

# I. Structure for Conservation and Repair of Heritage Buildings in Japan



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Conservation Repair Engineer

# Conservation of Historic Buildings

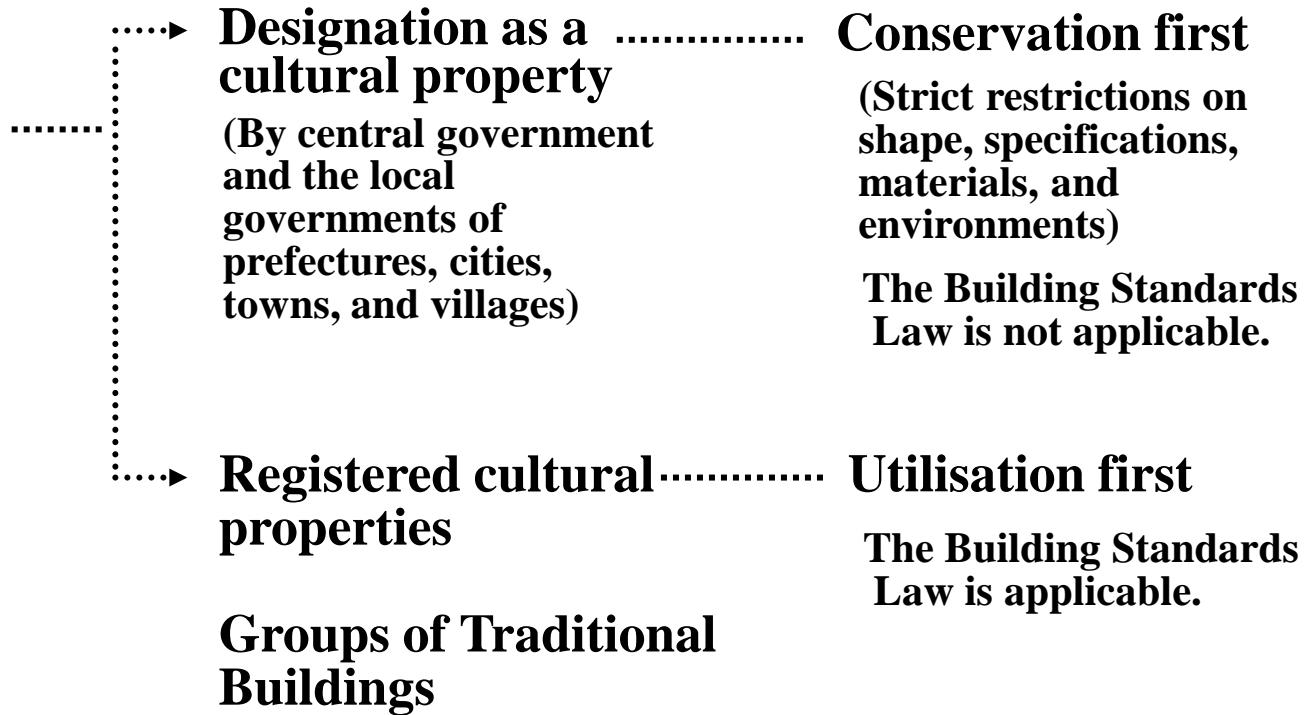
**Historic buildings**



**Evaluation of buildings**



**Conservation measures**



# Types of Cultural Properties

## **1 National Treasure/ Important Cultural Properties**

Designation under the Law for the Protection of Cultural Properties

## **2 Cultural properties designated by local governments**

Designation under cultural property protection ordinances of the local governments of prefectures, cities, towns, and villages.

## **3 Registered cultural properties**

Registration is conducted under the Law for the Protection of Cultural Properties

## **4 Preservation Districts for Group of Traditional Buildings**

-These preservation districts are decided by the local governments of cities, towns and villages under the Law for the Protection of Cultural Properties.

-“Important Preservation Districts for Groups of Traditional Buildings” is designated by the central government.

# Main Hall and Five-storied Pagoda of Horyu-ji Temple (national treasure)



# Fortified Tower of Himeji Castle (national treasure)



# Breakdown of National Treasures and Important Cultural Properties (buildings)

National Treasures	262 (282) buildings
Important Cultural Properties	3972 (4892) buildings As of June, 2009 (As of June, 2017)

Prior to the Early Modern Period (in or before 1867)	Shinto Shrines	31.5 %
	Buddhist Temples	30.4 %
	Private Domestic Buildings	20.4 %
	Others	17.7 %
Modern Period (since 1868)	Residences	40.0 %
	Heritage of Industrial Modernization	30.6 %
	Others	29.4 %

(As of June, 2009)

# Era Breakdown of Historical Buildings Constructed Prior to the Early Modern Period

Category	Nara Era in or before <b>793</b>	Heian Era in or before <b>1184</b>	Kamakura Era in or before <b>1332</b>	Muromachi Era in or before <b>1572</b>	Momoyama Era in or before <b>1614</b>	Edo Era in or before <b>1867</b>
Buddhist temples	28	35	147	346	125	426
Shinto shrines		4	46	306	155	640
Private domestic buildings				3	1	651
Others	1	12	122	61	151	298
Total	29	51	315	716	432	2,015

An aerial photograph showing the aftermath of an earthquake. A large, multi-story building has been completely destroyed, leaving a massive pile of rubble, twisted metal, and debris. The surrounding area includes a busy street with cars and other buildings. The text "Destruction of Building Earthquake damage" is overlaid on the image.

# Destruction of Building Earthquake damage

A small inset photograph in the top right corner shows the building in its original, pre-earthquake state. It is a grand, multi-story structure with classical architectural features, including a prominent portico with columns and a decorative facade. The text "Former '15th Building of Foreign Settlement' (important cultural property)" is overlaid on the bottom right of this inset.

Former "15th Building of Foreign Settlement"  
(important cultural property)





## **Typhoon damage**



**Five-storied Pagoda of Muro-ji temple  
(national treasure)**

# Conservation and Repair for Important Cultural Properties

- (i) The owner of an important cultural property is to manage/maintain it.
- (ii) The manager is to repair the important cultural property.
- (iii) The national government may grant a subsidy for management/repair work for important cultural properties. The central government subsidy is limited to 50–80% of the total project cost. However, supplementary subsidies from local governments (prefecture, city, town and village) may be added to the central government subsidy.
- (iv) In order to obtain such subsidies, the undertaker of the project must employ repair engineers specified by the central government.

# Details of Conservation and Repair for Important Cultural Properties

- Radical Repair
  - (i) Dismantling Repair (to be conducted by dismantling every structural member of a building)
  - (ii) Semi-dismantling Repair (to be conducted without dismantling some parts of the framework of a building)
- Maintenance and Repair
  - (i) Rethatching (Repair of the roof only)
  - (ii) Repaint (Repair of painting only)
  - (iii) Partial repair (Repairs to be made partly only on parts of building as deemed necessary)

# **Subsidised Projects and Repair Engineers**

**1897** Subsidised projects initiated under “Ancient Shrines and Temples Preservation Law”.



**Conservation architects are employed for each project.**

- **Social status of the engineers became stable.**
- **Number of projects increased.**

**1957** Shiga and Kyoto prefectures employ conservation repair engineers as public servants.

**1961** Nara Prefecture employs the repair engineers as regular staff members.

**1970** “The Association for the Preservation of the Nikko World Heritage Site Shrines and Temples” established.

**1971** “The Japanese Association for Conservation of Architectural Monuments” (JACAM) established.

**1987** “The Center for Cultural Properties in Wakayama Prefecture” established.

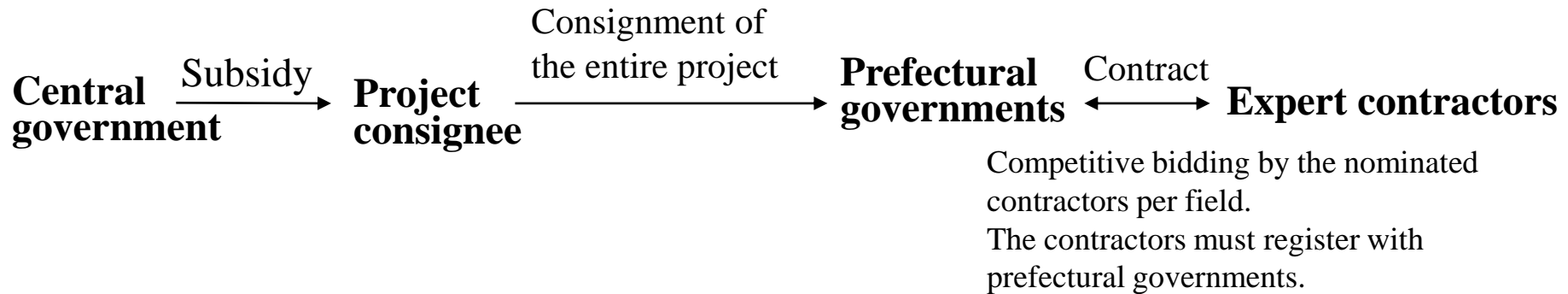
# Designated Properties and Related Organisations

As of 2006

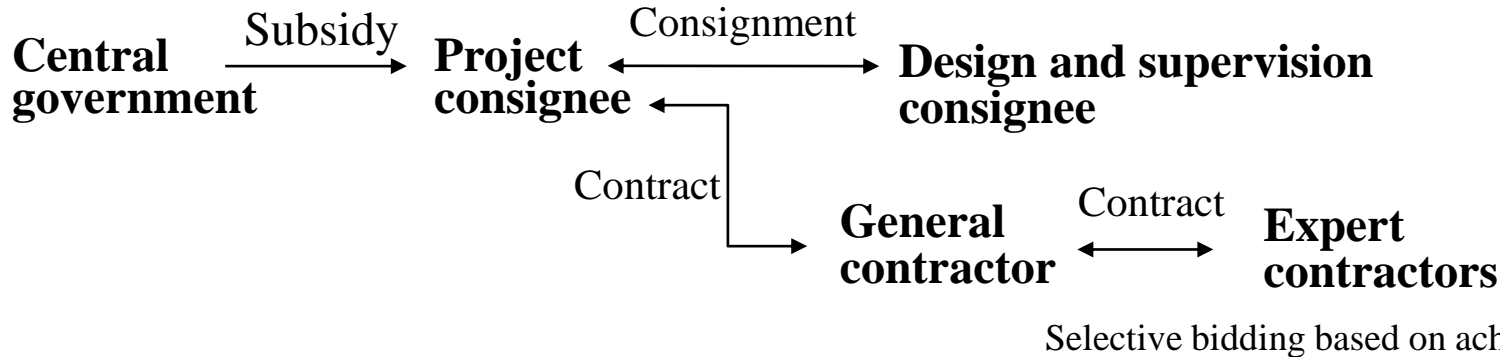
Location	Total Number of Properties	Organisation in Charge of Repair Work
Shiga Pref.	5.5% (227)	Board of Education
Kyoto Pref.	13.8% (571)	Ditto
Nara Pref.	9.0% (374)	Ditto
Wakayama Pref.	2.9% (121)	The Center for Cultural Properties in Wakayama Prefecture
Nikko	2.7% (110)	Association for the Preservation of the Nikko World Heritage Site Shrines and Temples
Japan Open-Air Folk House Museum, and others	0.5% (19)	Board of Education of Kawasaki City
Others	65.6% (2,725)	The Japanese Association for Conservation of Architectural Monuments

# Framework for Undertaking Projects

- In the case of **Kyoto and Nara prefectures**



- In case of the **JACAM and other organisations**



# Practical Conservation and Repair

Dismantling repair undertaken in 1960



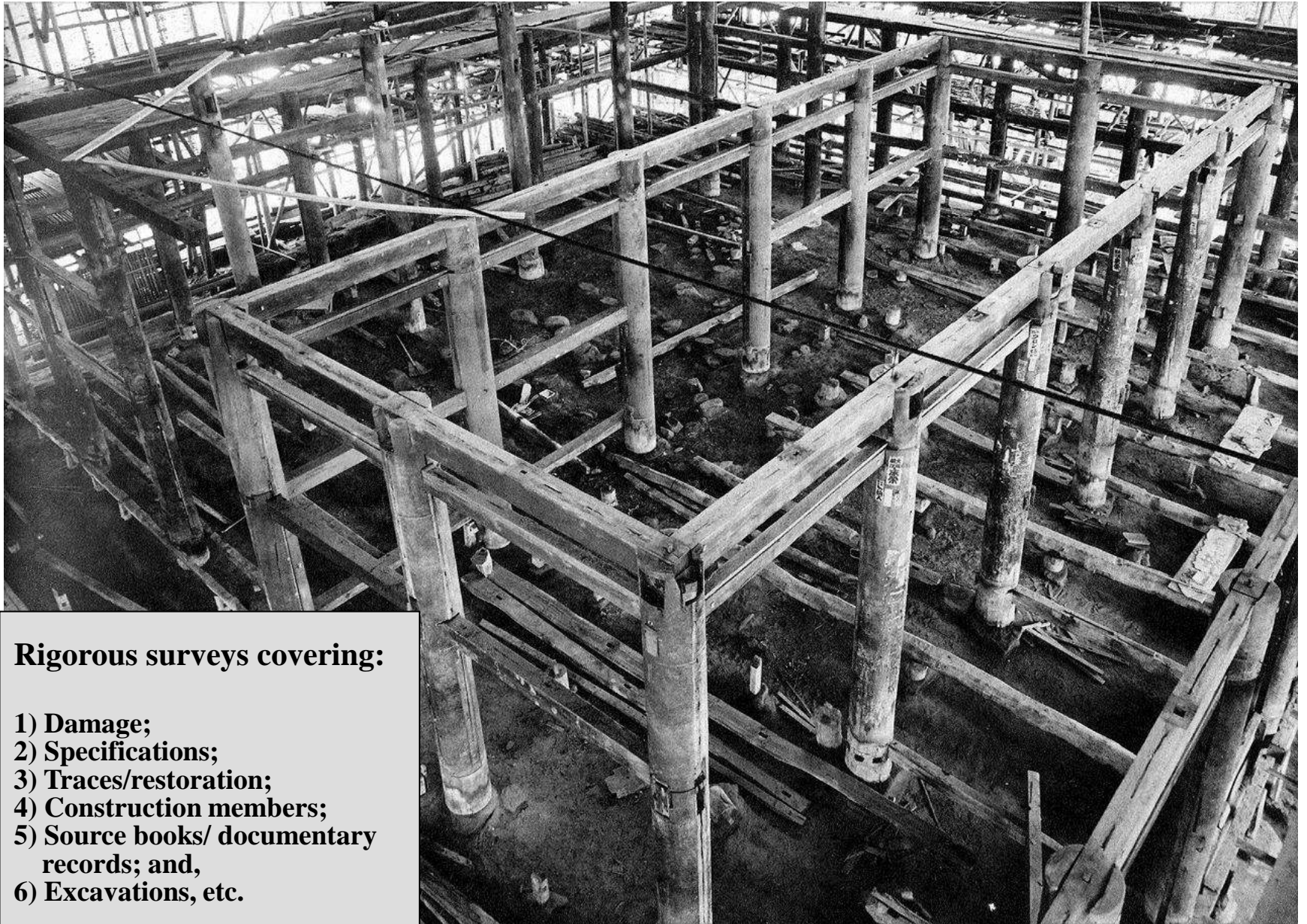
**Main Hall of Taima-dera Temple (national treasure), built in 1161  
Prior to repair**

# Dismantling Repair





# Under Dismantling



## **Rigorous surveys covering:**

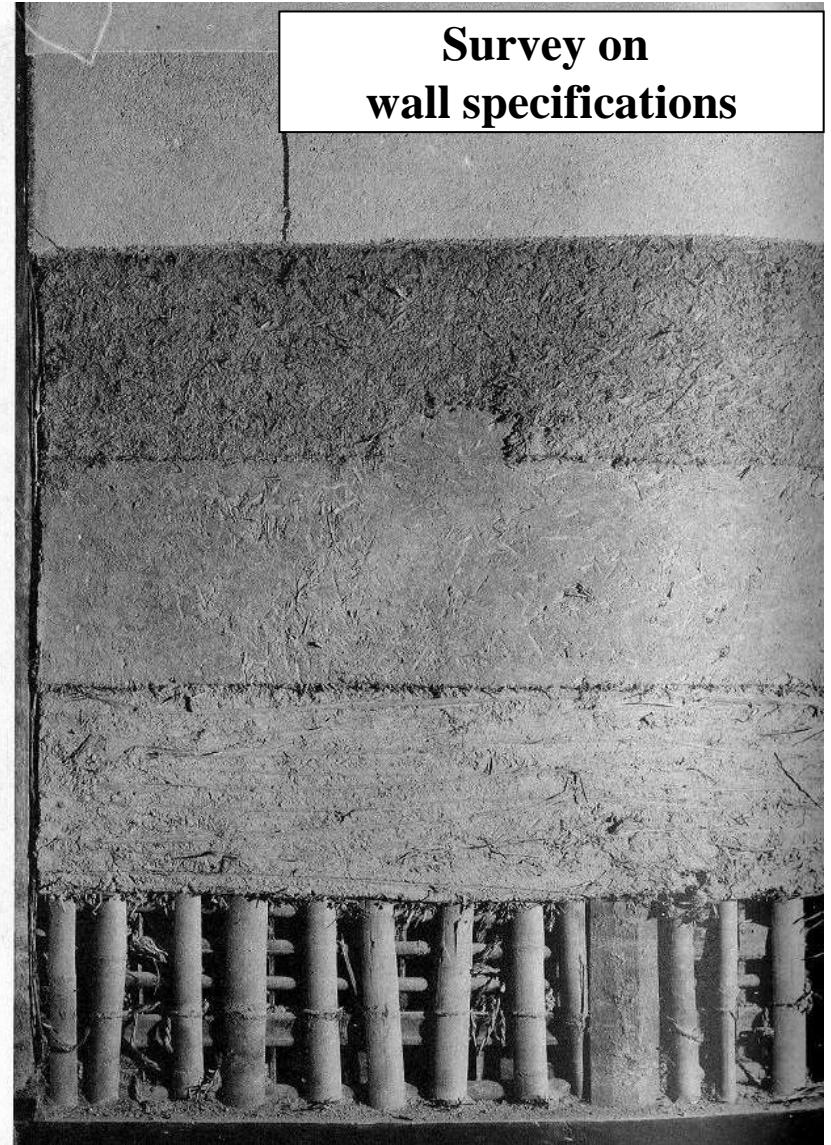
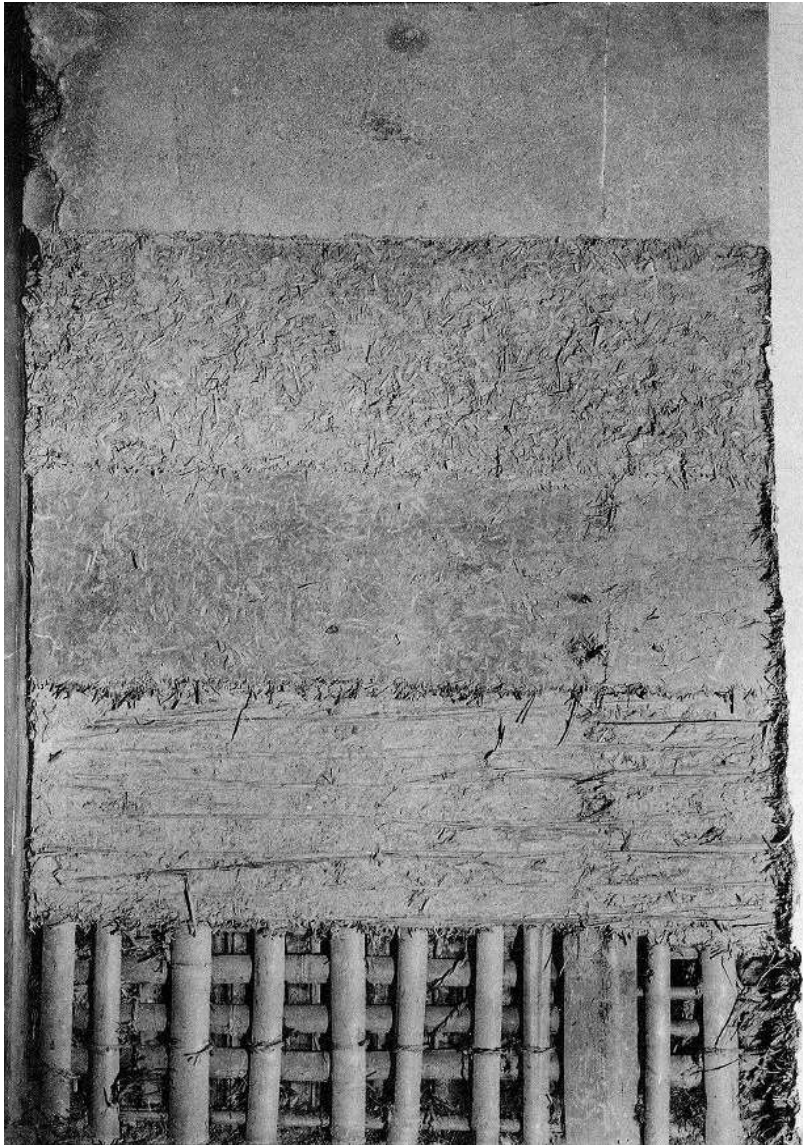
- 1) Damage;**
- 2) Specifications;**
- 3) Traces/restoration;**
- 4) Construction members;**
- 5) Source books/ documentary records; and,**
- 6) Excavations, etc.**

# Various Surveys Undertaken During Dismantling Work (wooden components)



Surveys on  
damage, specifications and restoration

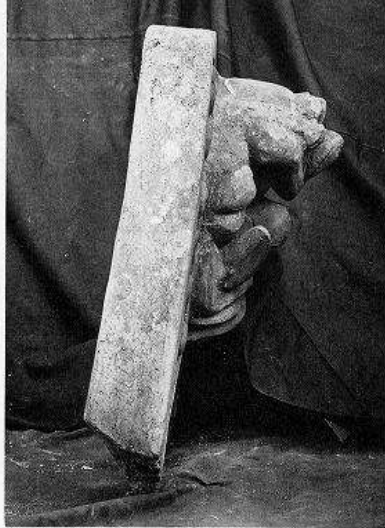
# Various Surveys Undertaken During Dismantling Work (wall)



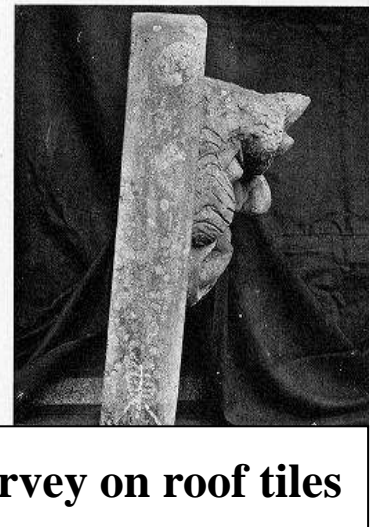
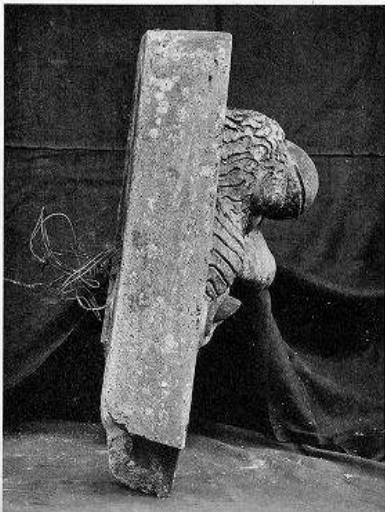
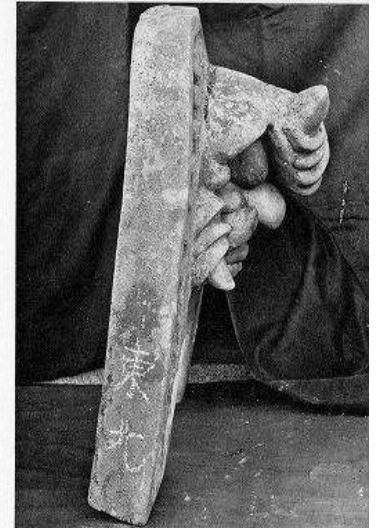
# Various Surveys (roof)



第三九六図 東北降棟一の鬼



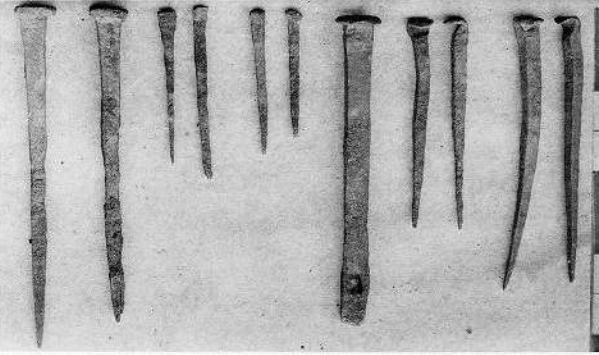
第三九七図 東北降棟二の鬼



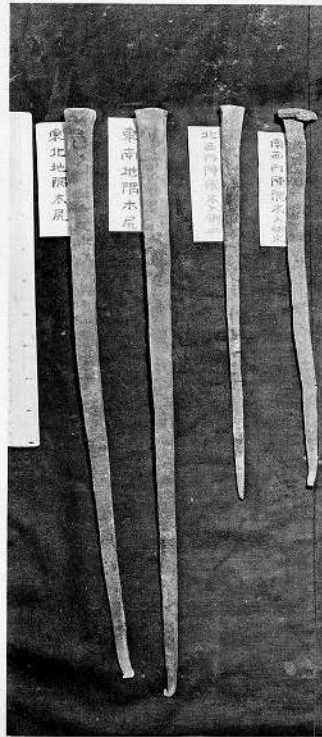
Survey on roof tiles

# Various Surveys

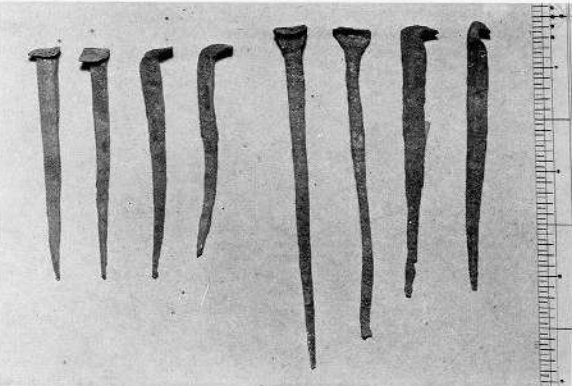
## Survey on nails



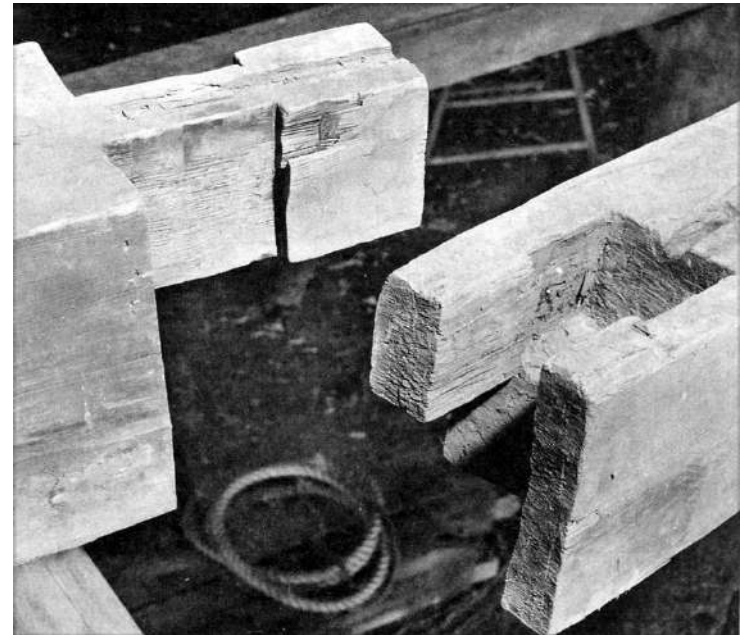
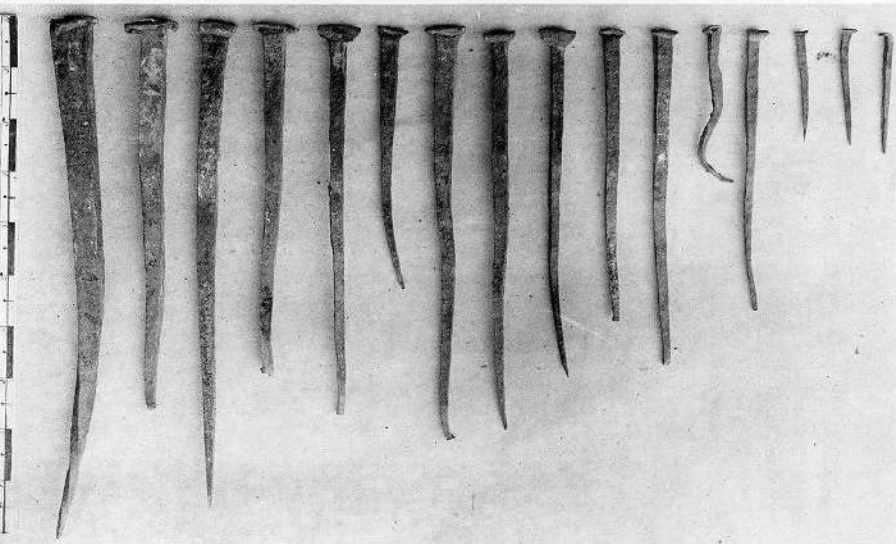
第三八六図 厨子、須弥壇の使用釘 左六丁厨子当初釘、右四丁須弥壇用釘  
釘金具は厨子蔵子用



第三八五図 隅木止の各種釘



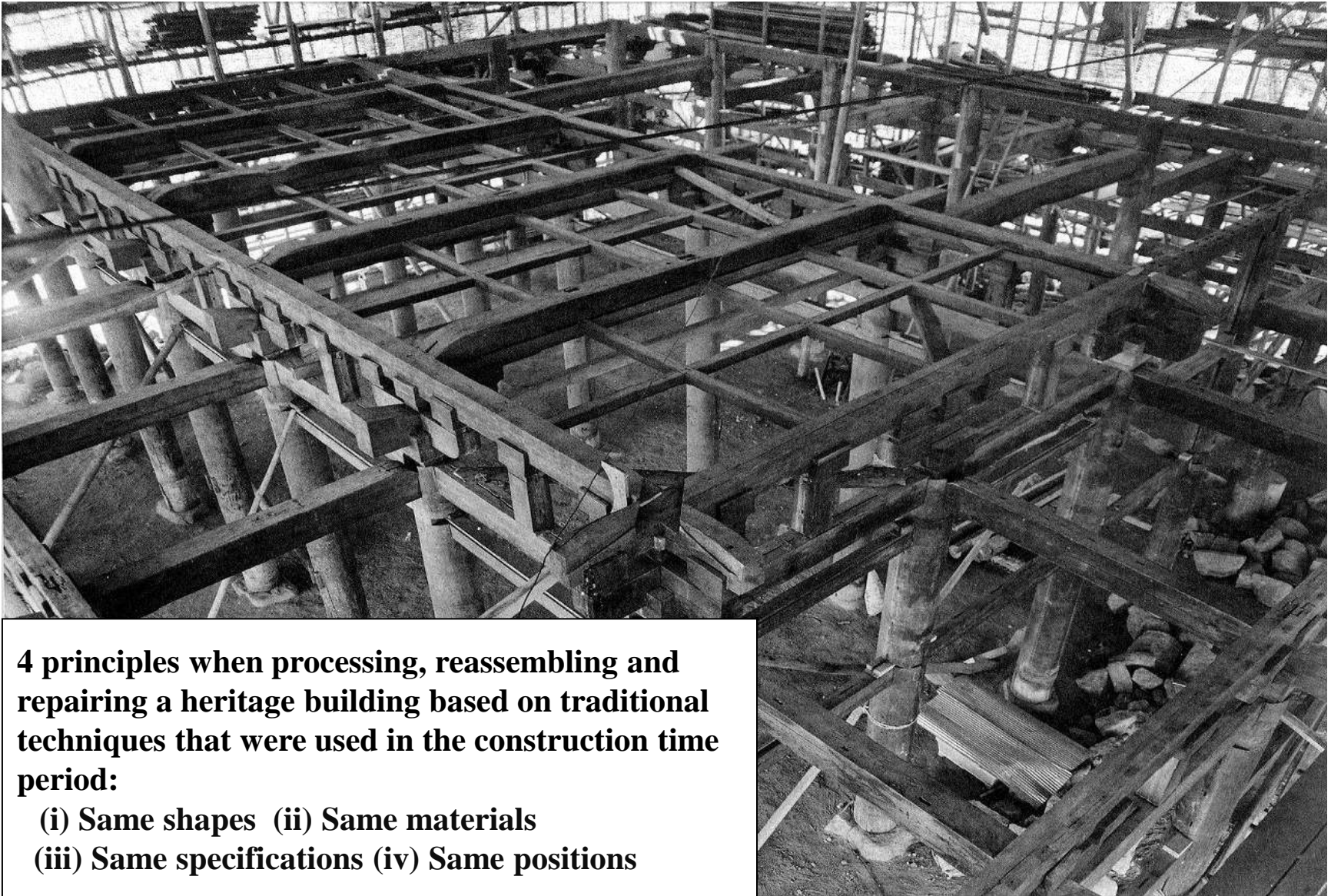
第三八九図 化粧裏板と須弥壇床板止釘の比較



## Survey on joints

Samples of ancient joints

# Reassembly (frameworks)

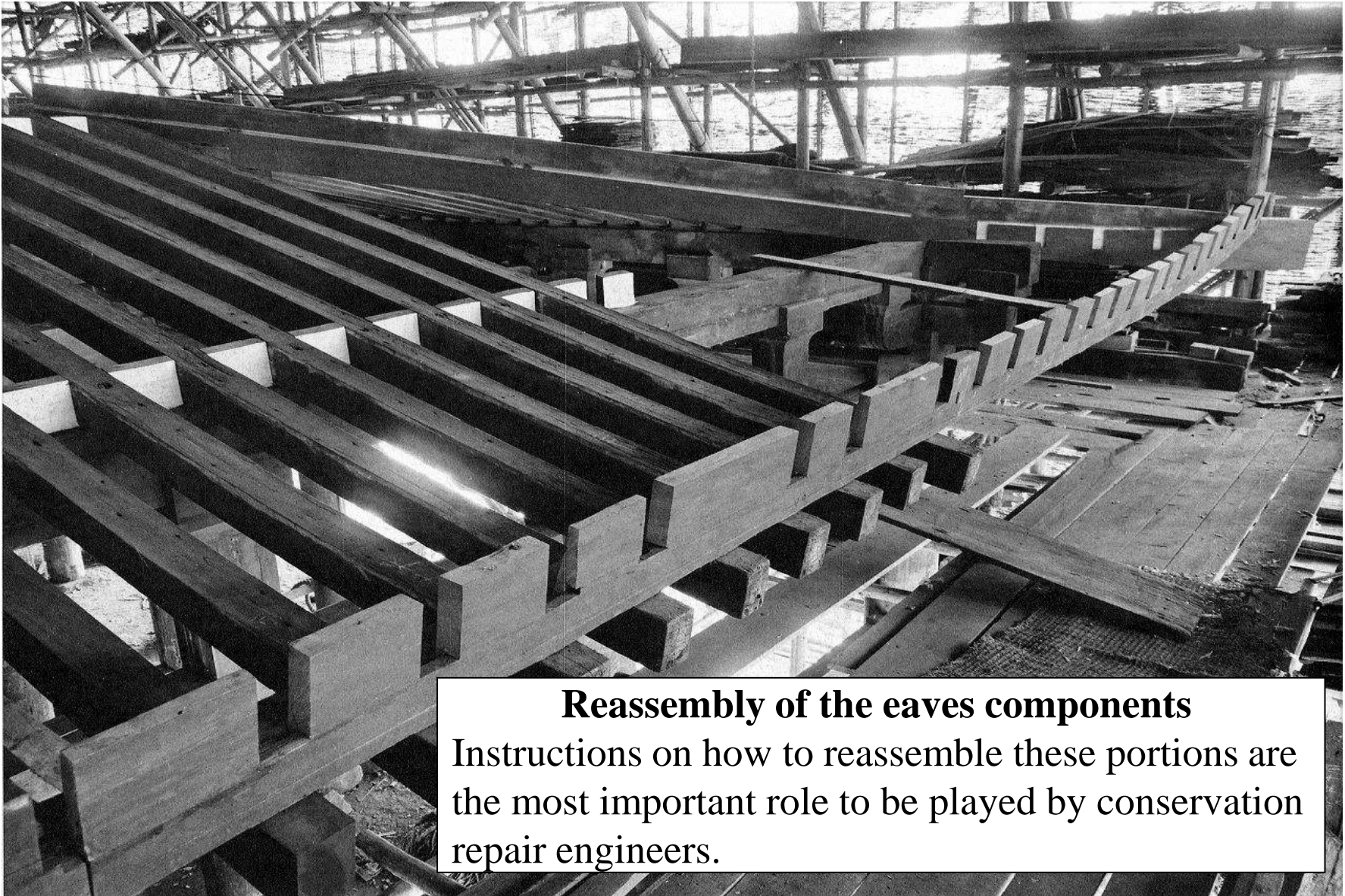


**4 principles when processing, reassembling and repairing a heritage building based on traditional techniques that were used in the construction time period:**

- (i) Same shapes**
- (ii) Same materials**
- (iii) Same specifications**
- (iv) Same positions**

# Reassembly (*Nokimawari* \*)

\* All the eaves components including rafters, rafter supports, eave supports, eaves fillers and roof tile seats



## **Reassembly of the eaves components**

Instructions on how to reassemble these portions are the most important role to be played by conservation repair engineers.

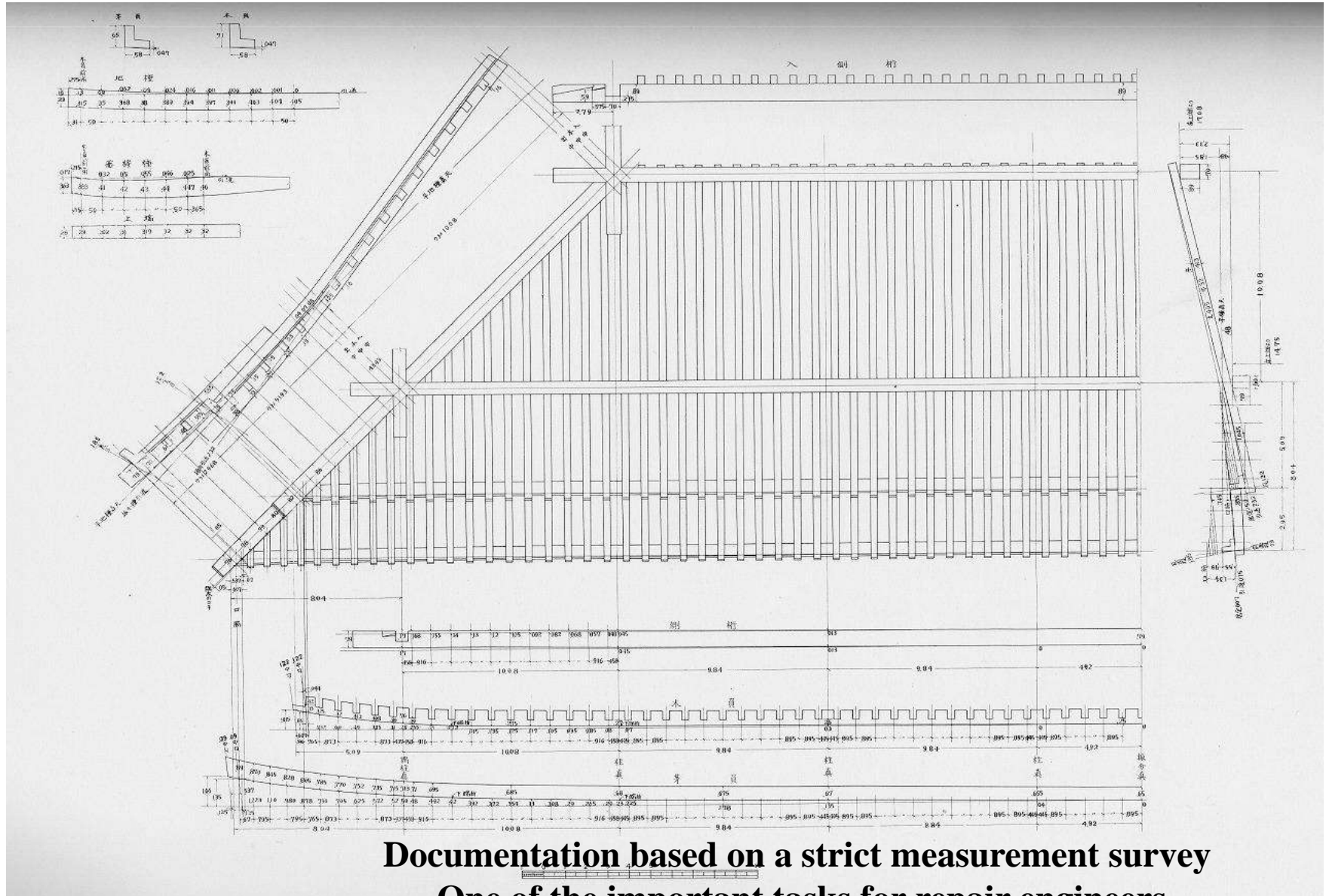
# Completion of Work



**An official report on the repair work including the results of surveys and records of each work is published.**



# Creation of Conservation Drawings



# Protection of Selected Conservation Techniques

- Under the “Law for the Protection of Cultural Properties” enacted in 1950, individuals may be certified as intangible cultural properties (architectural stereotomy, etc.).
- Under the said law amended in 1975, in addition to individuals, organisations that possess knowledge of such techniques may be certified as intangible cultural properties.

## **Repair of traditional buildings:**

The Japanese Association for Conservation of Architectural Monuments

## **Woodworking for traditional buildings:**

The Japanese Association for Conservation of Architectural Monuments

## **Roofing with Japanese cypress barks and shingles:**

The Japanese Association for Conservation of Roofing Techniques for Shrines and Temples

## **Architectural *kiku-jutsu* (measuring with a carpenter’s square):**

TAKEHARA Kichisuke

## **Woodworking for traditional buildings:**

NISHIOKA Tsunekazu

## **Coloration of traditional buildings:**

YAMAZAKI Shoziro

# Training Programmes for Repair Engineers

4 training programs are held every year based on government subsidy.

Category	Target participants, Number of participants	Contents/methods	Schedule, etc.	Remarks
Managers	Work supervisors 10 – 15 participants	Discussion with a theme	4 hours in Tokyo	- Information exchange - Unification between organisations
Unit chiefs	Work supervisors, Work chiefs 100 – 120 participants	- Lecture - Case study presentation - Discussion	2 days in Tokyo	- Information sharing - Summary of results - Presentation skills
Mid-level	Staff members who have completed the development training sessions 40 – 60 participants	- Lecture - Practical training	3 days Nationwide	- Simulated experiences of repair - Obtainment of specified techniques
Development	Newly appointed staff members 8 – 10 participants	- Lecture - Practical training - Observation tour - Exercise	400 hours per year	Obtainment of basic knowledge of overall repair techniques

# Ongoing Training Programmes



**For managers**



**For unit chiefs**



**For mid-level staff**



**For developing staff**

# Training programs for woodworking technicians

Category	Target trainees	Contents/ methods	Period/ schedule	Remarks
Senior course	Those with 10 years experience related to cultural property	Lecture	Once per year 6 days	Certification as a “Chief woodworking technician of architectural monuments ”
Regular course	Those with 3 years experience related to cultural property	Lecture	Over two years 12 days	Certification as a “Woodworking technician of architectural monuments ”

# Ongoing Training

Practical training of the regular course

