

## PRINCIPLES FOR THE CONSERVATION OF WOODEN BUILT HERITAGE

*Adopted by ICOMOS at the 19<sup>th</sup> General Assembly in Delhi, India, December 2017.*

### PREAMBLE

These Principles have been written with the objective of updating the “Principles for the Preservation of Historic Timber Structures” adopted by ICOMOS at the 12th General Assembly in Mexico, October 1999. The updating process began in Guadalajara, Mexico (2012), Himeji, Japan (2013) and continued in Falun, Sweden (2016).

This document seeks to apply the general principles of the Venice Charter (1964), the Declaration of Amsterdam (1975), the Burra Charter (1979), the Nara Document on Authenticity (1994) and related UNESCO and ICOMOS doctrines concerning the protection and conservation of the wooden built heritage.

The purpose of this document is to define the basic principles and practices applicable in the widest variety of cases internationally for the protection and conservation of the wooden built heritage with respect to its cultural significance.

The words “wooden built heritage” refer here to all types of wooden buildings and other wooden structures that have cultural significance or are parts of historic places, and includes temporary, movable and evolving structures.

The word “values” in this document refers to aesthetic, anthropological, archaeological, cultural, historical, scientific and technological heritage values. These Principles apply to wooden architecture and structures with historic value. Not all buildings are made entirely of wood and due regard should be paid to the interaction of wood with other materials in the construction.

The Principles:

- recognize and respect the importance of the wooden built heritage, its structural systems and details from all periods as part of the cultural heritage of the world;
- take into account and respect the great diversity of the wooden built heritage, and any associated intangible heritage;
- recognize that wooden heritage provides evidence of the skills of craftworkers and builders and their traditional, cultural and ancestral knowledge;
- understand the continuous evolution of cultural values over time and the need to periodically review how they are identified and how authenticity is determined in order to accommodate changing perceptions and attitudes;
- respect different local traditions, building practices and conservation approaches, taking into account the great variety of methodologies and techniques that could be used in conservation;
- take into account and respect the various historically used species and qualities of wood;
- recognize that wood constructions provide a valuable record of chronological data concerning the whole building or structure;

- take into account the excellent behaviour of wood structures in withstanding seismic forces;
- recognize the vulnerability of structures made wholly or partially of wood in varying environmental and climatic conditions, caused by (among other things) temperature and humidity fluctuations, light, fungal and insect attacks, wear and tear, fire, earthquakes or other natural disasters, and destructive actions by humans;
- recognize the increasing loss of historic wooden structures due to vulnerability, misuse, loss of skills and knowledge of traditional design and construction technology, and the lack of understanding of the spiritual and historic needs of living communities;
- recognize the relevance of community participation in protection of the wooden heritage, its relation with social and environmental transformations, and its role in sustainable development.

## INSPECTION, SURVEY AND RESEARCH

1. The condition of the structure and its components, including previous works, should be carefully recorded before considering any action.

2. A thorough and accurate diagnosis should precede any intervention. This should be accompanied by an understanding and analysis of the construction and structural system, of its condition and the causes of any decay, damage or structural failure as well as mistakes in conception, sizing or assembly. The diagnosis must be based on documentary evidence, physical inspection and analysis and, if necessary, measurements of physical conditions using non-destructive testing (NDT), and if necessary on laboratory testing. This does not preclude carrying out minor interventions and emergency measures where these are necessary.

3. This inspection may not be sufficient to assess the condition of the structure adequately where it is concealed by other elements of the fabric. Where the significance of the covering allows, consideration may be given to its local temporary removal to facilitate the investigation, but only after full recording has been carried out.

4. “Invisible” (hidden) marks on old wooden parts must also be recorded. “Invisible” marks refers to features such as scribe marks, level and other marks used by carpenters in setting out the work (or in subsequent works or repairs) and which were not intended to be visible features of the structure.

## ANALYSIS AND EVALUATION

5. The primary aim of conservation is to maintain the authenticity of the historic fabric. This includes its configuration, materials, assembly, integrity, architectural and cultural heritage values, respecting changes through history. To do so one should retain as far as possible all its character-defining features.

Character-defining features may comprise one or more of the following:

- a the overall structural system;
- b non-structural elements such as facades, partitions, stairs;
- c surface features;
- d decorative treatment of the carpentry;
- e traditions and techniques;
- f the materials of construction, including their quality (or grade) and particular characteristics.

6. The value of these character-defining features must be determined in order to formulate any intervention plan.

## INTERVENTIONS

7. The first stage in the process of intervention should be to devise a general strategy for the conservation of the building. This needs to be discussed and agreed by all parties involved.
8. The intervention strategy must take into account the prevailing cultural values.
9. The original function of a structure should be maintained or restored except in cases when the intervention would be too extensive and prejudicial to the authenticity of the structure.
10. Interventions may take the form of:
  - a simple repairs using either traditional carpentry techniques or compatible modern fasteners;
  - b the strengthening of the structure using traditional or compatible materials and techniques;
  - c the introduction of a supplementary structure that will relieve the present structure of load.

The choice of which intervention to use should be determined by selecting that which best protects the structure's cultural significance.

11. Interventions should preferably:
  - a be the minimum necessary to ensure the physical and structural stability and the long-term survival of the structure or site as well as its cultural significance;
  - b follow traditional practices;
  - c be reversible, if technically possible;
  - d not prejudice or impede future conservation work should this become necessary;
  - e not hinder the possibility of later access to evidence exposed and incorporated in the construction;
  - f take environmental conditions into account.

12. Interventions should follow the criteria of the minimal intervention capable of ensuring the survival of the construction, saving as much as possible of its authenticity and integrity, and allowing it to continue to perform its function safely. However, that does not preclude the possible partial or even total dismantling of the structure if:

- a repairs carried out *in situ* and on original elements would require an unacceptable degree of intervention;
- b the distortion of the structure is such that it is not possible to restore its proper structural behaviour;
- c inappropriate additional work would be required to maintain it in its deformed state.

Decisions regarding the appropriateness of any dismantling should be considered within each cultural context, and should be aimed at best protecting the authenticity of the building.

In addition, decisions should always consider and evaluate the potential for irreversible damage to the wood, as well as to wood joints and connections (such as nails) during the dismantling intervention.

13. As much as possible of the existing members should be retained. Where replacement of a member or part of a member is necessary it should respect the character and significance of the structure. In cultures where the tradition exists, aged building parts from other structures might be used in the intervention.

14. Any replacement timber should preferably:

- a be of the same species as the original;
- b match the original in moisture content;
- c have similar characteristics of grain where it will be visible;
- d be worked using similar craft methods and tools as the original.

15. No attempt should be made to artificially age replacement timber. The new components should not aesthetically undermine the whole. Colouring the replaced members to match the current colour of the original may be permitted in specific cases when not doing so would unacceptably impair the aesthetic understanding and cultural significance of the structure.

16. New members or parts of members may be discreetly marked, so that they can be identified at a later date.

17. Consideration of specific values may be required to evaluate the cultural significance of some wooden built heritage, such as temporary and evolving buildings.

18. In the case of interventions, the historic structure should be considered as a whole. All materials, including structural members, in-fill panels, weather-boarding, roofs, floors, doors and windows, etc, should be given equal attention. In principle, as much as possible of the existing material, as well as earlier repair works, should be retained if they do not prejudice the stability of the structure. Conservation should also include surface finishes such as plaster, paint, coating, wall-paper, etc. The original materials, techniques and textures should be respected. If it is considered strictly necessary to renew or replace deteriorated surface finishes, the use of compatible materials and techniques is desirable.

19. When considering structural members it should be noted that:

- a if a structure has a satisfactory performance, and if the use, the actual conditions and loading regime are unchanged, the structure can be made adequately strong by simply repairing/stabilizing recent strength-reducing damage and failure;
- b if recent alterations have been made, or any proposed change of use would impose a more onerous loading, the potential load-bearing strength should be estimated by structural analysis before considering the introduction of any further reinforcement.

20. On no account should interventions be carried out simply to enable the structure to meet the requirements of modern building codes.

21. All interventions must be justified based upon sound structural principles and usage.

22. No attempt should be made to “correct” deflections that have occurred over time, and which have no structural significance, and present no difficulties of use, simply to address present-day aesthetic preferences.

## **PRESENT-DAY MATERIALS AND TECHNOLOGIES**

23. Present-day materials and technologies should be chosen and used with the greatest caution and only in cases where the durability and structural behaviour of the materials and construction techniques have been satisfactorily proven over a sufficiently long period of time.

24. Utilities should be installed with respect for the tangible and intangible significance of the structure or site.

25. Installations should be designed so as not to cause changes to significant environmental conditions, such as temperature and humidity.

26. The use of chemical preservatives should be carefully controlled and monitored and should be used only where there is an assured benefit, where public and environmental safety will not be affected and where there is the expectation of significant long-term improvement .

## **RECORDING AND DOCUMENTATION**

27. A record should be made of all materials used in interventions and treatments, in accordance with Article 16 of the Venice Charter and the ICOMOS Principles for the Recording of Monuments, Groups of Buildings and Sites. All relevant documentation, including characteristic samples of redundant materials or members removed from the structure, and information about relevant traditional skills and technologies, should be collected, catalogued, securely stored and made accessible as appropriate. The documentation should also include the specific reasons given for the choice of materials and methodologies in the conservation work.

28. All the above documentation must be retained both for future maintenance of the building and as an historical record.

## **MONITORING AND MAINTENANCE**

29. A coherent strategy of regular monitoring and day-to-day maintenance must be established in order to delay the need for larger interventions and ensure the continuing protection of wooden built heritage and its cultural significance.

30. Monitoring should be carried out both during and after any intervention to ascertain the effectiveness of the methods used and to ensure the long-term performance of the timber and any other materials used.

31. Records of any maintenance and monitoring should be kept as part of the documented history of the structure.

## **HISTORIC FOREST RESERVES**

32. Because wooden structures may be in a vulnerable state, but still part of a living heritage and contributing to society, the availability of suitable timbers is essential for their conservation. Therefore the crucial role that forest reserves play in the self-sustaining cycles of maintenance and repair of these wooden structures should be recognized.

33. Institutions responsible for the conservation of monuments and sites should encourage the protection of original woodland reserves and establish stores of seasoned timber appropriate for the conservation and repair of the wooden built heritage. This policy should foresee the need for large properly seasoned wooden elements in future repairs. However, such policies should not encourage the extensive substitution of authentic elements of historic structures, but rather constitute a reserve for repairs and minor replacements.

## EDUCATION AND TRAINING

34. It is essential to record, preserve and recover the traditional knowledge and skills used in constructing historic wooden architecture.

35. Educational programmes are an essential part of raising awareness of wooden heritage by encouraging recognition and understanding of values and cultural significance. These programmes are the foundation of a sustainable conservation and development policy. A comprehensive and sustainable strategy must involve local, regional, national and international levels and should include all relevant officials, professions, trades, the community and other interested parties.

36. Research programmes (particularly at regional level) to identify the distinctive characteristics, and social and anthropological aspects of the wooden built heritage, buildings and sites, are to be encouraged.

## GLOSSARY OF TERMS

**Construction (noun):** the manner in which materials are ordered, assembled, and united into a whole<sup>1</sup>; the act of constructing; the thing built. (See also “Structure” below).

**Cultural significance:** the aesthetic, historical, archaeological, anthropological, scientific, technological, social, spiritual or other intangible heritage values of a structure or site for past, present or future generations.

**Evolving buildings:** those that retain an active social role in present-day society closely associated with a traditional way of life, and in which the evolutionary process is still in progress. At the same time such structures exhibit significant material evidence of their evolution over time.

**Fabric:** all the physical material of the structure or site including components, fixtures, contents and objects.

**Intangible heritage:** the traditional processes associated with the creation and use of the wooden built heritage.

**Reinforcement:** actions carried out to increase the structural efficiency of an element, an ensemble of elements, or a structure.

**Repair:** every action aimed at recovering the structural efficiency, aesthetic integrity and/or completion of them, of a part or the whole of a wooden built heritage. This involves a painstaking intervention in the historic fabric, aiming at replacing only decayed parts and otherwise leaving the structure and the materials intact.

**Structure (noun):** a stable assembly of elements designed and constructed to function as a whole in supporting and transmitting applied loads safely to the ground<sup>2</sup>.

**Temporary structures:** those which are built, used and disassembled periodically as part of a culture’s or nation’s ceremonies or other activities and embody traditions, craftsmanship and traditional knowledge.

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<sup>1</sup> Ching, Francis D K (1995) *A Visual Dictionary of Architecture*. New York: John Wiley & Sons.

<sup>2</sup> Ibid.