

The handing down of traditional skills and securing of materials for repairs

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1. Conservation of wooden buildings (how they differ from stone buildings)

- Wood and stone buildings are different not only in terms of material but also in the approach toward the conservation of architecture (cultural difference).
- Preservation of wooden buildings: Using inventive methods of composition and organization to give semi-permanent life to easily rotted building materials.

Measures to deal with moisture, which can cause deterioration.

Use of moisture-resistant wood

Deep eaves; a thick layer of earth applied under the roof tiles

Many openings in the building to encourage ventilation

Broadly categorized into two groups: the important sections (core portion) and the sections which provide covering for the core portion

(1) Cover sections: Roof, exterior finishing: Considered to be wear-and-tear items, to be replaced repeatedly

Heavy use of plant-based materials, which are renewable and are not depleted

(2) Important sections: Protected by the cover portion, they can be conserved over the long term.

Repairs required every 100 to 200 years

However, they are easy to dismantle, repair, and assemble – a feature of wood (advantage)

- The repeated repairs for conservation ensures that craftsmen's skills are handed down and expanded from master to apprentice.
- The conservation of wooden buildings should encompass more than consideration for the architecture. It should include a consideration for the underlying tradition and culture, such as

the mountains and forests which provide the resources, and the methods and processes by which the structures are repeatedly repaired and craftsmen are allowed to develop their skills.

Conservation of wooden buildings = Repeated repairs

Repairs to restore damage caused by earthquakes or typhoons should be considered as being in a category separate from repairs for the purpose of conservation outlined in (1) and (2) above.

2. The system for repairing cultural heritage and the process of repair

<The system for repair>

- (1) The owner of the cultural property: Orders the repair
- (2) Cultural heritage repair engineer (architect): Design and supervision
- (3) Repair contractor (construction company): Repair work
- (4) Government administration (national government, regional public entity): Administrative guidance for the above repair project

<The process of repair>

I. Prior to embarking on the repair work

- (1) Assessment of damage (by cultural heritage repair engineer): Investigation of pillar tilt, amount of subsidence, rotted areas, etc.
- (2) Review and decision-making on specific details for repair (by owner, cultural heritage repair engineer, and government administration e.g. Cultural Agency)

II. During dismantling of the building

- (1) Evaluation of the building (by cultural heritage repair engineer)

Implementation of studies (actual measurement, specifications, status of damage, evidence, literature, etc.)

Evaluation of the building based on the studies described above (features, cultural values, etc.)

- (2) Management and utilization plan (by owner)

Using the evaluation of the building in (1) above to lay out a plan for post-repair management and utilization

- (3) Formulation of improvement plan (restoration, etc.) for the post-repair building on the basis of (1) and (2) above

(By owner, cultural heritage repair engineer, and government administration e.g. Cultural Agency)

- (4) Submission of the improvement plan above to the Council for Cultural Affairs, an advisory body of the Cultural Agency, for deliberation

III. Assembly of the building

IV. Issuing of the Repair Work Report (by cultural heritage repair engineer and owner)

<The difference between repair of cultural heritage and repair of general architecture>

- Repair of cultural heritage

The design intent of the original building (Deciphering from the building itself)

+ Philosophy and approach to repair of cultural heritage (Recognition of the value of the relevant cultural heritage, Respect for the original materials and workmanship)

→ Repair

- General architecture

Design intent (Instruction from architect) → Construction

3. The handing down of traditional skills

Securing and developing cultural heritage repair engineers and technicians (craftsmen)

<Securing of work>

Work is what develops engineers and technicians (craftsmen). The securing of work is the most important task.

In Japan, cultural heritage repair projects are the only avenue for engineers and technicians (craftsmen) engaged in traditional wooden architecture to demonstrate their skills.

In order to secure and develop engineers and technicians, there is a need to increase traditional projects even in the field of general construction work.

<Training programs>

Training programs in Japan

Programs for cultural heritage repair engineers

- Basic training: 12 to 13 weeks over 2 years, sponsored by JACAM (Cultural Agency grant project)
- Professional development: Once a year, sponsored by JACAM (Cultural Agency grant project)
- Chief engineer training session: Once a year, sponsored by JACAM (Cultural Agency grant project)
- Executive engineer training session: Once a year, sponsored by JACAM (Cultural Agency grant project)
- Lacquer coloring training session: Sponsored by the Nikko Cultural Assets Association for the Preservation of Shrines and Temples
- Seminar for chief cultural heritage engineers: Regular course: Sponsored by Cultural Agency, 2 weeks, 2 years
- Seminar for chief cultural heritage engineers: Advanced course: Sponsored by Cultural Agency, 1 week, 1 year

Programs for technicians (craftsmen)

- Carpenter training session: Sponsored by JACAM (Cultural Agency grant project)
- Training session for *hiwadabuki* (cypress bark shingle roofing), *kokerabuki* (cypress shingle roofing), and *kayabuki* (thatched roofing): Sponsored by the National Association for the Conservation of Roofing Techniques for Temples and Shrines (Cultural Agency grant project)
- Training session for *kawarabuki* (tile roofing): Sponsored by the Japan Association for the Preservation of Techniques for Traditional Tiles.
- Other

<Selection of Selected Conservation Techniques and licensing systems for individual and group holders of the Techniques>

Enacted to preserve techniques for the conservation of cultural properties in the 1975 amendment of the Law for the Protection of Cultural Properties.

The Cultural Agency provides grants to individual and group holders of the Techniques to engage in activities for the preservation of the techniques.

4. Securing of materials for repair

<Materials for the repair of Japanese cultural heritage buildings>

Primarily plant-based materials

- Structural material: Timber – *hinoki* (Japanese cypress), *sugi* (Japanese cedar), *matsu* (pine), *keyaki* (zelkova), other
- Roofing material: Tile clay, *hinoki* (Japanese cypress) bark, shingles, thatch, slate, copper sheets, iron sheets, other
- Wall material: Plaster, bamboo, *waranawa* (straw rope), timber
- Finish: Red oxide, patina, ultramarine, whitewash, glue, other
- Metal fittings: Nails, copper, iron

<Status of supply and demand of repair materials in Japan>

- Timber: Difficult to obtain some species, such as pine. Prices are becoming increasingly expensive.
- *Hinoki* (Japanese cypress) bark: Procurement was extremely difficult until recently, but there are signs of improvement, such as the provision of materials from state forests for use in cultural heritage.
- Glue: Decline in quality is a problem
- Environmental issues

<Challenges for the stable supply of repair materials, now and in the future>

- Ascertaining the status of supply and demand of materials
- Securing sources of supply
- Awareness campaign to educate the general public on the importance of securing human resources and materials for the preservation of cultural heritage
- Use of traditional materials in general architecture