

ACCU NARA Group Training Program 2009

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# Conservation and Repair Projects: Their Systems and Project Planning

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The Japanese Association for Conservation of  
Architectural Monuments

# Outline of Lecture

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1. Japanese systems for the conservation of cultural properties
2. Features of architectural monuments, and their conservation and repair
3. Conservation and repair projects: Their systems and project planning
4. The preservation and handing down of conservation techniques for cultural properties
5. Conservation and repair project of the important cultural property Seki family residence (reference)

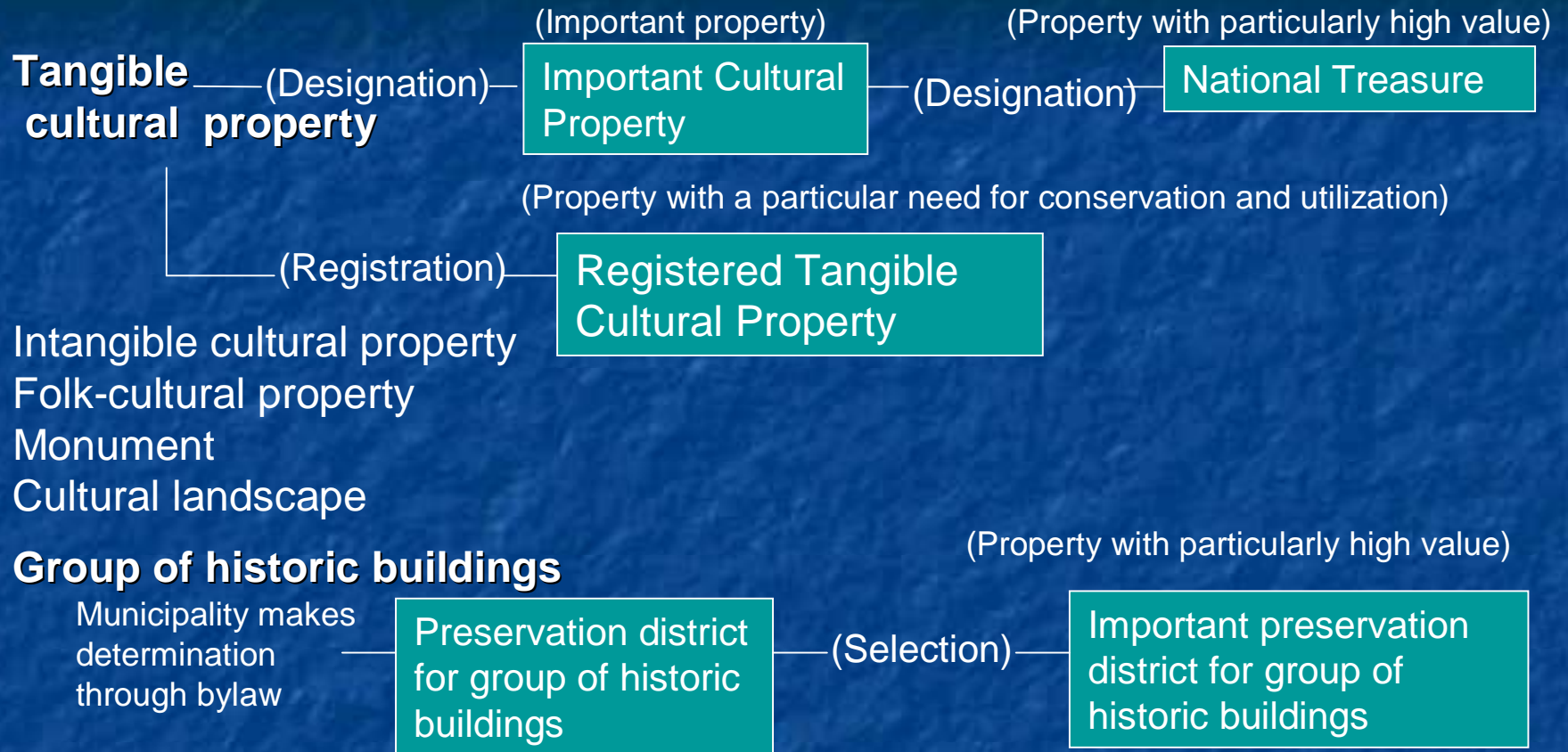
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# 1. Japanese systems for the conservation of cultural properties

# Japanese systems for the conservation of cultural properties (Law for the Protection of Cultural Properties)



## (Conservation techniques for cultural properties)

(Articles which require measures for conservation)

(Selection) **Selected conservation technique**

(Individuals or organizations possessing selected conservation techniques)

(Authorization) **Individual or organization in possession of selected conservation technique**

# Designation criteria for national treasures and important cultural properties (architectural structures)

## ■ Important cultural property

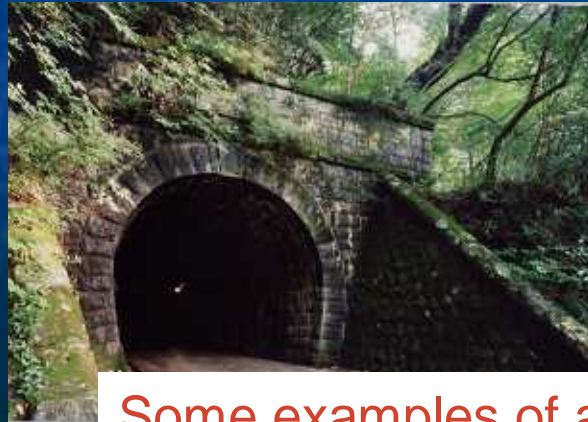
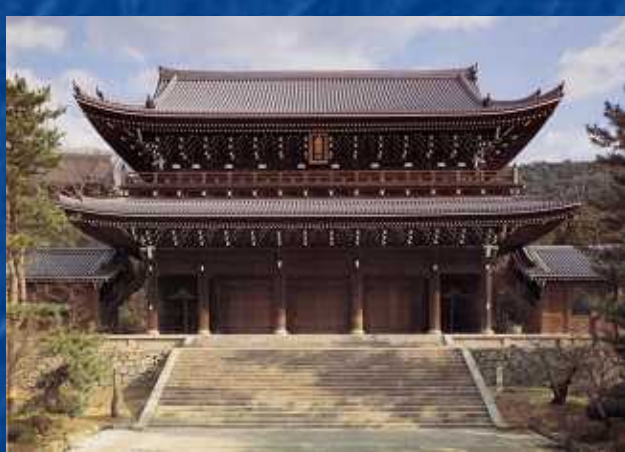
An architectural structure, work of civic engineering, or other manufactured article which falls into one of the following categories and which typifies the period or type.

- (1) It is a work of outstanding design and/or engineering
- (2) It is a work of outstanding technical achievement
- (3) It is of high historical value
- (4) It is of high academic value
- (5) It is remarkable in terms of its school or its regional characteristics

## ■ National treasure

An important cultural property which is outstanding in the extreme and which has particularly deep significance in cultural history.





Some examples of architectural monuments

# Registered tangible cultural properties

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- In **June 1995**, a partial amendment to the Law for the Protection of Cultural Properties was adopted.
- The system is one in which the national government and local public organizations **complement the system for designation** of cultural properties.
- The system is liberal which is based on **a notification and application process combined with guidance, advice, and recommendations.**



**The system is to promote conservation and utilization.**

## Registration criteria for registered tangible cultural properties

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- An architectural structure, work of civic engineering, or other manufactured article which was built more than 50 years ago and which falls into one of the following categories
  - (1) It contributes to the national historic landscape.
  - (2) It is a model of formative art.
  - (3) It is not readily reproducible.



Takahashi family residence main building (Shiogama City)



Porcelain torii arch at Miyajidake Hachiman Shinto Shrine



Hammerhead crane at Mitsubishi Heavy Industries Inc. Nagasaki Shipyard



# System for the conservation of groups of historic buildings

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- A system for the conservation of historic settlements and townscapes, adopted with the 1975 amendment of the Law for the Protection of Cultural Properties.
- **Groups of historic buildings**

Groups of traditional buildings which create a historic scene in unity with the surrounding environment and which are high in value.
- **Preservation Districts for Groups of Historic Buildings**

Districts designated by the municipality for the purpose of preserving groups of historic buildings and the environment with which they are integrated and which forms their value.
- **Important Preservation Districts for Groups of Historic Buildings**

On the basis of application made by the municipality, the national government selects as “Important Preservation Districts for Groups of Historic Buildings,” those districts which are highly valuable for the nation.

## Selection criteria for Important Preservation Districts for Groups of Historic Buildings

- A Preservation District for Groups of Historic Buildings which falls into one of the following categories:
  - (1) The group of historic buildings is of outstanding design overall.
  - (2) The group of historic buildings, and the grounds on which it is situated, favorably retain their original state.
  - (3) The group of historic buildings, and its surrounding environment, markedly demonstrate regional characteristics.



Seien-machi (salt-making town)  
Takehara-chiku, Takehara City



Buke-machi (Samurai town)  
Chiran, Chiran-cho



Sanson-shuraku (mountain village)  
Hagi-cho, Shirakawa Village

# Preservation Districts for Groups of Traditional Buildings

Farming villages, post towns, temple towns, castle towns, etc. which create a historic scene in unity with the surrounding environment.

Traditional building

Building + manufactured articles

Environmental objects  
(gardens, trees, lakes,  
swamps, etc.)

“Group of traditional buildings”



Kitano, Yamamoto-dori, Kobe City



Kitano, Yamamoto-dori, Kobe City

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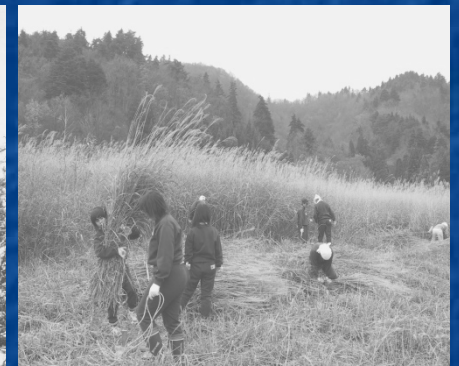
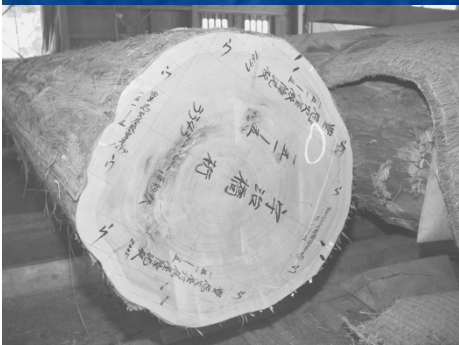
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## 2. Features of architectural monuments, and their conservation and repair

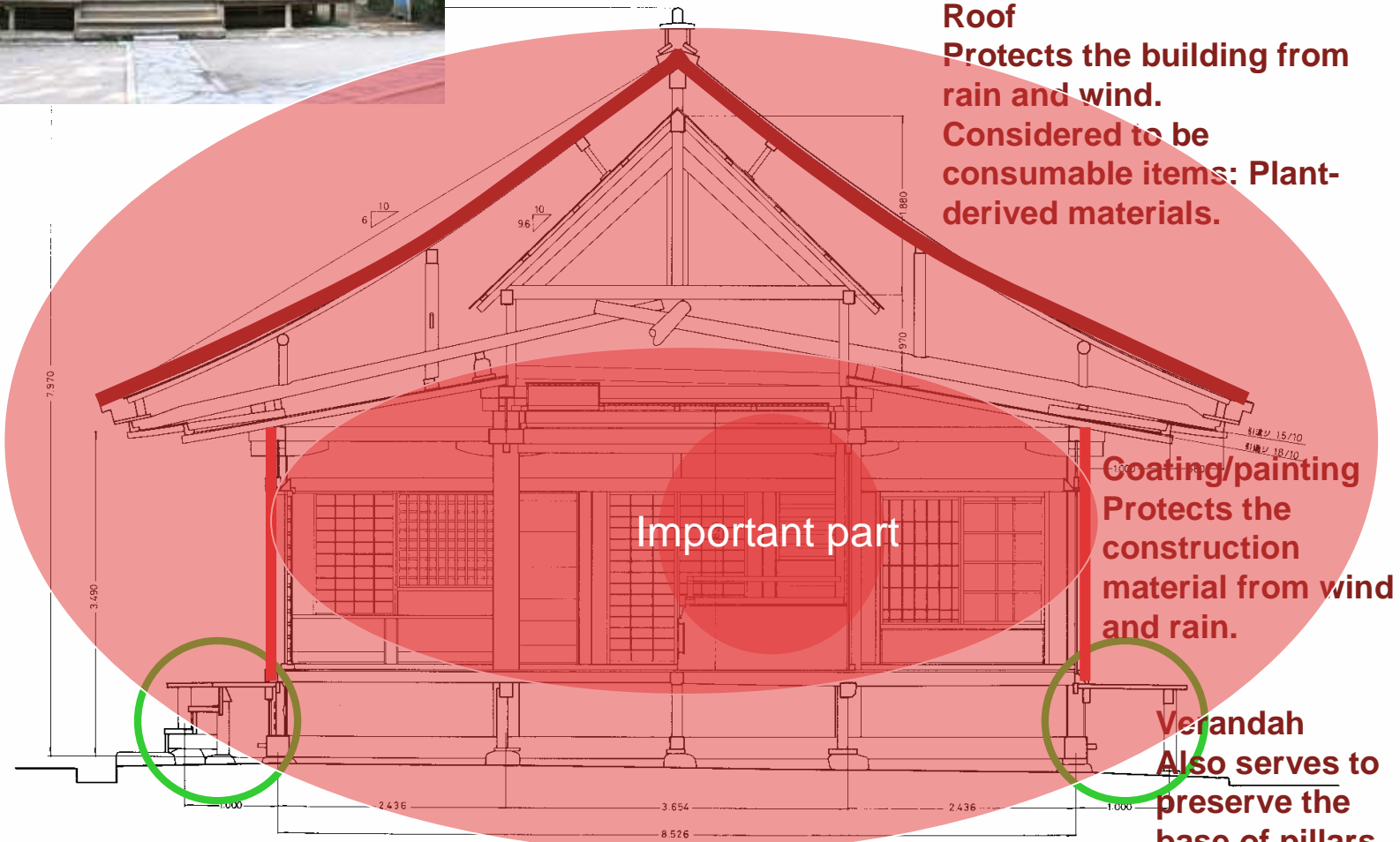
# Features of architectural monuments in Japan

Their main structure is made of wood  
The roofs are made of plant-derived materials



# Preservation and repair in appropriate intervals

# Traditional techniques for building preservation (approach)



# Types and approaches to conservation and repair projects

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## 1. Maintenance and repair

Repair for the purpose of maintaining the building's function in a healthy state.

**Reroofing; repainting; partial repairs (20 – 60 year intervals)**

## 2. Radical repair

Repair in which the building is taken apart and the components repaired or reinforced for the purpose of restoring the building to a healthy state.

Employed when there is uneven subsidence of pillars, loosening or warping of wooden frameworks, or rot or insect damage to central components such as pillars, beams, purlins, penetrating tie beams, etc.

### **Dismantling and repair**

Repair in which everything from the roof to the central portions is removed, repaired, and reassembled.

### **Partial dismantling and repair**

Repair in which parts of the central portions are left as is, without being dismantled, while the rest is subjected to repair.

**(100 – 300 year intervals)**

## 3. Other

**Dismantling and reconstruction in a different location; restoration after a disaster; investigative work**

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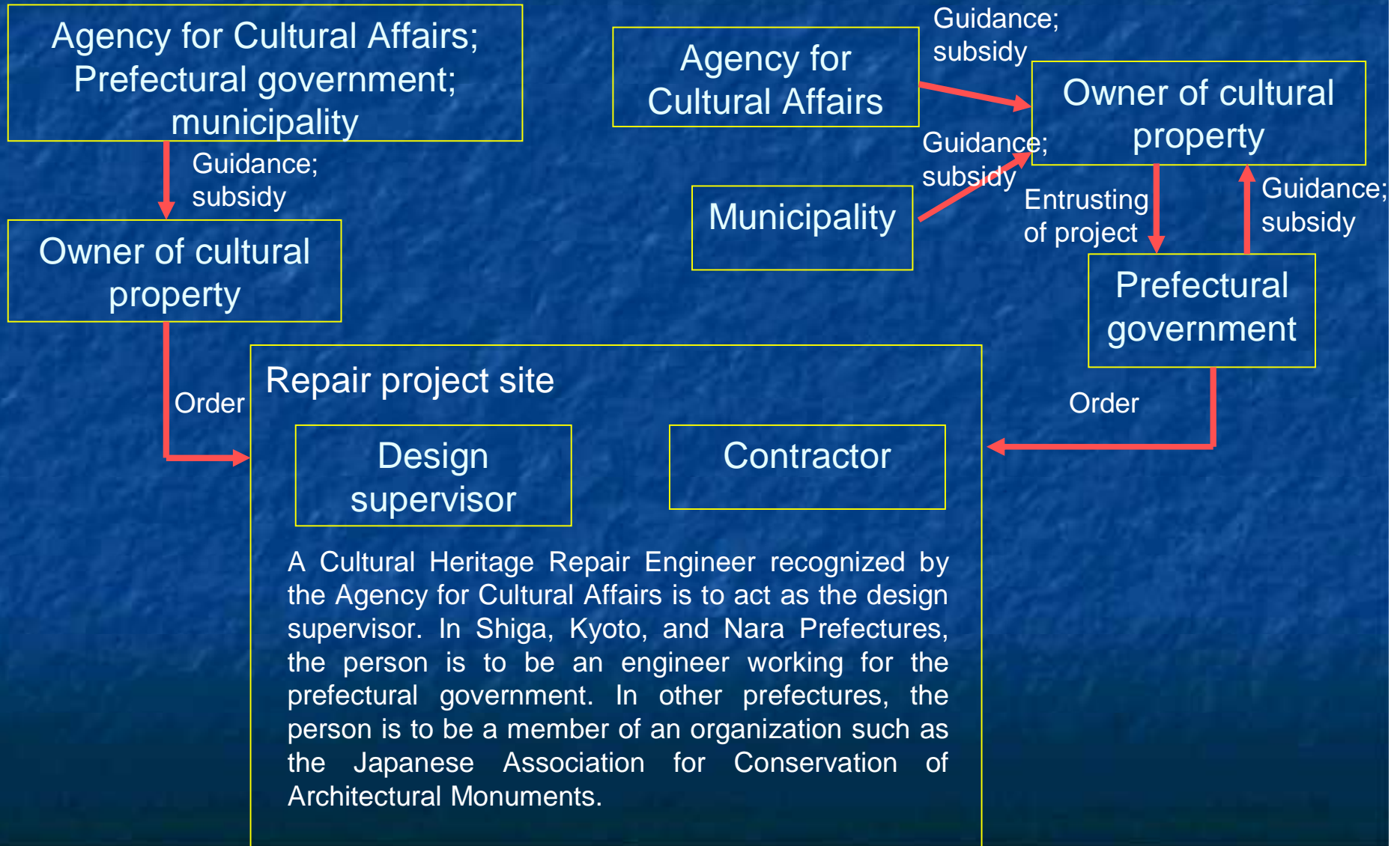
### 3. Conservation and repair projects: Their systems and project planning



# System for conservation and repair projects

Prefectures other than those shown on the right

Shiga, Kyoto, and Nara prefectures



# Appointment of repair engineer

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- Conservation and repair projects for important cultural properties are usually carried out with a State subsidy. In such cases, it is stipulated that **a chief engineer** (senior; ordinary) approved in advance by the Cultural Agency must be used.

**Senior chief engineer:** Must have at least 12 years of actual experience in the repair of important cultural properties after graduating from university, and have taken the Advanced Level Seminar sponsored by the Agency for Cultural Affairs.

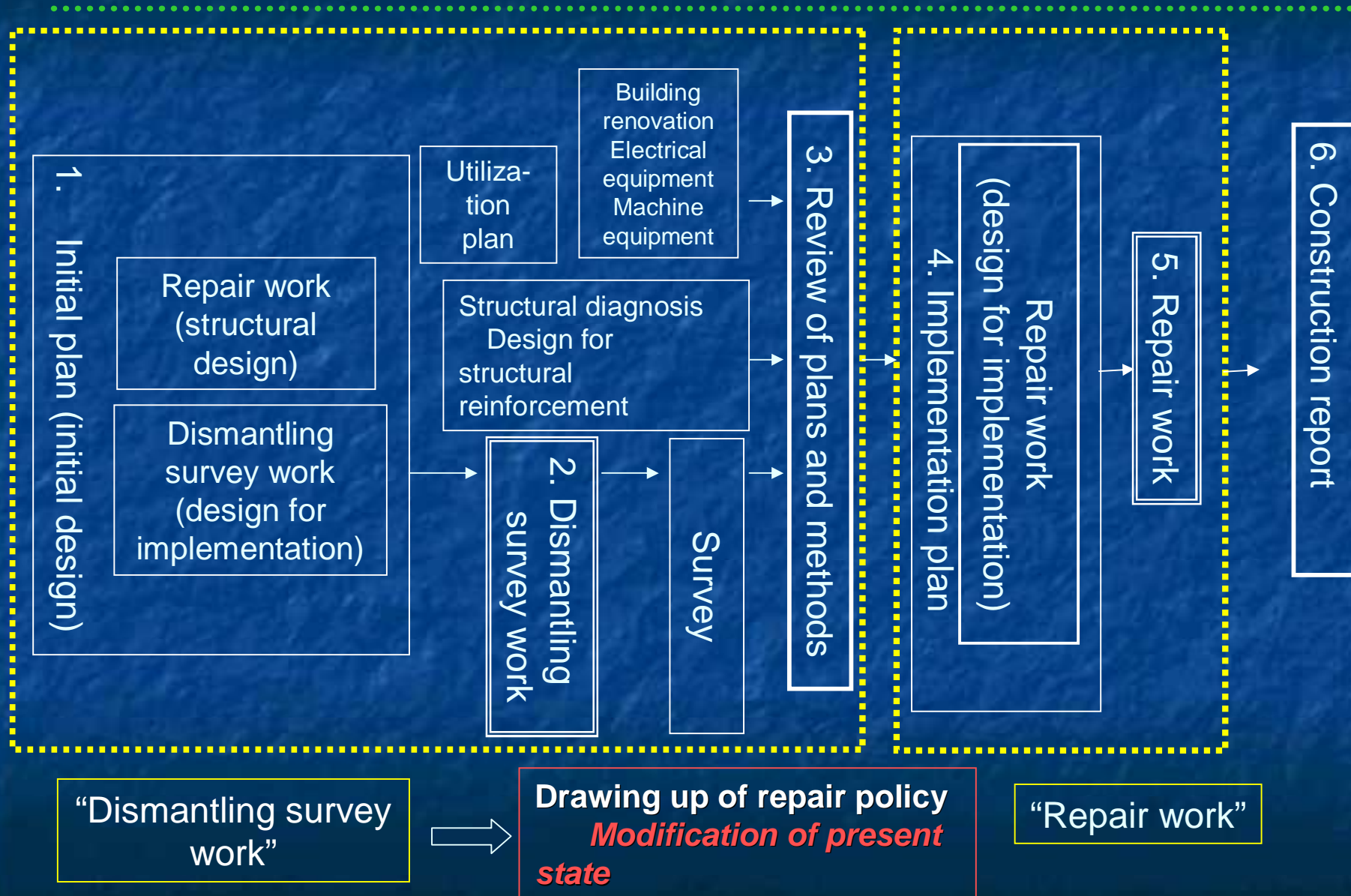
**Ordinary chief engineer:** Must have at least 6 years of actual experience in the repair of important cultural properties after graduating from university, and have taken the Regular Level Seminar sponsored by the Agency for Cultural Affairs.

# Role of the repair engineer

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- In the case of radical repair projects, as a general rule an administration office is to be set up at the repair site and the chief engineer etc. is to be permanently stationed there. The supervision, design, and construction work for the repair project is to be carried out under the guidance of national or prefectural level administration for the conservation of cultural properties, and in continuous liaison with the owner of the cultural property.
- Construction supervisor (part time): General supervisor of the site
- Construction chief (chief engineer: full time): Person in charge of site supervision
- Assistant chief (engineer: full time): Assists the chief and performs surveys, prepares conservation drawings, etc.

# Flow of conservation and repair projects for architectural monuments





# Principles of conservation and repair

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## 1. Stringent review of restoration plan

Restoration (modification of present state) is determined upon deliberation of academic surveys by experts.

In the past, buildings were sometimes restored to the appearance they originally had at the time of construction. However, in recent years, the restoration plan is considered with emphasis on the building's historical value and utilization plan.

## 2. Reuse of components

Old components are reused as much as possible.

Preserve the material's historical value and vast amounts of information (make efforts to preserve the components which were replaced also).

## 3. Survey and re-creation of construction methods and techniques

The original specifications and techniques used for the building are verified during the dismantling operations, and the building is assembled using methods and techniques that are as close as possible to the original.

## 4. Keeping of detailed records

The survey results, restoration plan, and repair techniques are described in detail and objectified in the Repair Work Report.

# List of surveys

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**Actual measurement survey:** Actual measurements are made of the building dimensions  
→ Drawings are prepared.

**Damage survey:** The types and extent of damage is surveyed → Identification of the cause of damage.

**Trace survey:** A survey of the traces remaining in the components.

**Specifications survey:** Survey and recording of the specifications of each component

**Chronological survey:** Survey and recording of the chronological age of each component

**Photography:** Photography of the building components and/or the building in its entirety

**Creation of printed sheets and rubbed copies:** Copying of traces of processing of curved components and on component surfaces

**Chemical analysis of pigments used for coloring etc.:** Identification of pigments used

**Survey of colors using slanted lighting etc.:** Survey and recording of coloring and patterns

**Structural analysis of building:** Identification of structure → Drawing up of structural reinforcement proposals as needed

**Identification of species of wood materials:** Identification of *hinoki* (Japanese cypress), *sugi* (Japanese cedar), *matsu* (Japanese pine), etc.

**Dendrochronological survey of wood materials:** Identification of the year of construction or repair of the building

**Literature survey:** Research of the history etc. of the building

**Survey of similar examples:** Survey of similar types of buildings to use as reference

**Excavation:** Survey of underground ruins, antecedent buildings, etc.

**Other**

# Preparation of the conservation drawing

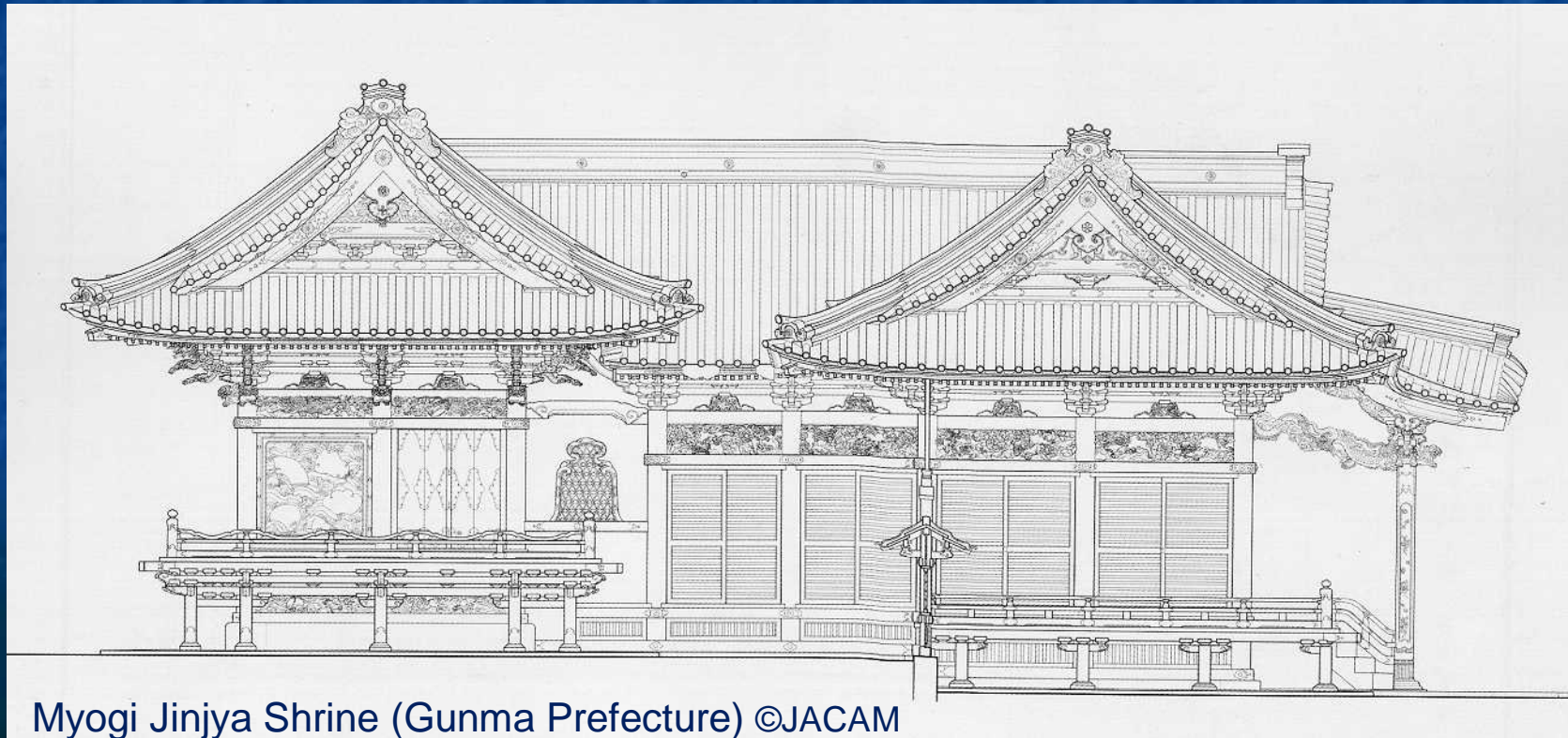
Type of paper: Kent paper (98.5 cm x 68.0 cm)

Specification: Inking

Details: Floor plan, front view, side view, cross section, worm's eye view, detailed view, other

Approximately 30,000 sheets prepared to date

Delivered to the Agency of Cultural Affairs. Stored and utilized by Nara National Research Institute for Cultural Properties.



Myogi Jinja Shrine (Gunma Prefecture) ©JACAM



# Publication of the repair work report

Reports are published for radical repair projects such as dismantling and repair. 300 copies are issued and distributed to organizations relating to cultural properties, research organizations, libraries, etc. Approximately 1,300 publications have been made to date.



# Examples of buildings whose value as cultural properties was enhanced by restoration and improvement through conservation and repair projects



Completion



Before repair

Rear side of Jigenji  
Temple storehouse  
(Yamanashi Prefecture)



Completion



Before repair

Seki family residence main  
building and drawing room  
(Kanagawa Prefecture)



Completion



Before repair

Hanjoji Temple main hall  
(Fukui Prefecture)

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4. The preservation and handing down of conservation techniques for cultural properties

# The preservation and handing down of conservation techniques for cultural properties

- The Minister of Education, Culture, Sports, Science and Technology selects those traditional techniques or skills which are essential for the conservation of cultural properties and which require measures for preservation, designates them as Selected Preservation Techniques, and certifies the individuals and organizations which hold such techniques.



Mr. Yasunosuke Morimoto, maker of *Kazari Kanagu* (decorative metal plates)



Mr. Akio Kobayashi, roof tile master (*Onishi*)

# Selected conservation techniques (individuals)

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## Main selected conservation techniques

- *Kikujutsu* (modern *Kiku*): Drafting with a carpenter's ruler
- Manufacture of roof tiles (*Onishi*)
- Harvesting of *Hinoki* (Japanese cypress) bark
- Plastering (*Shikkui*)
- Manufacture of fittings
- Manufacture of cast articles
- Manufacture of *Kinkarakami* (decorated leather-like paper)
- Building woodwork
- Roofing (*Hongawarabuki*)
- *Hiwadabuki*, *Kokerabuki* roofing
- Plastering (*Koshiki Kyokabe*)
- Metalwork
- Manufacture of *tatami*
- Slate roofing

# Selected conservation techniques (organizations)

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## Main certified conservation organizations

- Building repair: The Japanese Association for Conservation of Architectural Monuments
- Building woodworking: The Japanese Association for Conservation of Architectural Monuments
- Coloring of building: Nikko Cultural Assets Association for the Preservation of Shrines and Temples
- Roofing with roof tiles (*Hongawarabuki*): The Japanese Association for the Conservation of Traditional Roofing Techniques
- *Hiwadabuki*, *Kokerabuki*, *Kayabuki* roofing (roofing with *hinoki* bark, shingles, and thatch): National Association for the Conservation of Roofing Methods for Temples and Shrines
- Plastering (Japanese-style walls): National Association for the Preservation of Cultural Heritage Wall Covering Techniques
- Manufacture of fittings: National Association for the Preservation of Traditional Fittings Techniques

# Development of cultural heritage repair engineers

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Training program for mid-level engineers  
Actual measurement survey at a tradesman's house in Kyoto



Training program for chief engineers  
Restoration survey at a repair site for a private house

# Development of building coloring technicians

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Hands-on session in the coloring of *Hashira Kinran-maki* (decorative metal fittings for the tops of pillars)



Hands-on session in the coloring of *Karajishi* (Chinese lion) and *Karahana Monyo* (Chinese floral pattern)



# Development of cultural heritage woodworking engineers

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Hands-on session in applying ink to wood materials



Hands-on session in the processing of wood materials



Instruction in practical techniques during the training program

# Development of technicians for *Hinoki* bark harvesting (*Hiwada saishu*), *hinoki* bark roofing (*Hiwadabuki*), and shingle roofing (*Kokerabuki*)



Harvesting of *hinoki* bark  
Bundling and cutting  
of *hinoki* bark



Hands-on training of  
*Hiwadabuki* (*hinoki*  
bark roofing)  
Harvested *hinoki* bark



# Cultural property conservation projects help to develop technicians



*Hinoki bark roofing (Hiwadabuki)* Thatch roofing (Kayabuki)



Carpentry



Plastering



Coloring

# Conclusion

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- Repeated repairs for the conservation of architectural monuments ensures that craftsmen's skills are handed down and improved upon from master to apprentice (development of human resources).
- By recording and publicizing the results of such repairs in the form of conservation and repair work reports, it is possible to provide information that will be useful for future repairs of the same building as well as conservation of similar buildings.