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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

LY/T 2146-2024

Replacing LY/T 2146-2013

**Non-destructive testing method and defects classification for
wooden components of ancient buildings
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces LY/T 2146-2013 "Non-destructive testing methods and decay classification of wooden components of ancient buildings" and is compatible with LY/T 2146-Compared with 2013, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) Added the term and definition of "stress wave detection" (see 3.5);
- b) Changed "instruments and equipment" to "tools and instruments" (see Chapter 4, 5 of the 2013 edition);
- c) Changed "probe detector" to "nail probe detector" (see 4.3, 5.2 of the 2013 edition);
- d) Added "stress wave detector" and parameter requirements (see 4.5);

- e) Added "Wood Moisture Content Rapid Detector" and parameter requirements (see 4.7);
- f) "growth cone" was deleted (see 5.4 of the 2013 edition);
- g) Changed "Testing procedures" to "Testing methods and scope of application" (see Chapter 5, Chapter 6 of the 2013 edition);
- h) Added "stress wave detection method" and related application scope and detection process (see 5.4);
- i) Deleted "Growth cone detection" (see 6.2.2 of the 2013 version);
- j) Added the calculation of "stress wave detection defect rate" (see 6.3);
- k) Added quantitative indicators for describing the decay status of wood components (see Table 1, Table 1 of the 2013 edition);
- l) Added "wood component insect damage classification" and status description and quantitative indicators (see Table 2);
- m) Changed the description of the classification of wood defects by nail probe test (see Table 3, Table 2 of the 2013 edition);
- n) Changed the description of the resistance meter test classification of wood defects (see Table 4, Table 3 of the 2013 edition);
- o) Added "Stress wave detection classification of wood component defect levels" (see 7.5);
- p) Added "The defect classification of the same part or the same wood component is based on the comprehensive determination of all the above test results" (see 7.6).

1 Scope

This document specifies the testing methods and scope of application, result calculation and defect classification of wooden components for non-destructive testing of ancient building timber components.

This document is applicable to the defect detection and defect classification of wooden components of ancient buildings. This document can be used as a reference for defect detection of wooden components of modern buildings.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 14019-2009 Terminology for wood preservation GB/T 28990-2012 Code for non-destructive testing of internal decay and elastic modulus stress waves of wooden components of ancient buildings GB 50005-2017 Timber Structure Design Code

3 Terms and definitions

The terms and definitions defined in GB/T 14019-2009, GB/T 28990-2012 and GB 50005-2017 and the following terms and definitions apply this document.

wooden components

The wooden parts that can be divided into the most basic units in wooden structure buildings.

Non-destructive testing Without destroying the original characteristics, stress conditions and final use of the wood, the decay, defects and physical and mechanical properties of the wood are Detection.

Under the action of fixed force, a micro probe such as a nail is driven into the wood, and the degree of wood defects is judged according to the change of the needle penetration depth.

A non-destructive testing method.

Note: The test results are expressed as relative values, that is, the percentage change of the penetration depth of the defective wood relative to the penetration depth of the non-defective wood.

Resistance testing

The resistance meter's microprobe is inserted into the wood, and the density of the wood and the degree of internal decay and development are determined based on the resistance encountered by the probe as it moves forward.

A non-destructive detection method for defects such as cracks and scars.

Note: The test results are expressed as relative values, that is, the percentage change of the resistance value of defective wood relative to the resistance value of non-defective wood.