

Conditions Glossaries as a Tool in the Survey Process: A Review of Several Glossaries





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Introduction

Most preservationists involved in the documentation of historic structures utilize conditions glossaries in their work. The conditions glossary is an important tool used in the conservation process: describing the condition of a material is the first step in the evaluation of the condition, which leads to a better understanding of the cause of deterioration and ultimately treatment of the condition. Sometimes the glossaries preservationists use are internalized, drawn from one's background and experience with a particular system or material but often based on terms developed from various disciplines. Sometimes preservationists refer to glossaries that have been published for building or preservation professionals and have become, to some degree, industry standards. Although it is not necessary for everyone to use the same list of conditions, it is useful to have a common reference point on the general meaning of condition terms. The purpose of this article is to review several glossaries used by preservationists in order to better understand the features of glossaries as a tool in the survey process.

A glossary is simply an alphabetical list of terms with definitions, usually specific to a particular field of study or discipline. A conditions glossary, then, is a list of terms used to describe the condition of the object, system, or material. Its purpose is to assist in the objective documentation of conditions. By practice, conditions surveys are usually most concerned with identifying problems, so most of the terms in the conditions glossaries typically relate to deterioration, degradation, and distress.

Trade groups, government agencies, and preservation organizations have developed many different glossaries that are available to preservationists. The published preservation glossaries should be used as a common reference point, although it may be useful to develop specific glossaries for a project, as long as they are shared amongst and understood by the project team. From the outset of a preservation project, a conditions glossary is important for sharing information among the entire project team, from the survey and design teams who conduct the investigation to the

Material	Brick	TPAS Code	CJ
Condition	Crack System Joint	Severity Units	Width in 1/16" increments
Condition Description	A crack following the path of two or more connecting joints without any fractured masonry units	Amount Units	Lineal feet of crack
		AutoCAD Layer	Brk CrkSys Jt
 <p>Joint crack system in 19th century brick</p>		 <p>Joint crack system in modern buff brick 2</p>	
 <p>Joint crack system modern buff brick 3</p>		 <p>Joint crack system in modern buff brick</p>	

owner who approves the scope of work based on the investigation to the contractors and tradespeople who perform the work. Photographs and images are an important part of a glossary, since they help the team understand the terms in the glossary.

A key question in the examination of conditions glossaries is whether we are documenting cause or effect. Some glossaries include implicit, or sometimes explicit, assumptions about condition causes. Other glossaries include terms that are purely descriptive, in an attempt to make the glossary as objective as possible. When the initial conditions survey is conducted, the glossary terms should be an objective description of the conditions themselves, without assumptions about cause or treatment. The analysis to determine the cause of the conditions will follow from the description of the effects, or symptoms.

Fig. 1. Sample entry for the crack system in brick masonry joints in the Vertical Access condition glossary. All images by Vertical Access.

Another feature of some glossaries is a hierarchical structure of terms. For example, a glossary may include a definition for the gross term “soiling,” as well as for specific types of soiling, such as atmospheric, biological, and cementitious; it may then have definitions for different types of biological soiling on another level of the hierarchy. Glossaries with a hierarchical organization of terms can be more easily scaled for a particularly investigation and allow for documentation to move from a general assessment to a detailed description, making them more flexible than a simple list of terms.

Trade-Organization Glossaries

The first group of conditions glossaries examined here includes those developed by trade organizations. A good example is the American Concrete Institute’s “Guide for Conducting a Visual Inspection of Concrete in Service,” ACI 201.1R. First published in 1968, the current version dates to 2008. As stated in the abstract for the guide, “its purpose is to establish a uniform system for evaluating the condition of concrete.” The entire document is essentially a list of definitions of various conditions with associated photographs. The guide also has a classification system, dividing nearly 50 different conditions into three categories: cracks, distress, and textural features and phenomena. In some cases the cause of the condition is explicit in the definition, such as temperature cracking: “cracking due to tensile failure, caused by temperature drop subjected to external restraints or by a tempera-

ture differential in members subjected to internal restraints.” In other cases, the definition is purely descriptive with no implied cause: “hairline cracks: cracks in an exposed-to-view concrete surface having widths so small as to be barely perceptible.” Although developed for concrete, the simple hierarchical organization of this glossary can be adapted to other materials.

Other examples of glossaries developed by trade organizations include the Brick Industry Association’s “Technical Notes 2: Glossary of Terms Relating to Brick Masonry,” the Marble Institute’s “Glossary of Stone Industry Terms,” the Forest Products Laboratory’s “Glossary,” the Society for Protective Coatings *Visual Comparison Manual*, the Master Painter’s Institute’s *Master Painter’s Glossary*, and the Stained Glass Association of America’s “Glossary.”¹

Many of these glossaries are not specifically conditions glossaries. Rather, they are comprehensive glossaries that include many trade terms; typically they include only a handful of terms relating to material conditions or defects, such as “chip” or “spall” for masonry materials. Although these glossaries are useful for general reference, they have limited value as conditions glossaries.

Similar to the trade-organization glossaries and developed with the input of trade-organization leaders are ASTM standard terminologies for different materials and systems; they include many industry terms, including some relating to conditions and defects. Some of the standards relevant to the documentation of historic buildings include *C119-09 Standard Terminology Relating to Dimension Stone*, *D9-09a Standard Terminology Relating to Wood and Wood-Based Products*, *D16-10 Standard Terminology for Paint, Related Coatings, Materials, and Applications*, and *D1076-10 Standard Terminology Relating to Roofing and Waterproofing*. Like most trade-organization glossaries, they often have only a few terms relating to material conditions.

Government Agencies

Another group of conditions glossaries available to preservationists are those published by government agencies. In the United States the National Park Service (NPS) is the government agency tasked with conserving historic sites and developing preservation standards and guidelines. One of the first NPS conditions glossaries was Anne Grimmer’s *A Glossary of Historic Masonry Deterioration Problems and Preservation Treatments*. This glossary, published in 1984, was the result of an NPS initiative to develop a “standard set of definitions for masonry deterioration” for federal, state, and local officials conducting conditions assessments. It has been widely cited in other reference materials. The 22 deterioration terms are clearly defined and illustrated with black-and-white photographs. The concise definitions and photographs make

Fig. 2.
Sample entry for stone exfoliation in the Vertical Access condition glossary.

Material	Stone	TPAS Code	Exf
Condition	Surface Exfoliated	Severity Units	Depth of loss in 1/8" increments
Condition Description	Loss of outer surface of a masonry unit in layers	Amount Units	Area affected in sq. ft.
		AutoCAD Layer	Stn SurfLoss Exfol
			
Exfoliation in sandstone		Exfoliation in sandstone 2	
			
Exfoliation in limestone 3		Exfoliation in limestone 4	

this a useful resource. Unlike most glossaries, the description of the conditions also includes discussion of potential causes. The second part of the glossary is comprised of preservation treatments, again illustrated with photographs.

Other NPS reference publications, especially various *Preservation Briefs*, include terminology on deterioration and examples of specific defect conditions for various materials, although these are not intended to be glossaries. Because the *Preservation Briefs* are intended as guides not only for the survey of historic structures but also their preservation, rehabilitation, and restoration, the discussion of conditions terms is put in the context of their treatment. Typically, only the most common conditions of deterioration for a specific material are included.

Preservation Organizations

Non-governmental preservation organizations have also developed illustrated glossaries for conservation professionals. One example is the *Illustrated Glossary: Mosaics In Situ Project*, developed by the Getty Conservation Institute (GCI) and the Israeli Antiquities Authority in 2003.² It contains definitions of “current conditions” divided into previous interventions, structural conditions, and surface conditions and is illustrated with photographs and drawings. Similar to Anne Grimmer’s *Glossary*, this is an example of a focused reference developed for a specific project purpose and material.

In 2008 the ICOMOS International Scientific Committee for Stone (ISCS) published the *Illustrated Glossary on Stone Deterioration Patterns*,³ which draws from international sources of previously published and unpublished glossaries, including the National Park Service’s *Glossary of Historic Masonry*. One of the strengths of the ISCS glossary is its hierarchical organization. Each of the six “families,” or categories — general terms, crack and deformation, detachment, features induced by material loss, discoloration and deposit, and biological colonization — contains between two and eleven terms, with some terms having sub-terms. The hierarchy of terms facilitates identification of a condition within the glossary. The glossary is also useful as a cross-reference resource, citing both equivalent terms found in other glossaries and similar but inequivalent terms for each condition. Another important feature of the glossary is the use of multiple photographs to illustrate each condition, which can sometimes be as helpful as the written definition in understanding the meaning of a condition term. The photographs supplement the definitions by providing examples of different types of stone or stones in different environments for each condition.

The GCI illustrated glossary for mosaics and the ISCS glossary on stone deterioration are both hierarchical glossaries. The hierarchical structure facilitates



Fig. 3.
Bonded spall in limestone.



Fig. 4.
Incipient spall in limestone.

identification of problems on a gross scale by starting with general classes of conditions. It may be helpful in a conditions survey to first identify the general class of condition and then focus on the specific type of fault. The hierarchy allows flexibility in applying the glossary terms. In some cases it may be appropriate to use the more general terms in the evaluation rather than more detailed descriptions of the deterioration. For instance, if the intent of a survey is to provide a first-pass assessment without necessarily developing treatments, it may be sufficient to document areas of loss due to erosion and mechanical damage without differentiating between rounding or roughening erosion or cut or abrasion mechanical damage.⁴

Vertical Access Conditions Glossary

The unpublished conditions glossary used by Vertical Access is an example of a material-based glossary with a hierarchical structure that has been developed from other glossaries. It uses libraries of conditions for materials such as architectural metal, brick, concrete, stone, and wood. Within each material library there are classes of conditions, such as corrosion for metals, cracks for masonry materials, and infestation and damage for wood. Each condition may have up to five or six types. For example, “surface,” “pitted,” and “perforated” are used to describe corrosion of metal. Many of the definitions are drawn from published sources, such as ACI’s “Guide for Conducting a Visual Inspection of Concrete in Service” and Grimmer’s *Glossary*. As a reference, there are illustrated entries for each condition (Figs. 1 and 2).

Using the condition of “spall” as an example, it is clear that there are many different working definitions for this term. The working definition of “spall” for masonry materials that Vertical Access uses is “a piece of material dislodged from a masonry unit by exces-



Fig. 5.
Missing spall in
limestone.



Fig. 6.
Removed spall in granite.

sive, localized stress; may result from an impact or a localized accumulation of stress within the masonry." Within each library of conditions for masonry materials, spalls are further characterized as bonded, incipient, missing, missing with metal, removed, or removed with metal.

- *Bonded.* Piece of material dislodged from masonry that appears, based on visual inspection and on sounding with a mallet where possible, to still be attached to substrate, typically by means of mortar or adhesive (Fig. 3).
- *Incipient.* Partially formed spall that appears to be well attached (Fig. 4).
- *Missing.* The location of a spall that is no longer in situ at the time of investigation; no steel or other metal evident (Fig. 5).
- *Missing with metal.* Location of spall with steel, iron, or other metal evident within depression left by missing spall.
- *Removed.* Location of spall taken from the building at the time of investigation (Fig. 6).
- *Removed with metal.* Location of spall taken from the building at the time of investigation; steel, iron, or other metal evident within depression left by removed spall.

These terms provide a snapshot of the existing conditions of the material at the time of survey. They are relatively objective, focusing more on effect than cause. The terms are hierarchical, starting with the general term "spall," which is then divided into specific types of spalls. Depending on the purpose of the survey, it may be sufficient to document the general class of condition without identifying specific types.

For comparison, listed below are definitions of "spall" or "spalling" from some other glossaries:

- Marble Institute: "a chip or splinter separated from the main mass of a stone." This is very simple, de-

scriptive definition, but the choice of words (chip and splinter) implies a small area relative to the unit and leaves open the question of what to call larger areas of loss (Fig. 7).

- ASTM *Standard Terminology Relating to Dimension Stone*: "fragments or chips from a piece of dimension stone."
- Brick Industry Association: "a small fragment removed from the face of a masonry unit by a blow or by action of the elements." This definition includes an explicit description of cause.
- American Concrete Institute: "a fragment, usually in the shape of a flake, detached from a concrete member by a blow, by the action of weather, by pressure, by fire, or by expansion within the larger mass." Spalls are further divided into joint spalls (spalls adjacent to joints), small spalls (less than 0.8 inches in depth and 6 inches in any dimension), and large spalls (greater than 0.8 inches in depth and 6 inches in the greatest dimension).
- *Preservation Brief No. 7*: "the partial loss of the masonry material itself, is, like crazing, caused by water and is usually a result not only of airborne water but more commonly of water trapped within the masonry system itself." It focuses even more on the cause of the condition.
- ICOMOS International Scientific Committee for Stone glossary: Spalling is a type of contour scaling found in flat dimension stone "in which the interface with the sound part of the stone is parallel to the stone surface." Loss of stone sections having greater depth would be called "bursting" or "chipping" (Fig. 8). It also focuses on the process of deterioration.

These examples illustrate the variation in definitions for one type of condition. Some descriptions of spalls provide information, whether stated or implied, on size or extent. Other definitions are more general. Without an agreed-upon definition, two people looking at the same condition might use different terms to describe the same fault. Even using predefined terms in the survey, it is important that the entire project team understands the definitions of the terms. Photographs can be helpful to visualize and better understand the definitions.

Another difference between definitions in the example of "spall" and "spalling" is the intent of the glossary. In some cases, the definition of a term is derived from the process of deterioration, such as the descriptions of spalling found in the NPS *Preservation Brief* and the ICOMOS ISCS glossary. Other terms, especially those from trade-organization glossaries, are more objective descriptions of the observable conditions without assumptions about the cause or process.

Although it is necessary to understand the causes of deterioration, it is important not to prematurely assign causes to observed conditions. The conditions survey is the first step in the evaluation of the material

defects and should be as objective as possible. The causes of the conditions documented during the survey are typically evaluated as part of the next step in the conservation process, the conditions assessment.

Conclusion

A conditions glossary is a tool used during the documentation phase of a project, which is the first step in a multiphase process. The terms used in the glossary and survey should be objective descriptions of the conditions. The documentation phase might also include review of archival material on as-built construction and alterations, maintenance records, and previous repair campaigns; analysis of fault patterns using the complete set of survey data; and investigative probes or nondestructive testing. This holistic approach during the documentation phase will help to determine the causes of the deterioration observed in the conditions survey so that appropriate treatments can be developed from the conditions assessment.

Conditions glossaries help preservationists understand materials by focusing on their observable and current state. The published glossaries described in this *Practice Point* are valuable tools for documenting concrete, stone, and other masonry materials. They were developed for a specific purpose, however, and so they may not completely serve the needs of every project.

There are likely many glossaries developed for specific projects or by preservationists for their in-house use. Sometimes the glossaries are used in the field as a reference, but more often they are internalized or used as a general guide. It is important to know about these resources to understand the origin of these terms. Whether using a published glossary or a glossary developed for a project, all members of the project team should understand the terms and their definitions.

Hierarchical glossaries tend to be more dynamic than simple alphabetized glossaries. They typically provide a greater range of terms for measuring, describing, and documenting existing conditions. Depending on the scope of the survey and detail required, it is possible to use more general condition terms or a subset of terms rather than the full list of conditions.

It is important to keep in mind the limitations of conditions glossaries. A working glossary can be developed to cover many defects, although there will always be outlier conditions that are not included. It is necessary to recognize these outliers and document them in an understandable way. Another limitation is that conditions glossaries are often material-based. By focusing on specific materials, defects related to building systems may be overlooked. It is important to be mindful to look at the big picture, in addition to the detailed description of individual faults. Although the intent of most conditions glossaries is to develop a reference



Fig. 7. Chipping at edge of marble unit, which meets the Marble Institute's definition of "spall."



Fig. 8. Spall in sandstone unit, similar to the photograph in the ICS Illustrated Glossary showing "bursting."

for the objective documentation of existing conditions, judgment derived from experience is useful in applying the information.

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Notes

1. For more information, see the Condition Glossary Reference List.
2. Getty Conservation Institute and the Israeli Antiquities Authority, *Mosaics In Situ Project: Illustrated Glossary* (Los Angeles: Getty Conservation Institute, 2003).
3. ICOMOS-ISCS, *Illustrated Glossary on Stone Deterioration Patterns* (Paris: ICOMOS, 2008).
4. Ibid.

Condition Glossary Reference List

Trade Organizations

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