place, merely to install wiring and plumbing beneath the floor, is nothing but technical incompetence. It is a sign of the incapacity to grasp and to handle the complexity of a building.

It is necessary to find ways in which the deterioration of individual parts of the construction can be arrested, ways which in any case involve modifying the appearance and composition of materials. It is necessary to replace irreparably damaged components, or those elements that have been lost, where their absence makes preservation or use impossible — from a collapsed roof to a missing window or door. And finally it is necessary to add what was never there but which has become indispensable, like electric lighting or heating. But, like the building trade, architects also seem to have lost the ability to repair. Repairing means adding on without eliminating, increasing the complexity and density of the construction, just as a layer of stucco or plaster finish for frescoes was added to many German or Austrian Gothic churches in the 18th century.

. . . there is a forgotten tradition of additions as minute as they were significant; not many people remember that when Etienne Louis Boullée was working on the boiseries and rocaille of the Hôtel d'Evreux, the modern Elysée, he knew how to limit himself to supplementing the decoration of a mirror, or the trabeation of a transom. All the more reason that today, when existing structures are recognized as resources and testimonies of the past, attention should be turned to the detail, to a section of plaster, a fixture, a floor. . . The building is a stratification and a palimpsest, in which the requirements of use and the effects of deterioration are laid down at differing rates. The project is built up out of distinct parts, those which are new of necessity and those which already exist. It is not a unitary design that brings them together, but the attempt to attain a level of quality in keeping with what is already there.

Alberto Grimoldi, "Architecture as reparation", 1985.

Putting the principles to work

Principles

Here, in the left-hand column of the first page of each topic in "Good practice", look for the listing of the principles underlying the information and advice on that topic, material or component. They provide, individually and as a group, the essential reasoning behind that advice. At first it may prove necessary to flip back to the text for each principle (pages 44 to 55), but each principle's "headline" should serve to help recall its substance.

For some topics there are two sets of principles — the first offering background prior to work in that area, the second listing those depending in turn on that work.

References

Following the principles is a reference list for that topic. The sources themselves are cited fully in the bibliography (pages 220 to 231), and difficult or technical terms can be found in readily available glossaries (see page 218–219).

Examples and cases, including more detailed commentary when appropriate, may be found in boxes that parallel the main text.

Using the good practice guidelines

The guidance on the following pages combines principles of careful conservation with the experience of hundreds of conservation professionals and thousands of conservation projects. It is not, however, an encyclopaedia of conservation practice — merely a digest. Each topic offers a brief outline of do's and don'ts (mostly do's), together with underlying principles and references on which the guidelines are based and which contain much more detailed advice.

These guidelines concentrate on the differences between standardized renovation and the more comprehensive task of conserving fully the heritage values of what is renovated. They offer advice about what to do much more than how to do it. They fit with and offer access to the many readily available sources of technical advice.

Together, the guidelines and the sources offer a kit of tools for conservation, to fine-tune the quality of all forms of "re-" work, from the details of mouldings to the planning of regions.

The guidelines presume a certain amount of background knowledge about buildings and their materials and familiarity with some of the terms used in architecture, planning and construction. The guidelines themselves are very brief. Detailed information that expands on these very brief points will be found in references noted in the margins of each topic.

The guidelines themselves are just that — guidelines. They mean to guide work, not dictate it. Their purpose is to enable co-operation among all the participants in the conservation process and to facilitate the best use of the many skills needed to achieve the best and most durable results — visually, functionally, economically, and truthfully.

Learning from cases: the varieties of successful conservation

If you multiply the number of types of properties that can be thought of as heritage resources by the varieties of chronology, style and region, and then further multiply by the different conservation treatments that any one of them might receive . . . it becomes clear that no two cases will be quite alike. Hundreds of structures have been conserved with respect and care, largely (whether witting or not) according to the philosophy that underlies the conservation principles in this book. Thousands of others have been far less thoughtfully repaired and modernized, their heritage values ignored and often completely destroyed. Further thousands that lie somewhere in between. Every project can teach some useful lessons about conservation work.

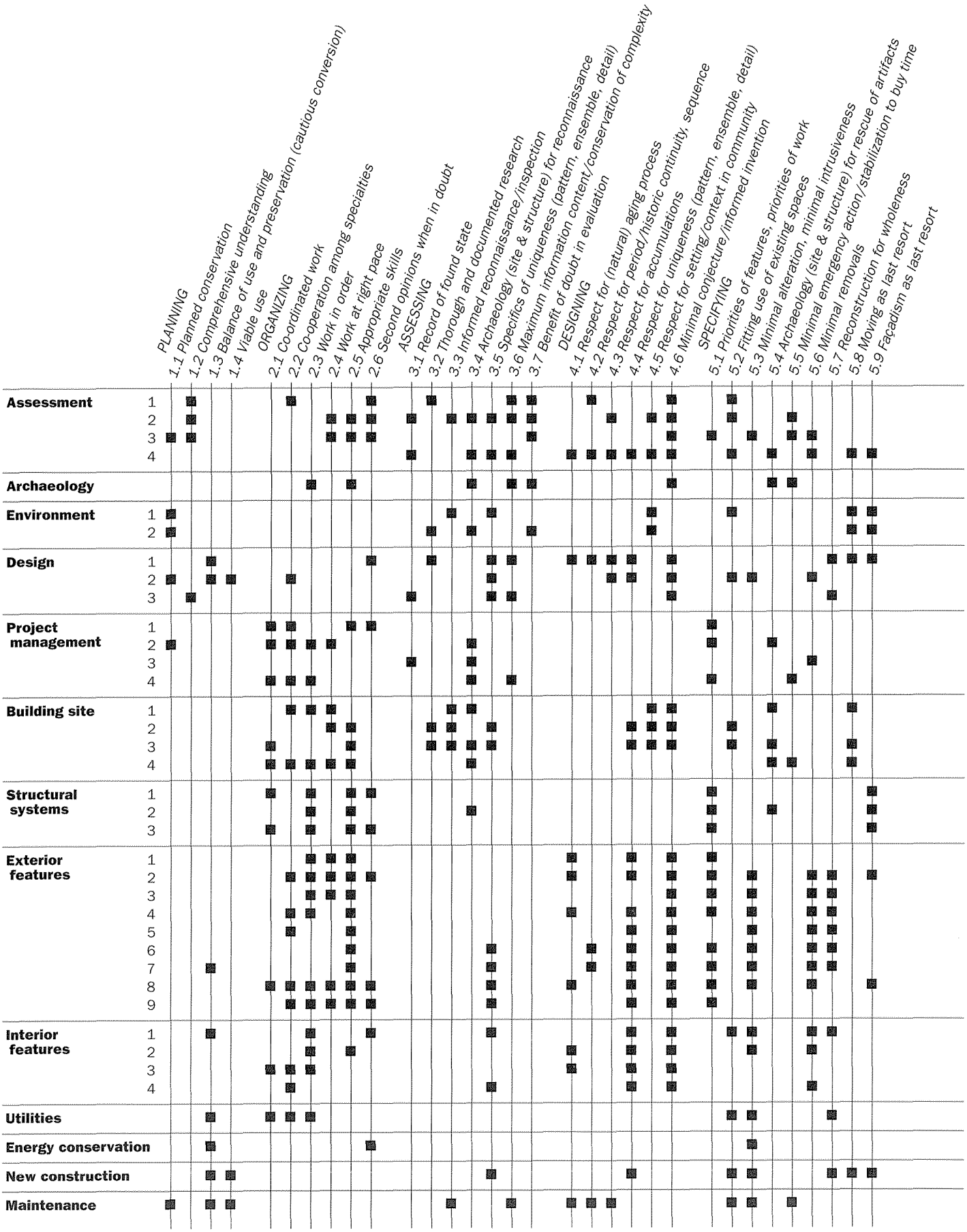
Completed conservation projects, whether good or bad (or both), should be assessed with the principles of careful conservation in mind. It isn't necessary to fill out a checklist of all 56 principles to rate a project. But it *is* necessary to look critically at work done in relation both to surviving historical materials and features and present and future uses of the property.

Looking for good ideas

In looking at any building or site for ideas to use for other places, examine its overall form, profile and silhouette, and then look at it detail by detail. Note what looks like original or historic work and what appears to be recent or new. Assess how old and new join, visually and physically. Ask how things were done and how they might have been done better. And be especially attentive to differences between that case and your own, even where there are apparently similar details or general conditions. Underlying causes of deterioration may differ and may call for quite different repairs, even where the final appearance may be similar. Above all, be sensitive to the craft evident in old work, in subsequent repairs, and even in very modern work that adjoins the old. Sloppiness not only looks bad; it may also betray poor work hidden behind, which will soon cause problems for both old and new elements.

The following pages offer many examples of the various facets of heritage conservation well done. Though even the most exemplary project may have weak points, each guideline offers some demonstrates how principles of careful conservation are useful in practice. The true test for good principles, good practice and good advice is a well-preserved result.

Conservation in progress, detail by detail.


PLANNING
1.1 Planned conservation
1.2 Comprehensive understanding
1.3 Balance of use and preservation (cautious conversion)
1.4 Viable use
ORGANIZING
2.1 Co-ordinated work
2.2 Co-operation among specialties
2.3 Work in order
2.4 Work at right pace
2.5 Appropriate skills
2.6 Second opinions when in doubt
ASSESSING
3.1 Record of found state
3.2 Thorough and documented research
3.3 Informed reconnaissance/inspection
3.4 Archaeology (site & structure) for reconnaissance
3.5 Specifics of uniqueness (pattern, ensemble, detail)
3.6 Maximum information content/conservation of complexity
3.7 Benefit of doubt in evaluation
DESIGNING
4.1 Respect for (natural) aging process
4.2 Respect for period/historic continuity, sequence
4.3 Respect for accumulations
4.4 Respect for uniqueness (pattern, ensemble, detail)
4.5 Respect for setting/context in community
4.6 Minimal conjecture/informed invention
SPECIFYING
5.1 Priorities of features, priorities of work
5.2 Fitting use of existing spaces
5.3 Minimal alteration, minimal intrusiveness
5.4 Archaeology (site & structure) for rescue of artifacts
5.5 Minimal emergency action/stabilization to buy time
5.6 Minimal removals
5.7 Reconstruction for wholeness
5.8 Moving as last resort
5.9 Facadism as last resort
Assessment 1 2 3 4
Archaeology
Environment 1 2
Design 1 2 3
Project management 1 2 3 4
Building site 1 2 3 4
Structural systems 1 2 3
Exterior features 1 2 3 4 5 6 7 8 9
Interior features 1 2 3 4
Utilities
Energy conservation
New construction
Maintenance


PROTECTING
6.1 Record of changes during project
6.2 Maximum retention
6.3 Patina preserved
6.4 Respect for craft
6.5 Safe working conditions
REPAIRING
7.1 Traditional repair (proven technology)
7.2 Replacement in kind/recycled materials
7.3 Reversible repair
7.4 Cautious high-tech repair
7.5 Recipes tested before application
7.6 Maintainable repairs
7.7 Gentle cleaning
ENHANCING
8.1 Distinctive new work
8.2 Added value (high quality) in new work
8.3 Complementary additions
8.4 Independent additions
8.5 Energy conservation
8.6 Aided access
KEEPING
9.1 Record of altered state
9.2 Faithful maintenance
9.3 Emergency plan
9.4 Conservation commemorated
9.5 Records maintained and accessible
9.6 Knowledge shared
1. Historical research
2. Inspection
3. Fault diagnosis
4. Recording
Archaeological investigation and reporting
1. Neighbourhood and district character
2. Heritage and planning policies
1. Visual approaches and results
2. Programming and using space
3. Specifying the work: drawing and specification-writing
1. Contracting and supervision
2. Phasing and scheduling
3. Project records and progress diaries
4. Surprises: on-site reassessments/archaeology
1. Earth, air and water
2. Vegetation
3. Spatial definition and hard landscaping
4. Cemeteries and preserved ruins
1. Stabilization during repairs
2. Foundations
3. Superstructure: frames, walls and floors
1. Roofing
2. Masonry: brick, stone, block, terra cotta
3. Exterior woodwork
4. Metalwork
5. Stucco, concrete and composites
6. Windows
7. Entrances: doors, porches, steps, ramps
8. Storefronts
9. Paint, colour and light
1. Interior spaces and circulation
2. Wood and plaster
3. Interior finishes
4. Fixtures
Building services and equipment
Balancing heritage, comfort, and energy efficiency
Visual harmony and good fit
Taking care: building operation/maintenance

Historical research

Principles *for* research

1.2 Comprehensive understanding

2.2 Co-operation among specialties

2.6 Second opinions when in doubt

3.2 Thorough and documented research

3.6 Maximum information content/conservation of complexity

3.7 Benefit of doubt in evaluation

Principles *based on* research

4.2 Respect for period/historic continuity, sequence

4.6 Minimal conjecture/informed invention

5.2 Fitting use of existing spaces

7.1 Traditional repair (proven technology)

7.2 Replacement in kind/ recycled materials

9.4 Conservation commemorated

9.5 Records maintained and accessible

9.6 Knowledge shared

References

General guides to methods and goals for researching buildings and environments include KING77, KIRK84, KITC83, LYNC72, LYNC76, NATI76a, SEAL79, SYKE84 and TECH86. Items offering directions to research sources in Canada and Ontario include CART83/83a, CUMI84, FRAM84, KALM80 and PARK79.

Good general sources for Ontario architecture and towns are BLAK69, FRAM84a, GREE74 and TAUS86. Some sources that provide useful context for research into Ontario architecture are BLUM77, GEBH77, HUMP80, MCAL84, MUTH79, POPP83, WALK81 and WHIF69. See also the sources for individual building types in "Types and varieties", page 14.

For general reference purposes, see CHAM80, MADD85, RICHnd and WHER82. See also the reference works listed in "Professional advice for free (and almost free)", page 200.

Research to suit the problem

Research is the basis for every conservation activity, from detailed work on an individual property to planning environmental changes affecting entire communities and regions. Research for conservation must usefully answer specific questions (see EVALUATION AND DECISION-MAKING). The search for data to help give those answers must be careful and methodical, no matter how small the resource.

Before anything else, write out the questions to be answered as explicitly as possible; many clues to their answers are contained in the questions themselves. Most often, research is a detective search for documents, whether primary sources directly connected to a place or secondary sources one or more times removed from those primary documents.

Primary sources normally stand on their own as evidence, but they can be inaccurate and should be relied on only very cautiously in the event of any doubt. Such documents may include deeds and other property records, wills, personal accounts, correspondence, diaries, personal interviews, business papers, historical drawings and old photographs.

Secondary sources are based on and abstracted from primary sources and often require corroboration by primary evidence or by a consistent pattern in other secondary sources, such as directories, published histories and guidebooks.

The balance between primary and secondary information depends on the purpose of the investigation. To evaluate an individual property — and decide on the appropriateness of restoring some missing features, for example — documentary evidence of the appearance to be restored is absolutely essential, and secondary information about other buildings is less important. But in planning for a district or studying an environmental project, the need to look at many properties simultaneously will increase reliance on secondary information such as directories, assessment records, and other sources of compiled data that allow broad comparisons.

Research should take advantage of and make links to historical context, beyond the individual project. Much of the original physical context of every heritage property has disappeared. Though it is impossible to recover or restore those missing surroundings, research may establish a good deal about what used to exist and how it related to a place, together with pieces of the story of its original development. Research can and should produce a sense of this context strong enough to guide planning and conservation.

Tracking down sources

- Local libraries have much valuable information (local histories, clipping files, old directories and atlases, etc.), are used as informal archives by many communities, are where other researchers start (giving opportunities to share information), and have lists and indexes of other sources locally and beyond. Librarians can get almost any item through interlibrary loan, and often know who is doing similar research.
- Local museums collect information to explain and interpret collections of artifacts and they often have copies of locally useful sources from larger archives. Curators usually know who may be knowledgeable about a given building or area.
- Local archives are growing in number, often as offshoots of local or county museums. Collections vary, but personal papers and photographs can be helpful, and archivists can direct you to other sources, even private ones. Wills can help one understand the history of a property's residents, but may be of little direct assistance with buildings. Minutes of local council meetings going back to the 19th century can document early development in urban and suburban areas, especially construction of public places, roads and utilities.
- For specific properties, use land title or registry offices to trace deeds to the original grant or patent. These offices also have maps showing original dates of subdivision.
- For one or more properties, use assessment rolls where available. They show successions of owners and tenants, and abrupt changes in building valuation may represent major construction, of new

Knowing when a building was built or modified will locate it in time and permit understanding of its community context. Even if nothing is known about the builders, secondary sources and other indirect information may tell much about what sort of people built a place, their social and economic status, and so on. For instance, knowing if a building was built before or after construction of a railway connection will help set it in its economic context and thus permit its comparison to those in other communities. In studying areas or districts, it is crucial to establish the sequence of buildings as they appeared, in order to determine who may have influenced whom or which buildings influenced which within the district.

buildings or additions. Most are on microfilm at the Archives of Ontario, in Toronto; some copies are on file at local museums or archives.

- For notable buildings in southern Ontario, consult "Archindont" at the Toronto Central Reference Library, which compiles newspaper and journal references to many buildings by address, back to the mid-19th century.
- For larger municipalities, check building department records; some cities have permit information and even drawings on file.
- Picture collections with historic photos are widespread, but few are well indexed and there is no co-ordinated index for collections in the province; check the National Archives of Canada in Ottawa, the Archives of Ontario, and local libraries, museums and archives; the local newspaper office may have a long history and thus (maybe) an extensive photo collection.
- Bird's-eye views, insurance atlases, and old aerial photos have been compiled in major collections at the National Archives, and at some university libraries (especially the University of Western Ontario in London).
- Major collections of architectural drawings at National Archives and the Archives of Ontario have design or working drawings of some historic buildings, but coverage is spotty.
- University libraries and archives often have important holdings useful to their communities; even relatively new universities such as York and Brock have collections of historical documents and images for their regions.

General guidelines

- Keep faithful notes; write as neatly as you can. Others may need to refer to your research, and you might have trouble with your own rough scratching after a while. Everyone has a favourite tool: index cards, notepads, bound books, portable computers.
- Cite sources carefully and accurately; you may have to return them long after initial contact.
- Keep notes about even the most mundane, indirect bits of data: they may well provide a crucial link in a chain of information that offers conclusive evidence of a building's importance.
- Distill explicit answers to specific questions (see EVALUATION AND DECISION-MAKING); where possible, tie these findings to a uniform evaluation scheme or nomination form (some municipalities use standard forms for heritage designation background reports). If you have no standard form, invent one, but base it on an accepted reference (see RECORDING).
- Try to establish the specific year of original construction, and of major changes or additions. While this may be difficult (and different sources may provide different dates), the place of a building in time is vital to understanding historical events and biographies, as well as other buildings of similar period and type.
- File a copy of your research at your local library or archive, or with the LACAC (local architectural conservation advisory committee) or municipal heritage committee; it will help other researchers (you would certainly appreciate having others' work to help your own project).

Relating research to other activities

- Where research is directed toward conservation of a specific property, include summary historical information on the property and its surroundings in the record of the conservation project, together with clear copies of visual documents that may help design, specify and execute the work.
- Do not rely completely on historic architectural drawings as records of what was built; changes during construction were frequent, sometimes radical: extra wings and floors may have been added or taken away, and designs for ornate details not executed fully.

Principles *for* inspection

1.2 Comprehensive understanding
2.4 Work at right pace
2.5 Appropriate skills
2.6 Second opinions when in doubt
3.1 Record of found state
3.3 Informed reconnaissance/ inspection
3.4 Archaeology (site & structure) for reconnaissance
3.5 Specifics of uniqueness (pattern, ensemble, detail)
3.6 Maximum information content/conservation of complexity
3.7 Benefit of doubt in evaluation
4.3 Respect for accumulations
4.5 Respect for setting/context in community
6.5 Safe working conditions

Principles *based on* inspection

4.6 Minimal conjecture/informed invention
5.2 Fitting use of existing spaces
5.5 Minimal emergency action/ stabilization to buy time
6.3 Patina preserved
6.4 Respect for craft
7.1 Traditional repair (proven technology)

References

For some background to the understanding of the character of a place impressionistic approach to assessing the character of a place, see ALEX77, LYNC72 and LYNC76.

Detailed inspection guides and checklists for residential buildings include BOWY79, CARS82, HERI87a/87b, HOW86, KIRK84, MELV74, OXLE83, POOR83 and READ82. For other types, see HOLL86, KEMP81, MEAD86, PICH84/84a, SEEL85 and STAH84.

For heritage districts, see CUMI85, LYNC76 and WRIG76.

Photography is an essential part of inspection; see BORC78, CHAMnd and MCKE70, as well as other sources in "Recording", page 74.

The contexts for inspection

Inspection of a single property, or a larger area with many elements, may have several objectives. The following guidelines provide a common denominator for these several ways of looking.

Two primary forms of investigation are in order for an individual building and site. First, the building's distinctive character must be identified and recorded to permit evaluation of its importance, both overall and in detail. Second, its physical state and need for repairs must be identified and recorded to enable specification of repair or preservation work. These two ways of looking permit judgment of the appropriate form for repairs or new work.

Looking at a wider area, from a potential heritage conservation district to an entire region, clearly requires a planned and selective approach. Such extensive inspection must concentrate on the identifying type of building or feature in a comprehensive or even statistical way but should be based on something of the approach suggested for individual buildings. The broad-brush survey of neighbourhood and community complements understanding of an individual building's character, by giving it context.

Identifying architectural character

Before assigning stylistic labels or other categories to a building, look at it as a piece of architecture with perceptible features of design, setting, materials, workmanship and feeling. Consider how much of what you see appears integral to its history and what seems to have been added or taken away from the original. Note these impressions carefully for comparison with corroborating documentation (especially historic photographs and drawings). Distinctive character may reside in a building's overall form and shape, particular features or apparent "appendages", such as porches or chimneys, details of wooden trim or window-glazing, craftsmanship apparent in the shape and surface of details or overall composition, and arrangement and sequence of interior spaces and their own details.

Look at the building from a distance, at its overall view from the street or from neighbouring properties. Find, and photograph, the most comprehensive view, the one that would be the picture postcard. Consider and note which aspects seem most striking, which aspects define the uniqueness of the building — in other words, the features that would be most missed if removed or changed:

- ❒ Overall shape — is there something distinctive about the size, form, massing, skyline or profile of the building against its background?
- ❒ Openings — is there a special rhythm or pattern to the arrangement of wall and roof to windows and other recesses or voids?
- ❒ Roof — does the roof's slopes and materials contribute positively to the building's character? Or are they simply background to walls and other elements?
- ❒ Projections — are there building parts projecting from the overall mass that are distinctive or special: chimneys, porches, balconies, cupolas, towers, window bays?
- ❒ Trim — are there special or conspicuous secondary features removal of which would devalue the building: bargeboard, shutters, decorative stucco or terra cotta?
- ❒ Materials — is there something distinctive about the brick, timber or other exterior materials, their colour, pattern or texture, the way they appear in different lighting conditions or different seasons?
- ❒ Setting — does the building fit well on its site; are its features and orientation tailored to the surroundings so that building and site are inseparable?

Look at the building much closer, at arm's length. Find, and photograph, several distinctive elements as if they were an artist's still-life compositions of light, form, colour and texture. View these as you would if you were about to pick up tools to do work on them; look for the signs of their making:

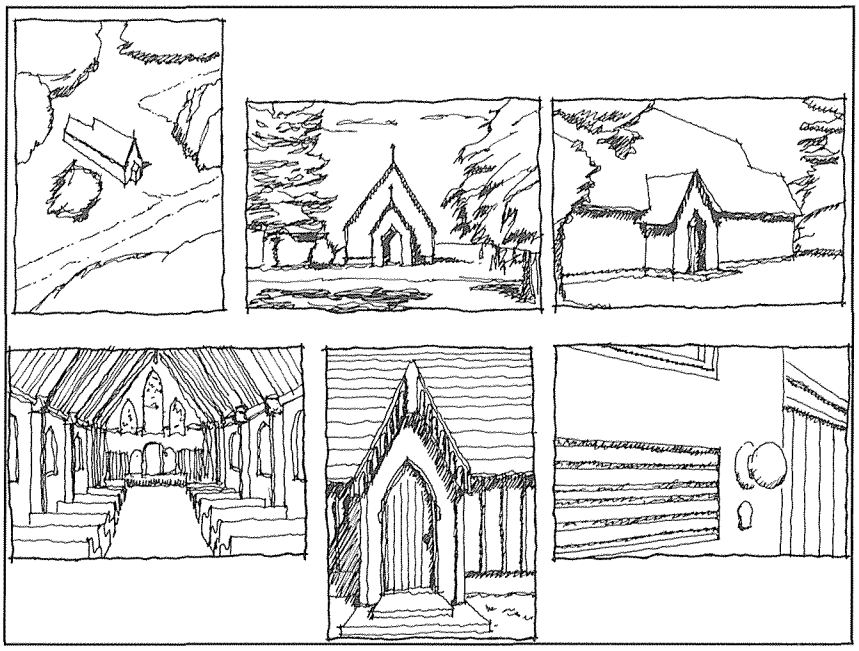
- ❒ Texture — do the materials' surfaces, smooth or rough, contribute to the overall impression of the building; do they show their age by virtue of a patina, and is that patina superficial dirt or intrinsic to the material; or is the texture a combination of underlying material and a different coating, such as paint?

- ❒ Assembly — are the joints between elements of one material or between different materials interesting in themselves; are they of rare or unrepeatable design and execution?
- ❒ Handcraft — are there signs of workshop or on-site hand-tooling that make plain or decorated elements one-of-a-kind; do forms and handwork visibly demonstrate care and skill in their combination?
- ❒ Close-up v. distant — are there important aspects that can be seen only close up?

Look inside the building, where its historic character, often out of public view and more easily modified, may have been most altered. Again, try to appreciate and photograph a "postcard" view of every major space, in a way that emulates your entry into that space. Examine interiors as spaces and details together, because of their more intimate and frequent use.

- ❒ Rooms and spaces — are there spaces of unusual size, height, proportion, or function particular to this building or building type: parlours, church naves, banking halls, proscenium stages, and so on?
- ❒ Sequence of spaces — do entrances, hallways and stairways offer carefully formal or informal access to rooms, in a designed order and with arranged views inside or out?
- ❒ Sound — do sounds carry clearly within a space or are they muffled (taking into account existing furnishings); does the acoustic quality fit the publicness or intimacy of the space; do interior and exterior walls keep sounds out or let them through?
- ❒ Light — does natural window light reach all or any of the space; is there borrowed light from adjacent spaces; do the quality and direction of the light enhance or detract from the proportions and details of the space; if the windows and spaces seem to have been altered, is there still a sense of the original daylighting?
- ❒ Features — are there fixed three-dimensional features that add distinction: balustrades, railings, mantelpieces, interior shutters, built-up cornices, doors and windows, doorframes and windowframes, and so on?
- ❒ Finishes — are there two-dimensional or modestly textured features that give interiors their close-up interest: decorative painting, marbling or stencilling, wallpapers, wood colour and grain, plasterwork, pressed metalwork and trim, and so on?
- ❒ Exposed structure — are there posts, beams, trusses, nogging and other structural elements exposed to view that give a space added visual interest?
- ❒ Fittings and furnishings — are there removable or portable elements that nevertheless survive from any of the building's earlier phases, that give clues to the historic quality and use of its spaces?

In answering these questions, assign priority to vital items, then to those that support these first-ranked items, next to items that are neither assets nor liabilities, and last to those that clash with important aspects. Make no value judgments about oldness or newness but look for intrinsic craft and quality of design and execution. Then compare these assessments with the results of historical research, which should establish associations of these features to past events and people. Together, architectural character and historic association will add up to a comprehensive value for the place as heritage resource and indicate directions for its conservation.



It is absolutely vital to move around, into and through a building and its site — carefully recording impressions and observations — in order to appreciate the character and potential importance of the place.

Assessing a building's condition

The following checklist summarizes aspects that must be examined for purposes of conserving visible architectural features and their supporting structure (there are several excellent guides to old-building inspection that provide more details).

For all but the smallest properties, it may well pay to retain someone experienced in surveying and inspecting old buildings, to ensure that the job is done to the right level of detail and to ascertain hidden or disguised faults (see FAULT DIAGNOSIS). It makes good sense to inspect a building in wet weather, despite the discomforts, as well as dry, in order to see how water runs off — or through — a building. The best season for major inspections is spring, when moisture-related deterioration is most visible and when several months lie ahead for urgent repair and preservation work.

Ideally, at least two people should undertake inspection and recording together, to aid each other and to consult in the case of puzzling evidence. They must take appropriate safety precautions, especially where the structure may be weak or where poor ventilation and infestations may produce and harbour hazardous organisms.

Building site

- ❒ Boundaries in relation to building; general orientation; survey markers
- ❒ Slopes to and from building; drainage from building to site, away from site; soil conditions; liability to flooding, erosion, subsidence
- ❒ Vegetation (trees, climbers, etc.) — species, root types, health, proximity to buildings
- ❒ Walls, fences, gates, outbuildings — materials, dimensions, state of repair
- ❒ Services and service access — telephone, electricity, gas, water, sewer connections; meters; septic tanks

Roofs

- ❒ Shape: hipped, gabled, flat — are there sags, low spots?
- ❒ Complexities: ridges, valleys, dormers — are junctions sound, flashings intact?
- ❒ Materials: slate, metal, asphalt, wood; combinations and patterns — are elements missing, worn, cracked, discoloured, lifting; are there signs of another roofing beneath?
- ❒ Eaves: troughs, gutters, vents, parapets, brackets, rafter ends, bargeboard — are gutters missing, cracked, sagging, peeling; are vents or gutters blocked; is painted trim cracked, broken, peeling; are parapets properly flashed, stable, with sound masonry and pointing?
- ❒ Chimneys: materials, flashing — are flashings and caps secure; are masonry and mortar sound, or decayed; are chimneys stable, vertical?

Walls

- ❒ Structure — is it solid masonry, combined masonry and rubble, wood frame, post and beam, masonry veneer; are there cracks evident, long or short, recent or old; are features out of alignment, walls bulging or out of plumb?
- ❒ Masonry: brick, stone surfaces; mortar and pointing — are surfaces sound, joints tight; are units cracked, broken, missing, efflorescing, pitted?
- ❒ Wood cladding — are boards cracked, peeling, warped, discoloured, dented, rotting?
- ❒ Trim and ornament: stone, terra cotta, artificial stone, wood, metal — is it sound, securely attached; is it cracked, crazed, rusted, peeling, discoloured; missing; are there rust stains beneath or below?

Foundations

- ❒ Grade and exposure — which way does the ground slope; do downspouts drain completely away; is water pooled against or near the building; are there signs of the ground around the building having been raised or lowered?
- ❒ Materials — is masonry cracked, discoloured, spalling, stained; is wood cracked, peeling, rotting; does it appear wet when surroundings are dry; are there signs of crumbling mortar or rotten wood immediately adjacent; is wood in direct contact with ground; are there signs of insect infestation?

- ❒ Integrity — are foundations even, level, settling, buckling, and in which locations; are cracks recent or old?

Windows and doors

- ❒ Materials and dimensions: metal, wood, plastic, glass, paint — are they sound, or cracked, peeling or rusted; do they appear to be original or later replacements?
- ❒ Assembly — are openings properly aligned, gaps properly covered by moulding or weatherstripping; are frames secure and square; do they show recent movements in cracked paint or crooked joints; do doors swing freely, or fall open or closed due to being out of plumb?
- ❒ Moisture — is there condensation inside windows, or between double glazing; are there stains or other evidence of wetness beneath windows, inside or out?

Porches and extensions

- ❒ Materials and dimensions: metal, stone, wood, plastic, glass, paint — are they sound, or cracked, peeling or rusted; do they appear original or later replacements?
- ❒ Attachment — are porches, steps, fire escapes, cornices, porticos, etc. securely connected to building; are their foundations independent or attached; are there subsurface foundations at all; are there signs of such features having been removed?

Basements

- ❒ Material — is masonry cracked, discoloured, spalling, stained; is wood cracked, peeling, rotting; does it appear wet when surroundings are dry; are there signs of crumbling mortar or rotten wood immediately adjacent; are there signs of insect infestation?
- ❒ Integrity — are walls even, level, settling, buckling, and in which locations; are cracks recent or old; is the floor heaved, cracked, damp? is there any floor at all?
- ❒ Structure — are structural supports directly beneath what they are supporting; do joists and floors sag noticeably; have structural members been cut for utilities; have cut areas been reinforced?
- ❒ Moisture — are there signs of past flooding, of leaks from floor above, near utilities?

Living and working spaces

- ❒ Structure — which partitions are load-bearing?
- ❒ Materials: plaster, wood, metal, masonry — are they sound, or uneven, cracked, out of plumb or alignment; is there evidence (discoloration, holes covered over, seams of paint, etc.) of previous features having been removed; are there signs of settlement, old or recent (bulging walls, long cracks, etc.)?
- ❒ Finishes: paints, stains, etc. — are they dirty, peeling, stained, cracked, crazed; has recent painting covered earlier deterioration; has paint buildup obscured details?
- ❒ Stairs and floors — are they springy, uneven, sloping, noisy to walk over; is wood spongy, decayed, splintering; are there signs of rot, infestation?

Attics, shafts and concealed spaces

- ❒ Integrity and ventilation — is light visible though walls, to the outside or to another space; are there ventilators for windowless spaces, of sufficent capacity; do pipes or exhausts pass through concealed spaces without leaks?
- ❒ Structure — do rafters, sheathing and other elements sag noticeably; have structural members been cut for utilities; have cut areas been reinforced; are wooden elements soft, damp, cracked; are metals rusted, paint peeling or off altogether?
- ❒ Moisture/insulation — is there a vapour barrier, and which side of any insulation is it on; are there signs of condensation on insulated areas, near openings; are there signs of leaks at corners or near flashed areas at chimneys or parapets?
- ❒ Infestations — are there signs of birds, bats, insects, rodents, past or present; are precautions such as facemasks being taken during inspection?

See WRIG76 for considerations in defining districts and CUMI85 for legal aspects of districts under the Ontario Heritage Act.

Heritage districts

The character of areas or districts of heritage value is based on recognizable correspondences among buildings and properties, together with differences between that aggregation and its surroundings. A district's character is comprised of many ingredients. Consider the following as a basic outline of what to look for and assess:

- ❒ Historical associations (with individuals, groups, events)
- ❒ Architectural value (compared to others of their type, era, architects)
- ❒ Vernacular design (modest buildings no less valuable than grand ones)
- ❒ Integrity (state of preservation of earlier conditions)
- ❒ Architectural details (quality and craft of construction)
- ❒ Landmark status or group value (relation to surroundings, either standing out or providing context for others)
- ❒ Open spaces (as context for existing structures and as neighbourhood amenity)
- ❒ Vacant land and contemporary structures (as context for existing structures and as sites for fitting new developments)

The boundaries of districts are also important, because public perception and appreciation of their character are based on a geographical definition (and because heritage and planning laws require it). Boundaries are based on a combination of factors, including physical situation, visual perceptions, patterns of historical evolution, and various legal definitions of property and land use regulations.

See NEIGHBOURHOOD AND DISTRICT CHARACTER, HERITAGE AND PLANNING POLICIES, and VISUAL APPROACHES AND RESULTS.

Defining a district of architectural or historical value requires transforming the three dimensions of space onto a two-dimensional map — and then transforming the map into policies that will maintain the values deemed important. This requires great skill at the very beginning, in observing, appreciating and noting how individual elements combine to make a whole that is more than its parts.

Periodic inspections

Buildings and sites should be inspected regularly, at half-yearly and yearly intervals for some items and features, at longer intervals for others. Such inspections should be part and parcel of maintenance programs for those places.

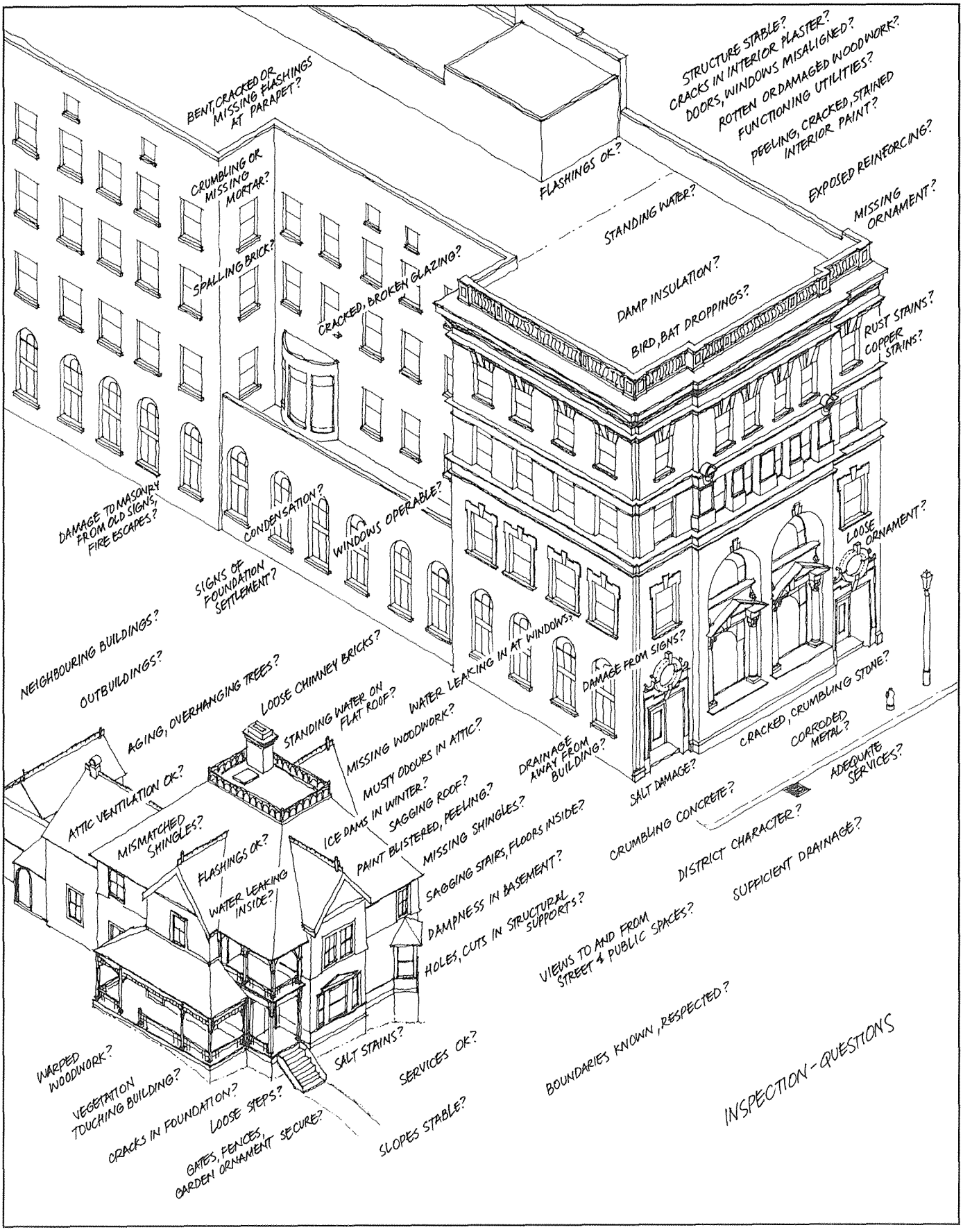
See TAKING CARE.

Relating inspections to documents and to other activities

Thorough inspection is the foundation for any physical work on the building, as well as for its understanding and interpretation as a heritage resource in its setting.

- ❖ Keep thorough records of visits, including date, time of day, and weather conditions.
- ❖ Use photographic film generously. Photograph from many angles and under different lighting conditions. Take plenty of photographs of details. Consider what historical photographs you would want or need to reconstruct features accurately, and make your own photographs accordingly.
- ❖ Ensure that photographic locations and directions of views are noted; other people will have to use these data, and they may not have seen the building or site themselves.

See RECORDING.


BENT, CRACKED OR MISSING FLASHINGS AT PARAPET?
CRUMBLING OR MISSING MORTAR?
SPALLING BRICK?
CRACKED, BROKEN GLAZING?
FLASHINGS OK?
STRUCTURE STABLE?
CRACKS IN INTERIOR PLASTER?
DOORS, WINDOWS MISALIGNED?
ROTTEN OR DAMAGED WOODWORK?
FUNCTIONING UTILITIES?
PEELING, CRACKED, STAINED INTERIOR PAINT?
EXPOSED REINFORCING?
MISSING ORNAMENT?
STANDING WATER?
DAMP INSULATION?
BIRD, BAT DROPPINGS?
RUST STAINS?
COPPER STAINS?
DAMAGE TO MASONRY FROM OLD SIGNS, FIRE ESCAPES?
CONDENSATION?
WINDOWS OPERABLE?
SIGNS OF FOUNDATION SETTLEMENT?
LOOSE ORNAMENT?
NEIGHBOURING BUILDINGS?
OUTBUILDINGS?
AGING, OVERHANGING TREES?
LOOSE CHIMNEY BRICKS?
STANDING WATER ON FLAT ROOF?
WATER LEAKING IN AT WINDOWS?
DAMAGE FROM SIGNS?
ATTIC VENTILATION OK?
MISSING WOODWORK?
MUSTY ODOURS IN ATTIC?
DRAINAGE AWAY FROM BUILDING?
CRACKED, CRUMBLING STONE?
CORRODED METAL?
MISMATCHED SHINGLES?
ICE DAMS IN WINTER?
SAGGING ROOF?
PAINT BLISTERED, PEELING?
SALT DAMAGE?
ADEQUATE SERVICES?
FLASHINGS OK?
MISSING SHINGLES?
CRUMBLING CONCRETE?
WATER LEAKING INSIDE?
SAGGING STAIRS, FLOORS INSIDE?
DISTRICT CHARACTER?
DAMPNESS IN BASEMENT?
HOLES, CUTS IN STRUCTURAL SUPPORTS?
SUFFICIENT DRAINAGE?
VIEWS TO AND FROM STREET & PUBLIC SPACES?
BOUNDARIES KNOWN, RESPECTED?
WARPED WOODWORK?
SALT STAINS?
SERVICES OK?
VEGETATION TOUCHING BUILDING?
CRACKS IN FOUNDATION?
LOOSE STEPS?
GATES, FENCES, GARDEN ORNAMENT SECURE?
SLOPES STABLE?
INSPECTION - QUESTIONS

Fault diagnosis

Principles *for* diagnosis

2.4 Work at right pace
2.5 Appropriate skills
2.6 Second opinions when in doubt
3.7 Benefit of doubt in evaluation
4.6 Minimal conjecture/informed invention
5.3 Minimal alteration, minimal intrusiveness
5.6 Minimal removals
9.5 Records maintained and accessible

Principles *based on* diagnosis

1.1 Planned conservation
1.2 Comprehensive understanding
5.1 Priorities of features, priorities of work
5.5 Minimal emergency action/ stabilization to buy time

References

See FEIL82 and especially HOLL86 for details on building-fault analysis and diagnosis. See TIMM76 for explanations of how many historic materials age and decay, and TRIL72/73 for problems of poor workmanship. Though focused on problems of acid rain, WEAV87 is an excellent survey of many other physical and chemical agents of building-material deterioration.

See also the sources listed in "Inspection" (page 64).

The need for experienced expertise

Diagnosing a building's ills from its apparent deterioration is an acquired skill, based on training in architecture and building science and proved by experience with many types of buildings and conditions. But even the most expert diagnostician often cannot determine with absolute certainty the cause of a crack or stain or the more serious symptoms that may lie beneath. Most conclusions are more or less probable, based on previous experience and careful reading and understanding of the case. Specialized instruments can be used to assess tricky situations, including moisture meters, strain gauges, thermographs, and even portable X-ray devices, but these may not be readily available.

It *is* necessary to have simpler devices in hand during inspections: binoculars, mirror, flexible flashlight or endoscope (for looking around corners in the dark — inside walls, for instance), measuring tape, pocket-knife, screwdriver, ladder, and so on. It is crucial to make as accurate a diagnosis as possible, without causing damage to the building by peeling away layers of material that cannot be replaced; as far as possible, building-fault diagnosis must be non-destructive.

Much of the information relating symptoms to likely causes appears under descriptions of individual materials or building elements.

Symptoms

- Generally, look for stains, discolorations, cracks, breaks, misalignments, discontinuities, bulges, traces of sloppy repairs, and so on. *Feel* and poke around for dampness, uneven or crumbling surfaces, and unusual sponginess. *Smell* for odours of decay, unusual yeasty odours, and so on (though take full precautions against inhaling dangerous organic substances associated with bird and bat droppings). *Listen* for hollow or dull sounds when a supposedly solid surface is struck.
- If there is an opportunity to monitor a building for a period of time, check cracks and other discontinuities for recent movement.
- Watch for signs of deterioration, changes in cracks, and so on, during early stages of work.
- Identify priorities for remedial action immediately and make sure that designs and specifications treat the most urgent work first.
- Record all symptoms thoroughly with notes, photos and sketches, especially where what is wrong is not immediately evident.

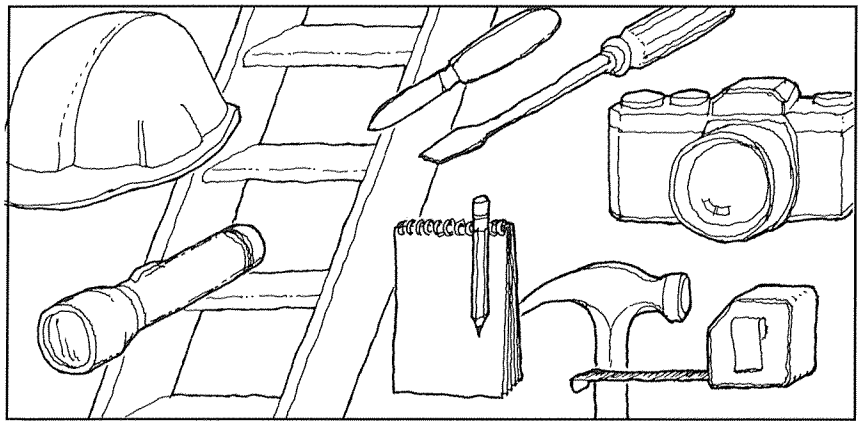
Confirmation on the job

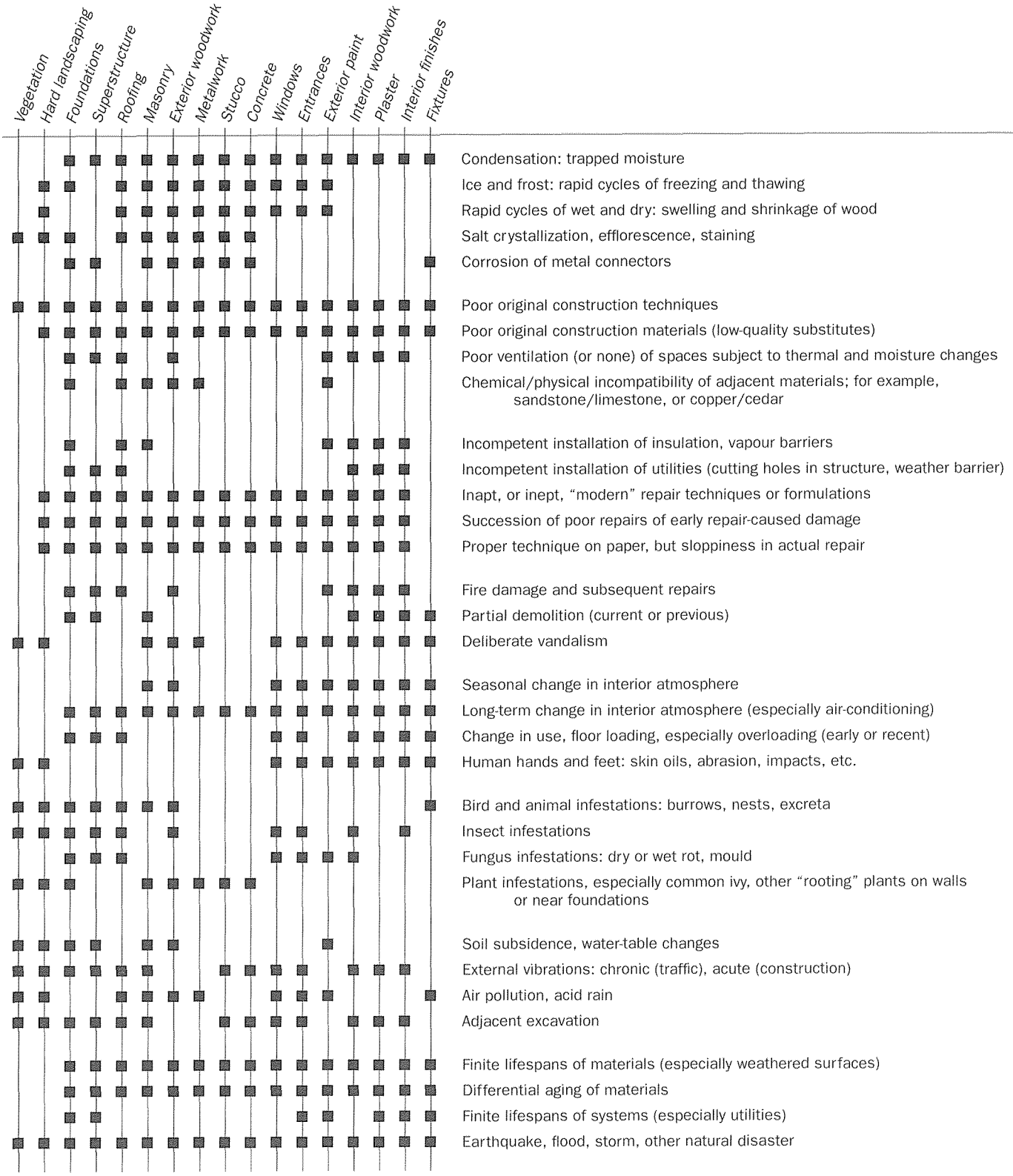
- As things are discovered and diagnoses confirmed or revised, notes about these changes must become part of the project record, so as to build up a body of experience and improve diagnosis the next time. This is as true for work from one day to the next on a single project as for work from project to project.
- Monitor site work extremely carefully to avoid incorporating new flaws that will contribute to future problems.

Interdependent causes

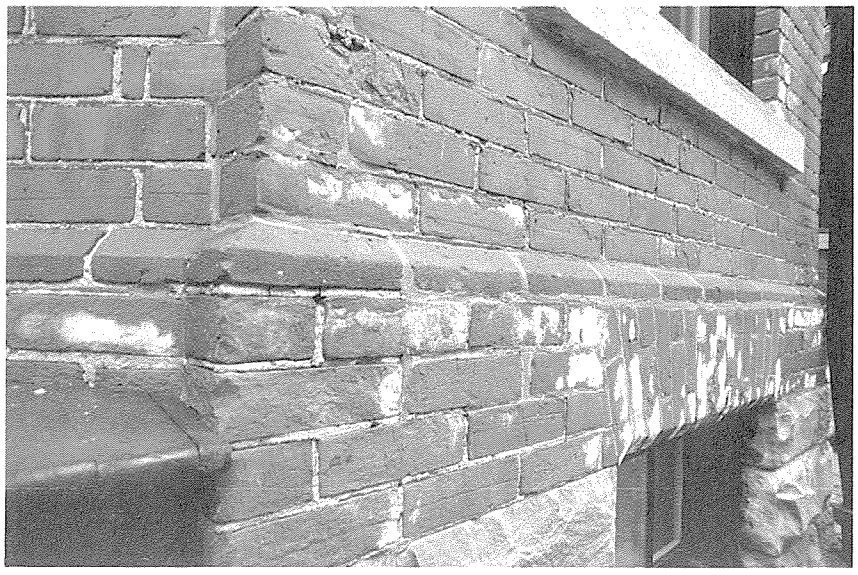
Opposite is a chart of causes of building deterioration and the places where they are most likely to cause problems. Their effects are often cumulative and interrelated. Weigh this checklist against evidence from thorough inspection. Some faults can be fought directly with preservation treatments, but others are environmental and thus harder to control.

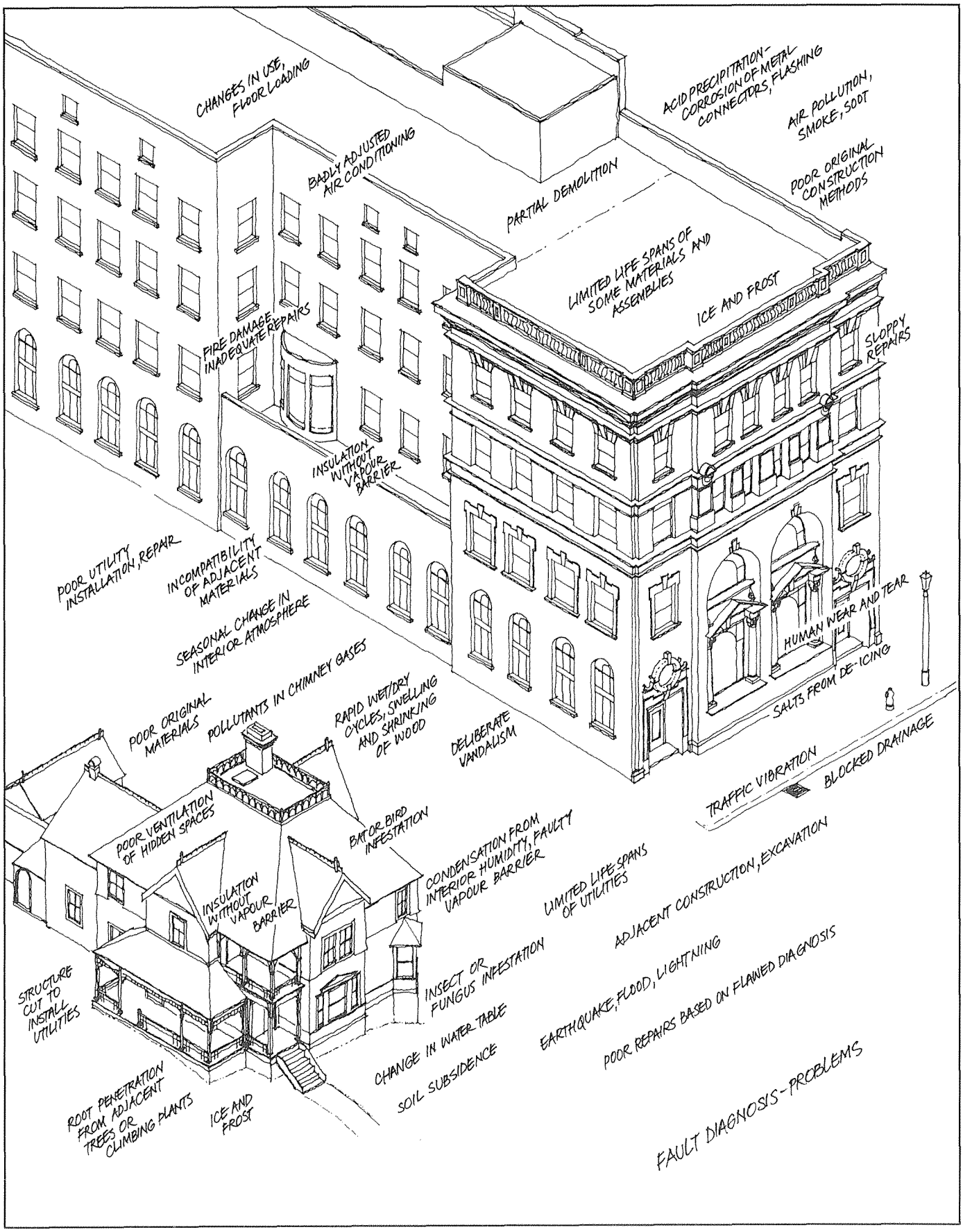
Basic tools for inspection and diagnosis.




Vegetation
Hard landscaping
Foundations
Superstructure
Roofing
Masonry
Exterior woodwork
Metalwork
Stucco
Concrete
Windows
Entrances
Exterior paint
Interior woodwork
Plaster
Interior finishes
Fixtures
Condensation: trapped moisture
Ice and frost: rapid cycles of freezing and thawing
Rapid cycles of wet and dry: swelling and shrinkage of wood
Salt crystallization, efflorescence, staining
Corrosion of metal connectors
Poor original construction techniques
Poor original construction materials (low-quality substitutes)
Poor ventilation (or none) of spaces subject to thermal and moisture changes
Chemical/physical incompatibility of adjacent materials; for example, sandstone/limestone, or copper/cedar
Incompetent installation of insulation, vapour barriers
Incompetent installation of utilities (cutting holes in structure, weather barrier)
Inapt, or inept, "modern" repair techniques or formulations
Succession of poor repairs of early repair-caused damage
Proper technique on paper, but sloppiness in actual repair
Fire damage and subsequent repairs
Partial demolition (current or previous)
Deliberate vandalism
Seasonal change in interior atmosphere
Long-term change in interior atmosphere (especially air-conditioning)
Change in use, floor loading, especially overloading (early or recent)
Human hands and feet: skin oils, abrasion, impacts, etc.
Bird and animal infestations: burrows, nests, excreta
Insect infestations
Fungus infestations: dry or wet rot, mould
Plant infestations, especially common ivy, other "rooting" plants on walls or near foundations
Soil subsidence, water-table changes
External vibrations: chronic (traffic), acute (construction)
Air pollution, acid rain
Adjacent excavation
Finite lifespans of materials (especially weathered surfaces)
Differential aging of materials
Finite lifespans of systems (especially utilities)
Earthquake, flood, storm, other natural disaster

Buildings deteriorate in many ways, and in many places, but most problems will be found at the top and at the bottom. At the roof, the building is most exposed and least looked after. Near the ground, simple symptoms like salt stains on brick may have many potential causes, and each must be checked out before corrective action can be taken.




CHANGES IN USE, FLOOR LOADING
ACID PRECIPITATION - CORROSION OF METAL CONNECTORS, FLASHING
AIR POLLUTION, SMOKE, SOOT
BADLY ADJUSTED AIR CONDITIONING
POOR ORIGINAL CONSTRUCTION METHODS
PARTIAL DEMOLITION
LIMITED LIFE SPANS OF SOME MATERIALS AND ASSEMBLIES
ICE AND FROST
FIRE DAMAGE INADEQUATE REPAIRS
SLOPPY REPAIRS
INSULATION WITHOUT VAPOUR BARRIER
POOR UTILITY INSTALLATION, REPAIR
INCOMPATIBILITY OF ADJACENT MATERIALS
SEASONAL CHANGE IN INTERIOR ATMOSPHERE
HUMAN WEAR AND TEAR
SALTS FROM DE-ICING
POLLUTANTS IN CHIMNEY GASES
POOR ORIGINAL MATERIALS
RAPID WET/DRY CYCLES, SWELLING AND SHRINKING OF WOOD
DELIBERATE VANDALISM
TRAFFIC VIBRATION
BLOCKED DRAINAGE
POOR VENTILATION OF HIDDEN SPACES
BAT OR BIRD INFESTATION
CONDENSATION FROM INTERIOR HUMIDITY, FAULTY VAPOUR BARRIER
INSULATION WITHOUT VAPOUR BARRIER
LIMITED LIFE SPANS OF UTILITIES
ADJACENT CONSTRUCTION, EXCAVATION
STRUCTURE CUT TO INSTALL UTILITIES
INSECT OR FUNGUS INFESTATION
EARTHQUAKE, FLOOD, LIGHTNING
CHANGE IN WATER TABLE
POOR REPAIRS BASED ON FLAWED DIAGNOSIS
SOIL SUBSIDENCE
ROOT PENETRATION FROM ADJACENT TREES OR CLIMBING PLANTS
ICE AND FROST
FAULT DIAGNOSIS - PROBLEMS

Recording

Principles *for* recording

3.1 Record of found state
3.4 Archaeology (site & structure) for reconnaissance
3.5 Specifics of uniqueness (pattern, ensemble, detail)
3.6 Maximum information content/conservation of complexity
5.4 Archaeology (site & structure) for rescue of artifacts
6.1 Record of changes during project
9.1 Record of altered state
9.5 Records maintained and accessible
9.6 Knowledge shared

Principles *based on* recording

4.1 Respect for (natural) aging process
4.2 Respect for period/historic continuity, sequence
4.3 Respect for accumulations
4.4 Respect for uniqueness (pattern, ensemble, detail)
4.5 Respect for setting/context in community
4.6 Minimal conjecture/informed invention
5.2 Fitting use of existing spaces
5.6 Minimal removals
5.8 Moving as last resort
5.9 Façadism as last resort
6.3 Patina preserved
7.2 Replacement in kind/ recycled materials
9.4 Conservation commemorated

References

See CHIT80, PATT82 and MCKE70 on graphic recording techniques and drawing standards for buildings; FLAD78 is an excellent informal guide to field recording for archaeology. Photographic recording is covered in BUCH83, MCKE70, CHAM73, CHAMnd and BORC78; special attention is given in HECK79 to photographs as on-the-job documents. A good background work for architectural photography in general is BUSC87.

The requirements of recording for comprehensive inventories are examined in BRAY80, SYKE84 and TECH86.

Making records

A complete record of a property consists of a compilation of research, inspection and fault-diagnosis notes. Others evaluating the property and planning its conservation can make full sense and use of each of these components only if they are combined as a full and comprehensive record. The records of a heritage resource are the essential links between its past and its future.

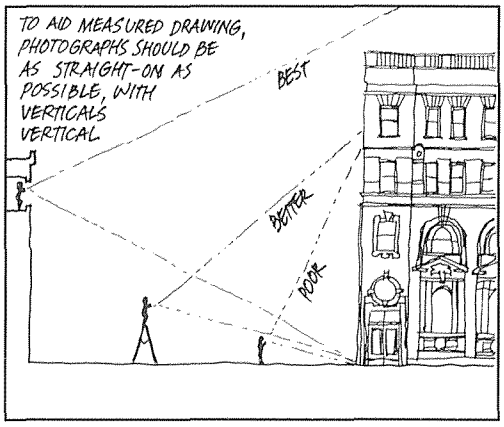
- Keep and cultivate records of research, planning and conservation work during the project, not as an afterthought; keep track of new information, as well as changes in plans and executed work.
- Conservation records will often have legal importance, as a basis for heritage designation and/or grant aid, or as a record of workmanship and/or liability.

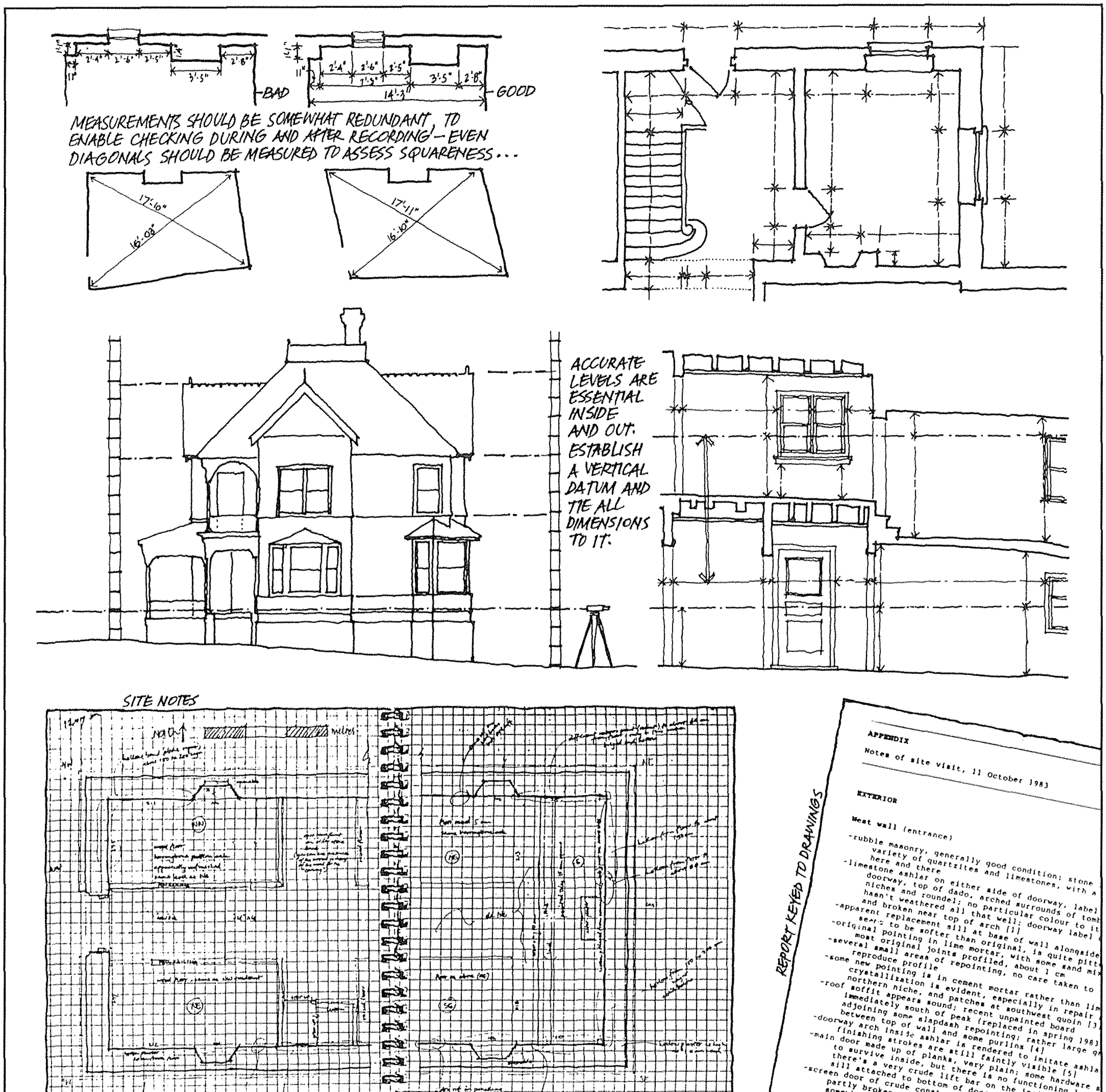
Texts

- There is no particular "best" format for compiling text material, but use chosen formats consistently — whether cards, looseleaf pages, hardbound notebooks, computer disks. Use a format that meshes well with supporting visual materials.
- Back up information all the time and keep spare copies of texts at separate, secure locations.
- Ensure that all copies are consistent with their originals. Put current dates on originals and copies to keep track of changes and ensure that copies are up to date.
- Building inspection and fault-diagnosis information should be directly tied to specification-writing. Use standard construction indexing where possible (not so easy in conservation; repair specifications may appear in many sections of standard new-construction formats).
- For designation and other purposes, convert research and evaluation notes into a formal summary of specific reasons for building importance, noting features of greater or lesser priority for recognition, preservation, and so on.

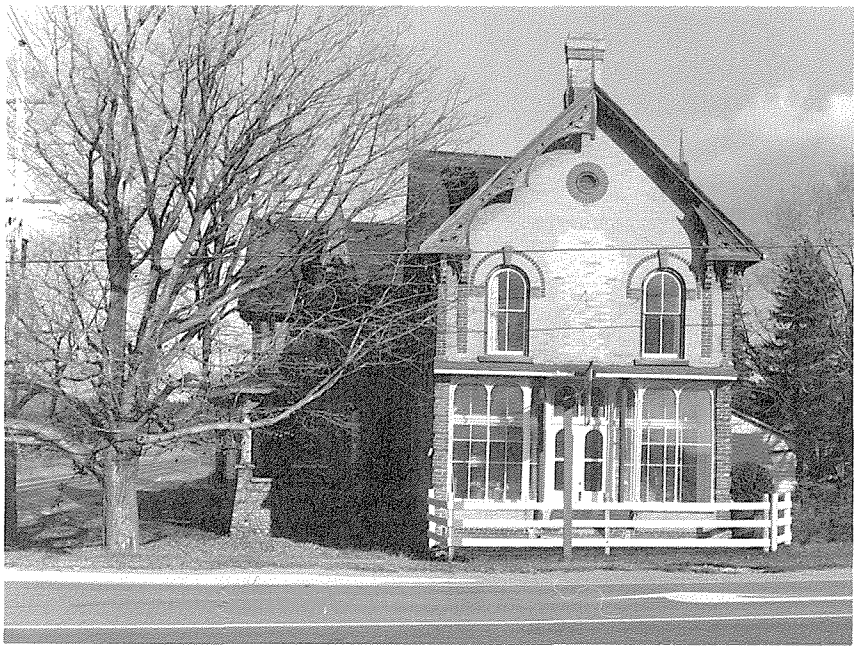
Site sketches and measured drawings

- Keep annotated field sketches from surveys and inspections together with their texts; it will be difficult to understand either if they are separated.
- Never presume that spaces and dimensions are perfectly rectilinear, or that there is a perfect match between original drawings/dimensions and finished work, even in relatively new construction.
- Double-check long runs of cumulative dimensions.
- Use sketches and photographs together: use field notes and drawings as keys to locations and directions of photographs and photographs as keys to locate sketches and notes.
- Final measured or record drawings must depict as fully as possible not only regularities and symmetries of the original design and intent but also irregularities and imperfections. Such drawings must never "neaten up" angles and dimensions.
- Follow consistent and standardized recording and drawing practices.
- In cases where there may be new construction following the metric (SI) system, record existing dimensions in both imperial (foot/inch) and metric units, and translate any standard modules or other consistent historic measurements into metric units consistently. Measured drawings done to metric scale should note dimensions in feet and inches, and should always include a graphic scale showing units in both systems.

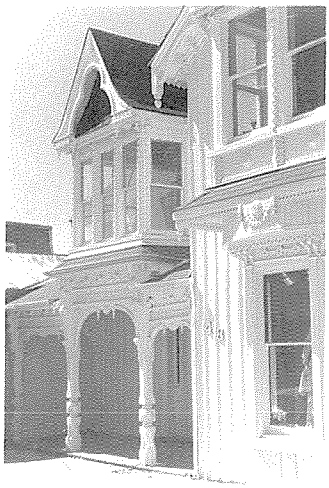



BAD
GOOD
MEASUREMENTS SHOULD BE SOMEWHAT REDUNDANT, TO ENABLE CHECKING DURING AND AFTER RECORDING—EVEN DIAGONALS SHOULD BE MEASURED TO ASSESS SQUARENESS...
ACCURATE LEVELS ARE ESSENTIAL INSIDE AND OUT. ESTABLISH A VERTICAL DATUM AND TIE ALL DIMENSIONS TO IT.
SITE NOTES
REPORT KEYED TO DRAWINGS
APPENDIX
Notes of site visit, 11 October 1983
EXTERIOR
West wall (entrance)
North wall
INTERIOR
THOUGH INSPECTION REPORTS MAY NOT INVOLVE FULL MEASUREMENTS, THEY CANNOT BE LEFT IN ROUGH-NOTE FORM...
INSPECTION DRAWINGS
Plan

In general, cloudy days are preferable to clear weather for making permanent photographic records. The shadows of sunny days obscure important details. But the shadows do help reveal the three dimensions of the building and site. Ideally, a photographic record should include similar views taken in different conditions of light.



Photographs of buildings should focus in on details and materials, but the record is not complete without a depiction of the building's context in town or countryside (below and bottom right).



Photographs

- Don't be stingy with film; in relation to other costs of conservation, film is very cheap. Use a variety of angles, perspectives, lighting conditions (see INSPECTION).
- Use both black-and-white and colour films. Black-and-white is important for comparison with historic photographs and as a base for drawings and specifications; colour slides are useful for presentations; colour slides and prints, properly calibrated, are useful for colour-matching and analysis.
- Consider annotated Polaroid prints as useful aids for site note-taking, but use 35 mm or larger-format negatives for permanent records and larger prints.
- Keep copies of black-and-white contact sheets with text records, keyed to notes and sketches.
- Use clear prints, annotated, as part of text, with a view to their incorporation in specifications; such photos should include a graphic scale to permit rough measurements.

Photogrammetry/rectified photography

Terrestrial photogrammetry can be very expensive (precision cameras and stereoscopic plotters cost tens of thousands of dollars) but may save money and time over extensive recording by hand. It may be the only way to get accurate measurements from inaccessible or dangerous features. Though firms experienced with aerial photogrammetry can do accurate plots from stereoscopic photographs, few can do ground-based work. New microcomputer-based systems that can use photographs from small-format cameras under suitably controlled conditions are now becoming available; for the current state of the art, contact ICOMOS Canada (see Appendix).

- For photographs that can be used for approximate dimensions, follow photogrammetric practice in taking clear, straight-on elevation photos in cloudy-bright lighting (minimal shadows) with a graphic scale in view, even if not shooting for photogrammetry. Such rectified photos can be used for approximate dimensioning if the wall or floor planes to be measured (and the scaling device itself) are parallel to the plane of the film, that is, to the back of the camera.

Video, audio and micro

- Use portable videotape equipment as an adjunct to other techniques when recording processes in motion or as a travelling camera through sequences of spaces. Combining a videographic record with a soundtrack of oral interviews or narrations can add a vital aura to other depictions of the life in and of a building.
- Use small dictation tape units as an aid to notetaking on site but be sure to transcribe such audio notes immediately afterward.
- If a conservation project anticipates use of computer data storage and graphic devices, it may be possible and effective to compile an electronic record of the existing building from the information gathered on site, to generate dimensions, material quantities and architectural drawings. This is a rapidly developing area, and is likely to become more affordable and expeditious in the very near future. In any case, do not use a system that cannot store and cope with the numerous irregularities (of dimensions and materials) in existing buildings and sites. This is especially important in computer-generated drawings.

KEEPING records

- Use consistent formats for filing.
- Make summary information easily copyable and available to others involved in the project and to researchers on other projects.
- File a duplicate copy of the complete records in the local archives or other suitable repository.

Archaeological investigation and reporting

Principles *for* archaeology

2.3 Work in order
2.5 Appropriate skills
3.4 Archaeology (site & structure) for reconnaissance
3.6 Maximum information content/conservation of complexity
5.4 Archaeology (site & structure) for rescue of artifacts

Principles *based on* archaeology

3.7 Benefit of doubt in evaluation
4.6 Minimal conjecture/informed invention
5.5 Minimal emergency action/ stabilization to buy time
9.4 Conservation commemorated
9.5 Records maintained and accessible
9.6 Knowledge shared

References

Archaeology comprises both intellectual study of the past and practical craft; few texts treat both together. To understand how the study underlies the craft, see KING77 and TECH86. Guidelines for responsible archaeological conservation and fieldwork include FLAD78, KEUN84 and TREA80. For archaeological aspects of building investigation, see FEIL82 and SEEL85; for southern Ontario physiography, see CHAP66.

Archaeology and building

Archaeology concerns itself with artifacts and other material evidence of the past — tools, weapons, domestic utensils, art objects, industrial machinery, human or animal remains, rock art or structures, fragments or traces of building materials, foundations and ruins of former structures — any object or place modified by human activity. Analysis and understanding of this material and its context give us valuable and irreplaceable information, unavailable in any other way, about human interaction with the environment over a long period.

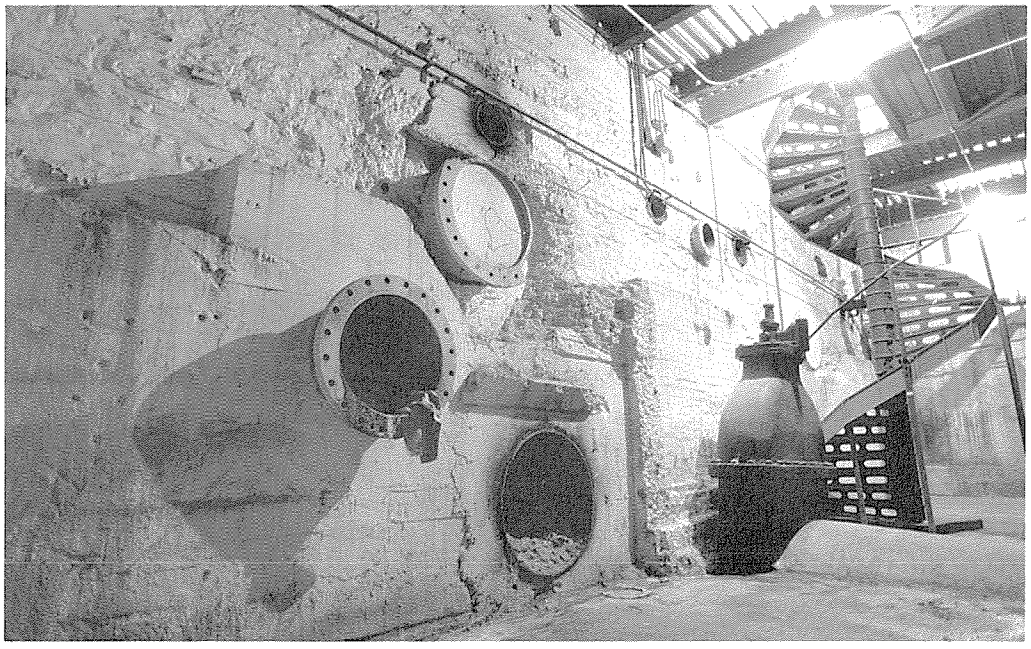
Because archaeological evidence lies hidden from view — underwater, underground, or inside walls and hidden places of buildings — it seldom comes to light in a predictable way. During rehabilitation or restoration, chance discoveries are not unusual. Some material may have direct connection to the history of the building, but some may be much older, relics of earlier, even prehistoric occupation of the same site. Even areas developed and redeveloped over the last two centuries may have buried evidence of prehistory.

Particularly sensitive are shorelines of lakes and rivers and former shorelines, such as sand and gravel pits and other post-glacial physiography. Prehistoric cultures used these zones intensively. More recently many waterfronts have witnessed initial settlement and early industrial development. Long-used agricultural landscapes often have similarly rich archaeological potential.

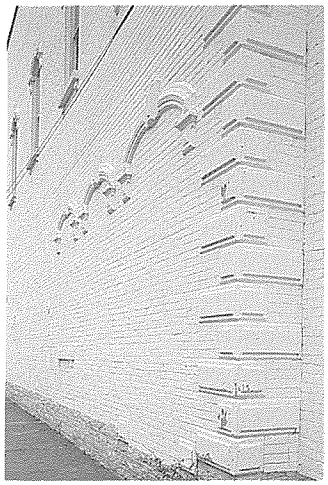
There is also a more localized archaeology of the building itself, its hidden spaces and immediate surroundings. Careful exploration may reveal material evidence of construction and early occupation, through broken or throwaway items in pits and privies and in material hidden or simply forgotten in an attic or basement or even between two walls.

Conserving the value of this evidence requires very careful recording of location, condition and context of artifacts as well as care in their retrieval and storage. Because the location of an object in a particular context offers as much information to a knowledgeable observer as the object itself, it is essential to record an object *before* it is removed, if it is to be removed at all. This can be done through notes, drawings, or photographs, but it must be done (see INSPECTION and RECORDING).

It is often worthwhile to bring in an expert to assist — someone trained in the uses and values of artifacts, with skills in archaeology and/or museology. On larger projects, where there is a strong likelihood of chance discoveries, it is vital to have someone with such skill as part of the regular working team. In other cases, arrangements for a quick response to a chance find might be made with a local museum or a provincial archaeologist.



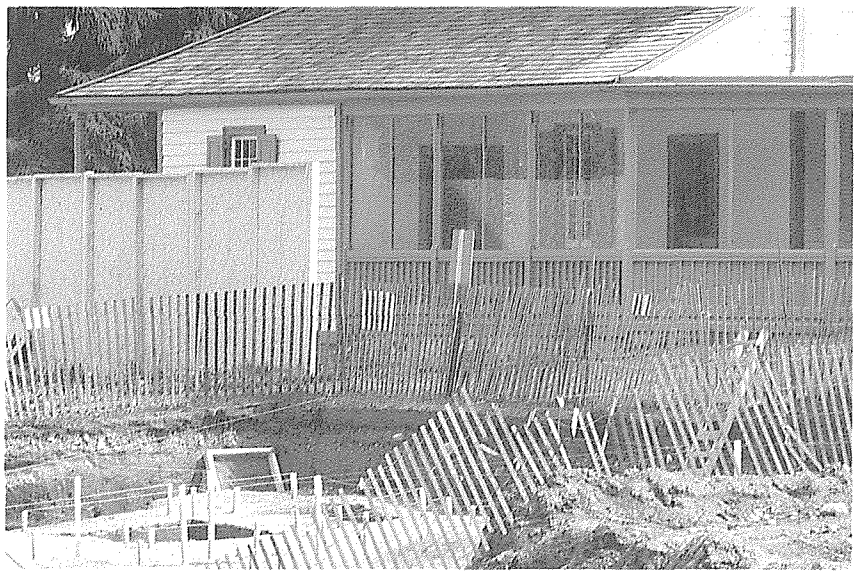
Buildings as archaeological sites.



For information about licensing and its requirements, contact the provincial data coordinator or one of the archaeological field offices listed in the appendices.

Archaeology and the law in Ontario

Most archaeological exploration anticipates some disturbance of the ground, and any activity of this sort is regulated by the Ontario Heritage Act. Such exploration requires a provincial licence. Sites of great importance may be designated by the province, and no work of any kind undertaken there without express permission. Licensing procedures are set out in Part VI of the Act, sections 48-51 and 65-66; regulation of the sites themselves is covered in sections 52-64.



Landscapes as archaeological sites.

The archaeological report

Archaeological evidence is similar to other information gathered in the investigation of a property. It must be properly compiled with other records of research and inspection to form a base for planning conservation work. Licensed archaeological exploration normally requires submission of an archaeological report, identifying in detail the reasons for exploration, methods used, details of the location and nature of artifacts recovered, inferences based on these discoveries, and action based on the discoveries and inferences.

A copy of the report must be filed with the provincial archaeological database at the conclusion of the invesigation. This report can then be used by others exploring similar properties or assembling data on many sites in order to broaden knowledge of general historical trends within a region or between regions.

Ongoing monitoring

In general, for archaeological purposes it would be ideal to have every potential "hiding place" explored before conservation work begins, but in practice this is seldom the case. A strategy for dealing with chance finds during work should be included in the overall management scheme for the project (see PHASING AND SCHEDULING and SURPRISES), and should be included in the archaeological report.

- Use caution in opening up any hidden space, for health and safety reasons and to minimize damage to artifacts.
- No object should be moved or disturbed in any way until its state and location are accurately recorded, and this must be made clear to every worker on the job.
- Information about any archaeological findings must be included in the final record of the property's conservation.

Neighbourhood and district character

Principles

1.1 Planned conservation
3.3 Informed reconnaissance/ inspection
3.5 Specifics of uniqueness (pattern, ensemble, detail)
4.5 Respect for setting/context in community
5.2 Fitting use of existing spaces
5.8 Moving as last resort
5.9 Façadism as last resort

References

There is a considerable literature on the subject of context and compatibility between old and new. See especially CUMI85, EDWA46, GOON80, LANG78, NATI80 and WRIG76 for criteria for districts as a whole and for the fit of individual buildings.

Broader treatments of the subject of environmental fit include ALEX77, FRAM84a, LYNC72, LYNC76, NEWC79, PERC79 and ZEIS84; see LENC82 and PRIZ75 for particular attention to the colours of buildings and landscapes. Detailed aspects of the fit of buildings into existing streets are covered in BROW80, CAPP86, DUTO85, HILL82 and RESE85.

The administrative niceties of heritage conservation districts in Ontario are covered in CUMI85.

The importance of context

Much of the motivation for heritage conservation comes from a general concern that future construction will not fit as well into a neighbourhood as existing structures. The public has a growing sense that conservation is essential to neighbourhood or district planning, beyond preservation of single buildings. The character of an area, with its buildings, landscapes and streets, has become of considerable value, even though no single person owns or controls this amenity — and even though its boundaries may be difficult to determine.

A district of particular heritage importance may be a collection of pleasant residential streets with solid Victorian houses, a main street lined with commercial blocks of many eras, a collection of mill and factory buildings along a waterfront, or even a rural landscape of scenic interest. Such areas are more than the sum of their parts and are demonstrably unique. They may be amenities for local people as well as attractions to visitors from near and far. They serve as a tangible focus for community pride.

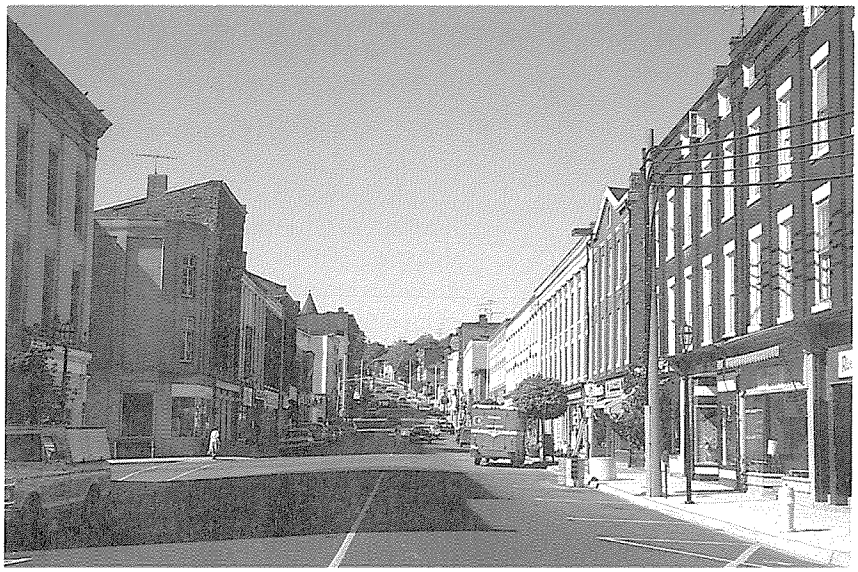
Buildings have been described as having good or bad manners toward their neighbours. If there really is such a choice, then both old and new must strive to present the best manners possible. And the neighbourhood itself should support that.

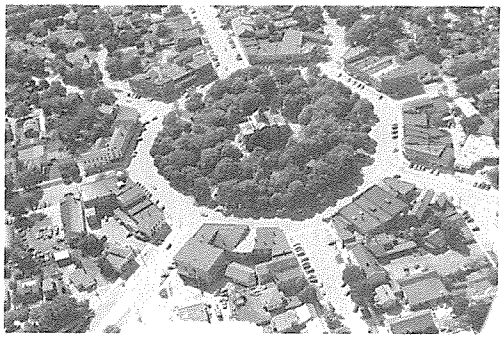
Though these are all features with heritage value, it is their combination with one another that offers this town its special distinction.

Preserving context

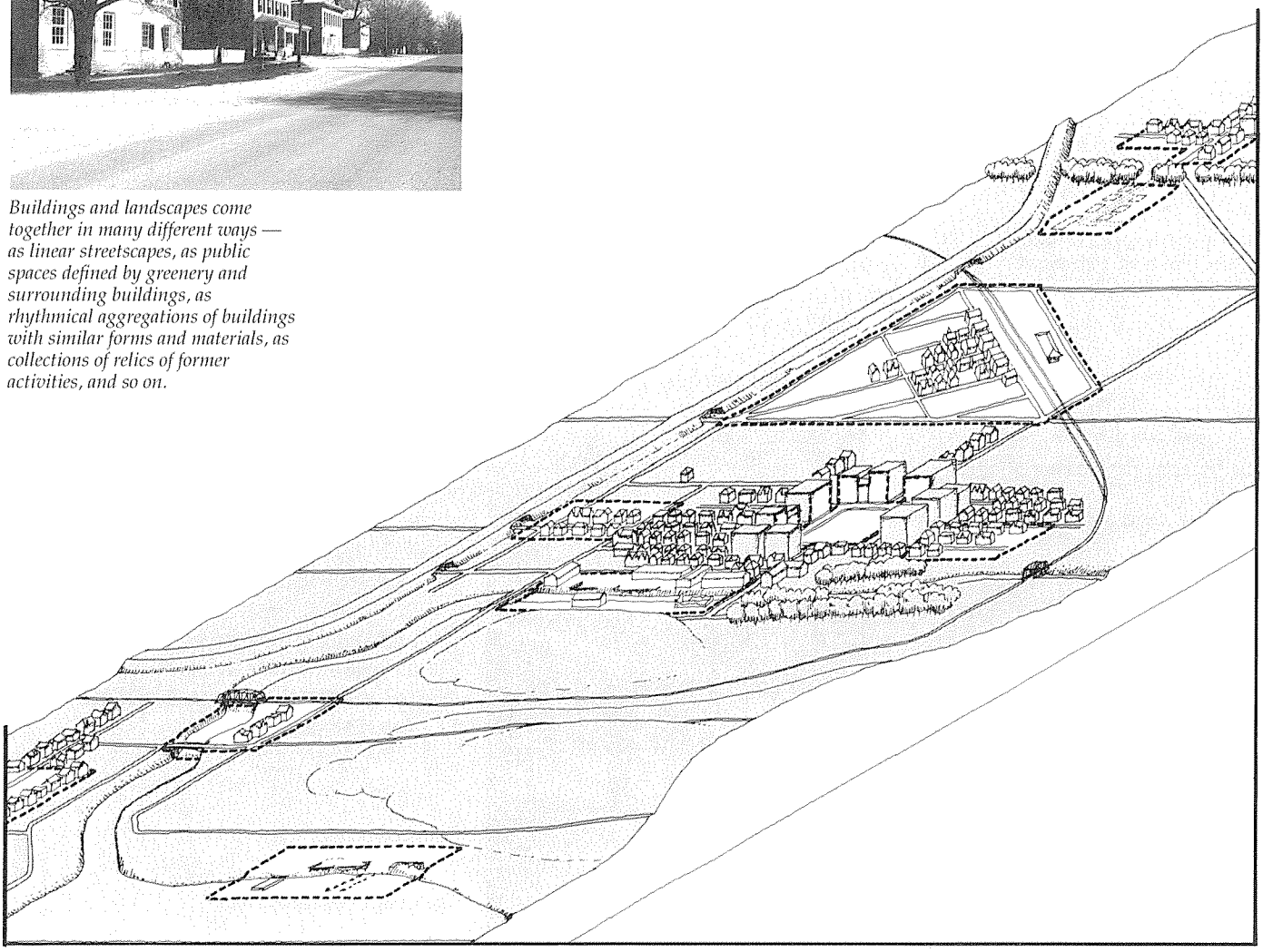
- Maintain existing principal views into and out of property; do not obstruct prominent building features with new construction that violates the symmetry or other aspects of the historical planning of the property, especially on façades that face major public ways.
- Continue to use historic means of access — paths, drives, etc.
- Maintain, or if necessary redefine, the property's edges with their historic features — fences, vegetation, and so on — in a way that frames views into the property. Use visual documents and archaeological evidence to locate these features.
- New construction should correspond to and complement buildings on adjacent properties.
- New or repair work should not confuse the historic character of an area by creating an impression of greater age or of a different region or even country — revivals should be clearly identifiable as revivals, not "originals".
- Keep new site features such as parking and utilities inconspicuous, separate from the principal public faces of a building, located preferably in areas used historically as service zones (side or rear yards, and so on).
- Heritage structures of any sort should not be removed from their sites, not even within a property, unless there is overwhelming evidence that the only alternative would be demolition. Relocations should maintain as much as possible the pattern of visibility and access of the original siting.

See INSPECTION, RECORDING, HERITAGE AND PLANNING POLICIES, and VISUAL APPROACHES AND RESULTS.





Buildings and landscapes come together in many different ways — as linear streetscapes, as public spaces defined by greenery and surrounding buildings, as rhythmical aggregations of buildings with similar forms and materials, as collections of relics of former activities, and so on.



Heritage and planning policies

Principles

1.1 Planned conservation
3.2 Thorough and documented research
3.4 Archaeology (site & structure) for reconnaissance
3.7 Benefit of doubt in evaluation
4.5 Respect for setting/context in community
5.8 Moving as last resort
5.9 Façadism as last resort

References

Preparation of designating by-laws and planning statements are covered for Ontario in FRAM84 and CUMI85. Other jurisdictions' publications may also be helpful in preparing plans and by-laws; see, for instance, GLAS83, KEUN84, RODD83 and FEDE00. In addition to the international charters described in Appendix 6 are several analytical works on legal issues, including DELA97, DENH97 and HUTT99.

For examples of other planning issues and strategies that may affect heritage resources, see FLEM82, STIP80, THUR83 and WILL78. An interesting guide to the development of arguments and cases for defending and promoting conservation at public hearings is SPAR71.

See also the sources listed in "Neighbourhood and district character" (page 80).

Promoting conservation, with caution

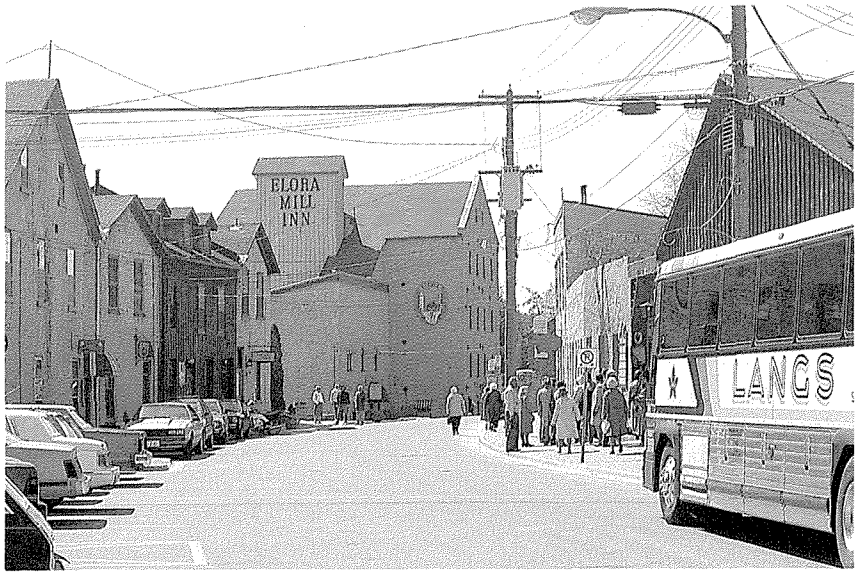
Promoting heritage conservation on a large scale can sometimes create its own problems, both for conservation of built heritage and for other community goals. Massive investment in tourist-oriented development or rapid inflation of property prices in an area being "gentrified" by higher-income groups may overwhelm and even wipe out the heritage values that attracted such interest in the first place. Such rapid change and economic pressure create the temptation to "over-renew" heritage properties, to make ill-advised changes that will reduce their heritage value and quite often their life expectancy, in the effort to make their appearance "like new".

- Develop, publish and maintain high standards for neighbourhood and building conservation, in order to temper this rush to modernize and "clean".
- Enumerate and assess all the social costs of planning policies that promote community renewal before such policies are implemented. Such costs may include displacement of population and of traditional uses and habits, increased vehicular traffic and noise, and narrowing of the economic base.
- Tourism can be a valuable community industry but must be treated with care. Develop "gentle", low-key strategies to promote visits by local residents and others. Promote tourism through guidebooks, selective building conservation and progressive small improvements in public amenities.
- Avoid massive capital investments that eradicate or severely damage the character of a place, such as standardized street furniture and paving, insertion of shopping malls out of scale with local needs, or renovation of waterfronts by obliterating traces of their working history.

Fitting the past to future plans

Heritage conservation cannot be completely isolated as a separate section of a municipal plan. It should be part and parcel of planning for land uses and activities. Whether or not they mention "heritage" by name, many land-use policies have direct and indirect implications for conserving heritage properties — often their effects are more potent than overt "heritage" policies.

- Local area plans should be based on thorough research and analysis of the historical background of the area, including an inventory of properties whose character is directly tied to that history.
- Planning policies should make clear that their implementation through zoning by-laws, business improvement areas, renewal plans and so on will take heritage conservation into account and ensure that no expenditure of public funds causes destruction of any identified heritage resource.
- Every legal instrument with planning aspects should be reviewed and its effect on heritage determined. Where possible each should promote conservation or at least not penalize it. For example, policies for eventual removal of non-conforming uses should be tempered by retention of the area's historic architectural character and provide that new uses will adapt to that character.



Tourist development may enhance the appreciation of a place's heritage — but tourists may also overwhelm the heritage they come to see.

Dealing with neighbourhood change

- Municipal plans should declare openly and publicly the municipality's desire and commitment to preserve its heritage on the ground; such declarations are invaluable advertisements and encouragements even where they lack tools to "enforce" compliance. If such policies are lacking, efforts should be made to have them adopted as a matter of high priority.
- New construction should follow a sort of environmental "golden rule" (do unto others as you would have them do unto you): new building should cause no impact that would not be welcomed by that same building if it already existed.
- Ensure that all applicable laws are followed by new construction adjacent to heritage properties, with special care to avoid environmental hazards.
- Proposals for new work on properties both within and adjacent to heritage sites and districts should be assessed at the earliest possible stages of planning. This analysis should cover traffic, microclimate, demography, noise and other factors that would reduce (or enhance) the heritage value of properties adjacent to new buildings, roads or other projects.
- Where Ontario's Environmental Assessment Act covers a new project, assessment of impact should consider heritage resources of all types, and any negative effects should be mitigated as part of the project.
- Development control and zoning by-laws should ensure that new development does not damage heritage properties. Consideration of such laws should be at least as systematic as the investigations required for environmental assessments.

A major environmental project may overwhelm the scale and activity of not only towns but countrysides as well. These impacts must be anticipated and mitigated as well as possible, and may even raise doubts about the merits of the project itself.

Establishing heritage districts

- Areas of consistent architectural character that are distinctive collections of private properties and public spaces should be designated heritage conservation districts and woven onto other plans and policies.
- Ensure full public participation in planning and establishing heritage districts, whether as formal heritage conservation districts under part V of the Ontario Heritage Act, or as special areas for other planning purposes: business improvement areas, community renewal areas, waterfront districts, scenic routes, and so on.
- Establish clear and well-publicized policies and programs as early as possible in the process of district planning to direct development on a consistent basis, with guidance for making new developments good neighbours with what exists.
- Ensure that research and assessment of the district and its edges are comprehensive, and present those findings clearly.
- Provide for diversity as well as consistency in assessing and planning districts. Include vacant lands within district boundaries where their development offers opportunities that may either enhance or damage the character of the district, and make explicit criteria for the quality of development on such lands — especially on frontages facing heritage properties.
- Make heritage districts part and parcel of comprehensive local planning, not separate add-ons.
- Build on locally distinct historical and physical characteristics, with careful attention to historical documents, especially photographs, rather than adopting standard street "beautification" designs and hardware.