



# Progress Report of Great East Japan Earthquake Recovery

Present State of Affected Cultural Heritage

5 November, 2014

Japan ICOMOS National Committee

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## Foreword

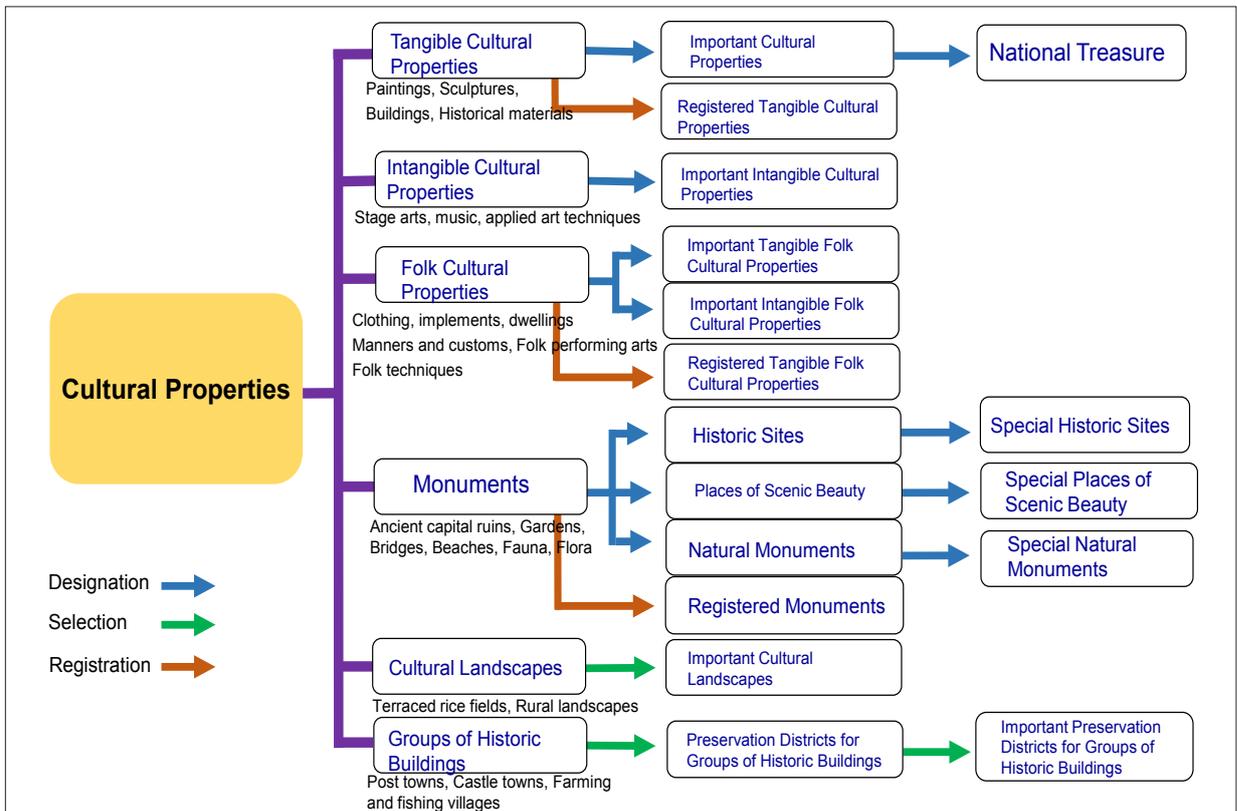
On March 11 2011, Japan was struck by a massive earthquake which scaled M9.0, leaving behind an unprecedented aftermath in the East Japan region. It has brought a serious impact on cultural heritage as well, and in order to rescue and prevent them from further damage, national efforts along with Bunkacho (Agency for Cultural Affairs) had been made immediately after the disaster in terms of securing special budget and other special measures. As an expert organization on conservation and preservation of cultural heritage, Japan ICOMOS National Committee have been deeply involved with these damage investigations and recovery projects. We would like to express our sincere gratitude for the many suggestions, supports, and words of encouragement that we have received from fellow ICOMOS members around the globe throughout this course.

The conditions of this disaster and ways of recovery have already been mentioned in the overall report distributed at the 17th ICOMOS General Assembly that took place in Paris, November that year. Over these past three years we have seen remarkable progress in the recovery projects of cultural heritage, as well as those of the general infrastructures such as roads and houses. However, considerable number of cultural heritage had been lost by the disaster, and many recovery projects have been delayed due to certain circumstances.

Thus, we have taken this opportunity to prepare a progress report on the current situation of disaster recovery of cultural heritage, and distribute it at the 18th ICOMOS General Assembly in Florence. We will be more than welcome to receive any comments and suggestions on this report.

Yukio Nishimura  
President, Japan ICOMOS National Committee  
November 5, 2014

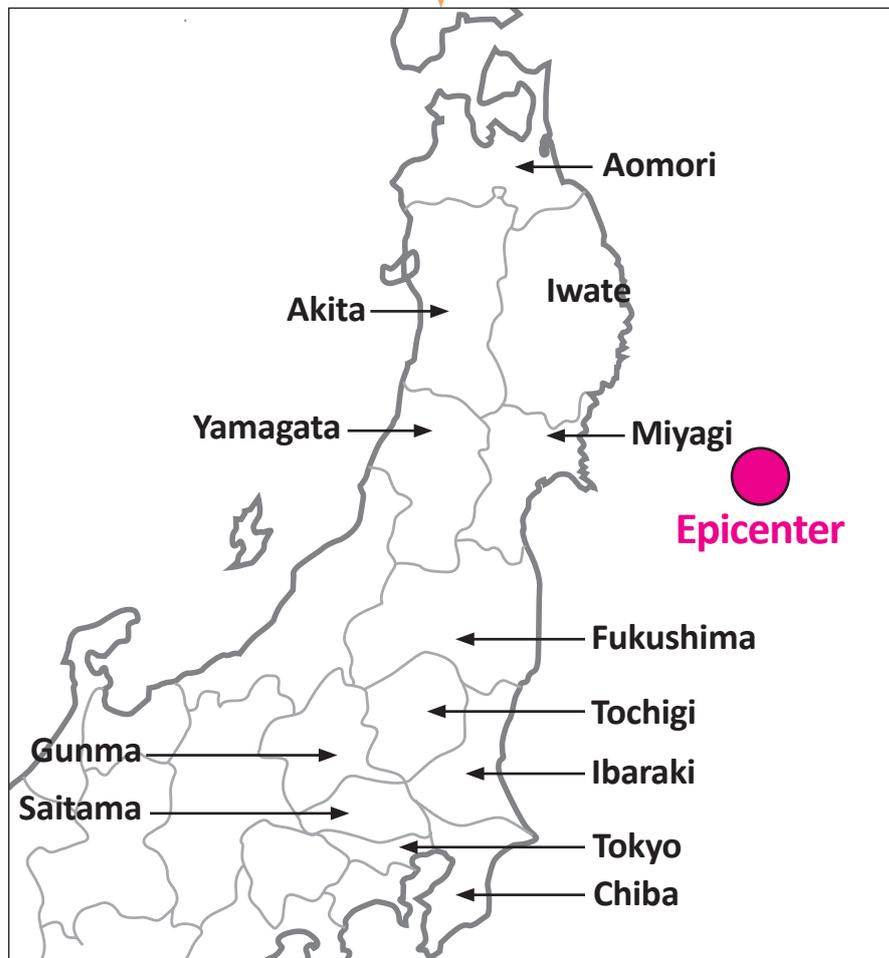
### Schematic Diagram of Cultural Properties





DATE-TIME  
at 14:46 JST (05:46 UTC)  
March 11, 2011  
EPICENTER  
Off the coast of Sanriku  
38.1 N, 142.9  
Depth:  
24 kilometer  
MOMENT MAGNITUDE  
9.0- (JMA, as of 2011-03-11)

Cf. The seismic energy was  $-10.000$   
( $10^{4.05}$ ) times as big as 2009  
L'Aquila (6.3- magnitude)



(Ref. Ministry of Education, Culture, Sports, Science and Technology)

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# Progress Report of Great East Japan Earthquake Recovery

## —Present State of Affected Cultural Heritage—

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# 1. Overview of the Nation-Wide Efforts for the Recovery of Cultural Properties

## 1.1 Initiatives by the Agency for Cultural Affairs (ACA)

Three and a half years have passed since the outbreak of Great East Japan Earthquake on March 11, 2011. With regard to the cultural properties protected under the Law for the Protection of Cultural Properties, 744 were affected by the disaster (Table 1.1).

Within the budget framework of the Special Account for Reconstruction from the Great East Japan Earthquake, ACA has conducted government subsidy programs to restore the damaged Important Cultural Properties, Important Tangible Folk Cultural Properties, Historic Sites, Places of Scenic Beauty and Groups of Traditional Buildings. As of the end of Japanese Fiscal Year (hereinafter called JFY) 2013<sup>\*1</sup>, 81 restoration projects had been completed, and 11 are still in progress. The entire program is expected to be accomplished in JFY-2020 (Table 1.2).

With regard to the regular budget programs of ACA, a subsidy program entitled “Program for Local Revitalization by Culture” has helped groups of local residents in affected areas take necessary actions to continue their

traditional events or performing arts, including performance for raising awareness of their damaged traditional culture, conduction of damage-status surveys on folk cultural properties, repairs or authentic re-creation of damaged or missing tools, succession planning, or organization of symposiums on disaster recovery. ACA started to formulate the program before the Great East Japan Earthquake was occurred, and launched it in May 2011, in order to promote tourism or local revitalization by developing culture with various and rich cultural properties of the place. Consequently, this program contributes to building back local communities by a power of culture.

In JFY-2012, ACA launched the “Affected Museum Reconstruction Program” to provide disaster-affected museums of arts or history with financial assistance mainly for (1) repairing damaged objects, (2) organizing the repaired objects and compiling their information into a database, (3) interim storage of the objects after emergency treatment, (4) organizing events for the revival of the museum, and (5) organizing exhibitions with the objects that belong to damaged museums. This program has been conducted in prefectures of Iwate, Miyagi, Fukushima, and Ibaraki.

\*1 Japan’s fiscal year runs from April 1 till March 31 in the following year

Table 1.1 Numbers of national designated cultural properties damaged by the Great East Japan Earthquake

Prefectures	Fine arts and applied crafts		Structures		Folk Cultural Properties			Monuments					Important Cultural Landscapes	Important Preservation Districts for Groups of Traditional Buildings	Structures	Tangible Folk Cultural Properties	Monuments	※Total	Number of Cultural Properties
	National Treasures	Important Cultural Properties	National Treasures	Important Cultural Properties	Important Tangible Cultural Properties	Important Intangible Cultural Properties	Historic Sites	Special Historic Sites	Places of Scenic Beauty	Special Places of Scenic Beauty	Groups of Traditional Buildings	Designated Cultural Properties							
Aomori	0	0	0	1	0	0	0	2	0	1	1	0	0	5	0	0	10	10	
Iwate	0	2	0	14	0	0	1	8	1	3	0	0	1	38	1	0	69	68	
Miyagi	0	5	3	16	0	2	1	16	1	2	5	0	0	39	0	0	90	89	
Akita	0	0	0	2	0	0	0	1	0	0	0	0	1	7	0	0	11	11	
Yamagata	0	0	0	9	0	0	0	0	0	0	0	0	0	11	0	0	20	20	
Fukushima	0	6	1	13	1	0	0	18	0	3	3	0	1	31	0	0	77	76	
Ibaraki	0	4	0	17	0	0	1	9	0	1	0	0	1	151	0	0	184	182	
Tochigi	0	0	0	13	0	1	0	10	0	0	0	0	0	62	0	2	88	87	
Gunma	0	1	0	5	0	0	0	8	0	0	0	0	0	47	0	0	61	60	
Saitama	0	1	0	6	0	0	0	1	0	0	0	0	1	16	0	0	25	25	
Chiba	0	1	0	9	0	0	0	6	0	1	4	0	1	16	0	0	38	38	
Tokyo	0	1	0	19	2	0	3	6	3	3	0	0	0	12	0	0	49	47	
Kanagawa	0	0	0	7	1	0	0	1	0	1	0	0	0	2	0	0	12	12	
Niigata	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	3	3	
Yamanashi	0	1	1	5	0	0	0	1	0	0	1	0	0	1	0	0	10	10	
Nagano	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	
Shizuoka	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	4	3	
Mie	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	
Kochi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Total	0	22	5	138	4	3	6	90	5	17	16	1	6	438	1	2	754	744	
		22		143				134					1				441		

※Properties with multiple designations (such as Historic Sites / Places of Scenic Beauty and Important Cultural Properties / Historic sites) are each counted as one under the “Number of Cultural Properties”.

## 1.2 Recovering Efforts in cooperation among Private and Public Sectors

Immediately after the Great East Japan Earthquake, ACA launched the "Cultural Property Rescue Program" for movable properties and the "Cultural Properties Doctor Dispatch Project" for built properties in cooperation with related organizations, in order to urgently protect the affected cultural properties from being demolished, abandoned, scattered or stolen. A total of 6811 persons participated in the Cultural Property Rescue Program (completed in JFY-2012), and contributed to activities for rescue, first-aid treatments and interim storage of movable cultural properties at 90 in 4 prefectures. Under the Cultural Properties Doctor Dispatch Project (completed in JFY-2013), damage surveys of over 4000 buildings were conducted in the disaster-affected regions.

For the many damaged cultural properties which cannot receive the financial support by the national government, ACA cooperated in the fund-raising campaigns driven by the Foundation for Cultural Heritage and Art Research and the Japan National Trust.

The Foundation for Cultural Heritage and Art Research (FCHAR) has cooperated individually with the Agency for Cultural Affairs, Samsung Japan Corporation, World Monuments Fund and a famous writer Natsuhiko Kyogoku in order to make appeals for raising money. FCHAR supported the reconstruction of Izura Rokkakudo owned by Ibaraki University in JFY-2011, and launched the "Save Our Culture" campaign in JFY-2012. The purposes of the FCHAR's fundraising activities are to support property owners conduct recovery projects of (1) registered cultural properties protected under

Table 1.2 Numbers of recovery projects implemented with the aid of Special Account for Reconstruction from the Great East Japan Earthquake

Fiscal Year	Arts and Crafts		Historic Structures			Folk Cultural Properties		Monuments			Important Preservation Districts for Groups of Historic Buildings	Total※			
	National Treasure / Important Cultural Properties		National Treasure / Important Cultural Properties		Registered Cultural Properties	Important Tangible Folk Cultural Properties		Special Historic Sites / Historic Sites	Special Places of Scenic Beauty / Places of Scenic Beauty	Natural Monuments	Conservation	Cumulative total per category	Number of Projects		
	Conservation	Disaster Prevention Facilities Preservation and Utilization	Conservation	Environmental Preservation	Conservation	Conservation	Transmission and Utilization								
Completed in 2011	0	0	2	0	0	0	0	3	1	0	0	6	5		
Completed in 2012	5	1	15	0	2	2	0	8	3	3	4	43	42		
Completed in 2013	2	1	5	1	0	0	1	12	1	1	1	25	24		
Prospective completion in 2014	0	0	2	0	0	0	0	5	1	0	1	9	9		
Prospective completion after 2015	0	0	3	0	0	0	0	5	3	1	1	13	12		
Total※	Cumulative total per category		7	2	27	1	2	2	1	33	9	5	7	96	92
	Number of Projects		9	30			3		43			7			

※Properties with multiple designations of Special Historic Sites /Historic Sites and Special Places of Scenic Beauty / Places of Scenic Beauty are each counted as one project in the "number of projects".

Table 1.3 Amount of donation and the implementation status of the projects concerning salvage and recovery of the cultural properties damaged by the Great East Japan Earthquake

Fiscal Year	Division	Conditions of Donations (Contributions)	Conditions of Subsidy Programs									Total
			Assistance on Conservation of Cultural Properties					Assistance on Rescue Measures of Cultural Properties				
			Fine arts and applied crafts	Structures	Monuments	Intangible Cultural Properties	Total	Fine arts and applied crafts (Rescue)	Structures (Doctors)	Total		
2011		544		1			1	1		1	2	
		274,999		1,000			1,000	40,000		40,000	41,000	
2012		168	11	42	2	21	76	1	1	2	78	
		51,159	7,425	62,094	1,598	15,315	86,432	20,000	6,000	26,000	112,432	
2013		109	7	32		17	56	1	1	2	58	
		28,453	3,000	52,200		17,938	73,138	5,000	4,000	9,000	82,138	
2014		6	2	21	2	2	27				27	
		15,027	1,200	20,300	1,100	1,300	23,900				23,900	
Total		827	20	96	4	40	160	3	2	5	165	
		369,638	11,625	135,594	2,698	34,553	184,470	65,000	10,000	75,000	259,470	

As of May 15, 2014

Upper row: number of projects

Lower row: amount of money (thousand yen)

Source: Foundation for Cultural Heritage and Art Research publication "Shishuu-no-michi 2014 Summer No.75" June 6, 2014

the Law for the Protection of Cultural Properties, (2) cultural properties protected under the Prefectural and Municipal Ordinance, and (3) cultural properties that are not registered but recognized for their values relevant to those mentioned above in (1) and (2). A total amount of donations are 370 million yen as of May 2014, and adopted 76 projects in JFY-2012, 56 in JFY-2013, and 27 in JFY-2014 (Table 1.3). This campaign is planned to last until JFY-2016.

The Japan National Trust has undertaken “Great East Japan Earthquake Recovery Project for Natural and Cultural Heritage —SEEDS OF FURUSATO—” in May 2011. A total of 66 million yen has been donated as of May 2014, and 41 support projects have been carried out in three different phases: 14 in Phase1, 15 in Phase2, and 12 in Phase3.

### 1.3 Future Challenges

While a steady progress has been made in the recovery of cultural properties over the past three and a half years since the earthquake disaster, there still are cases where the recovery measures cannot be commenced and others yet under the treatment. To ensure a

continuous, long-term support for the disaster-affected cultural properties, ACA along with the Miyagi Prefecture Board of Education and the “Kesenuma Kazamachi Cityscape Preservation Association for Community Recovery” organized a relay event entitled “Cultural Heritage, Town, People, and Recovery” consisting of three symposiums that took place in Miyagi Prefecture and Tokyo in JFY-2013, where the current state of cultural properties recovery was widely communicated and at the same time the cooperation and support in the medium- to long-term perspectives have been encouraged.

Alongside with the task of continuous support for recovery, efforts are currently being made to create a network of experts and related organizations so that the experiences through the Great East Japan Earthquake can be used effectively in future disasters. In the Cultural Property Department of ACA, the “Disaster Countermeasures Committee for Cultural Properties” has been established to correspond immediately on the occasion of a large-scale catastrophe. As a practical partner of the Committee, the “Taskforce for Promotion of Disaster Prevention Network for Cultural Properties” was established in the National Research Institutes for Cultural



Figure 1.1 Restaurant Wordsworth after recovery



Figure 1.3 The liquor shop Kadoboshi before the disaster



Figure 1.2 Restaurant Wordsworth after the disaster



Figure 1.4 Relocation of the liquor shop Kadoboshi

Properties in July 2014. This taskforce is expected to promote relevant project activities, including data collection, research and capacity building, to develop and strengthen a network for disaster risk reduction of cultural properties.

**1.4 National Financial Assistance for Disaster Recovery**

The Japanese national government provides financial assistance for the restoration and repair of nationally designated or registered cultural properties affected by Great East Japan Earthquake through the Agency for Cultural Affairs, under the disaster recovery budget category. While the usual rate of subsidy is 50% of restoration costs, an additional 20% subsidy is available for disaster recovery projects. Furthermore, depending on the financial situation of the owners of the restoration project, additional assistance can be requested from the national budget up to 85% of the total cost. Restoration projects for nationally owned cultural properties were conducted directly by the government and some have been completed already. The emergency excavations that are necessary for the protection of buried cultural properties prior to reconstruction are supported by the Great East Japan Earthquake Recovery Fund.

Cultural properties that are designated at the regional level can receive assistance from the relevant regional government. They can avail of additional assistance from the special disaster recovery subsidy that is allocated to regional governments from the national budget.

Apart from the above, culturally valuable harbor or river-related properties managed by the Ministry of Land, Infrastructure and Transportation (MLIT) were restored by MLIT.

For those projects considered to be important and complicated, advisory committees are formed to make conservation decisions on matters such as material authenticity. Reports are planned to be published.

Table 1.4 Conditions of government subsidy projects on cultural properties

Fiscal Year	2011	2012	2013	2014
Number of subsidy-granted projects	53	40	27	16
Amount of granted subsidy (thousand yen)	3,179,175	1,646,685	1,696,479	2,096,786

## 2. Cases of Heritage Structures

### 2.1 Seismic Countermeasures

In the Great East Japan Earthquake of March 11, 2011, numerous cultural property structures were damaged over a wide region. The Agency for Cultural Affairs has made efforts for recovery, by assessing the extent of damage starting immediately after the earthquake and has provided national funding for disaster recovery projects. After three and a half years since the disaster, nearly all recovery restoration projects have been completed, excluding those with exceptionally severe damage. Because it became apparent that cultural properties which had been structurally reinforced prior to the earthquake experienced only slight damage, at the same time as they underwent restoration, structures were reinforced for seismic protection.

As an interim report of the recovery process, three cases of architectural restoration of Important Cultural Properties in Ibaraki Prefecture will be given.

#### 2.1.1 Kodokan: Seicho and Nobility Hall

Kodokan is a clan school constructed in the Edo Period of which three structures - main gate, Seicho, and Nobility Hall - are nationally designated Important Cultural Properties. The property on which they stand is designated as a National Historic Site.

The Great East Japan Earthquake damaged the Seicho and Nobility Hall, with earthen walls falling on such areas as the portico. Results of structural analysis showed that reinforcement was necessary. These structures were seismically reinforced by introducing wooden braces in the floor structure; steel braces were installed in the roof structure, unifying the two buildings. This form of reinforcement employed reversible methods and was placed in areas hidden from view, so that the characteristic architectural designs of these structures would not be disturbed. Countermeasures were carefully taken with due regard to the value of these buildings as cultural properties.



Figure 2.1 Kodokan Seicho and Nobility Hall, exterior



Figure 2.2 Braces were introduced for reinforcement into the extant floor structure of buildings in the left photo

#### 2.1.2 Former Ibaraki Prefecture Ota Junior High School Assembly Hall

This assembly hall is a school building constructed in the late Meiji Era. The Great East Japan Earthquake caused many cracks in the wood lath and plaster wall and structural analysis revealed the necessity for seismic reinforcement. At first, it was planned to temporarily dismantle the walls for installation of reinforcement within. However, because this restoration was undertaken as a disaster recovery project, in order to keep the extent of construction work to a minimum, an alternative method had to be devised. Therefore, it was decided to place exposed steel columns inside the hall in the four corners, to be connected by steel-frame lattice beams hidden in the roof and floor structures. To keep the dimensions of the reinforcement columns small, comparably thin square pipes made of thick high-strength steel were employed. They were painted dark brown so as not to obstruct the historic interior. Though this method taken, with limits in

the area to be dismantled, resulted in visible reinforcement members, it was planned with care to keep influences on the interior design minimum.



Figure 2.3 Former Ibaraki Prefecture Ota Junior High School Assembly Hall, exterior view



Figure 2.4 Interior steel frame reinforcement of the Assembly Hall: Steel columns of 200-millimeter square were installed in the four corners

less steel rods were inserted into holes made in the top ends of walls, while mortar was removed from selected joints to be filled with aramid fiber of high tensile strength. For reinforcement of the entire structure, steel frame reinforcement was installed on the inside and outside, carefully choosing where they would be placed - within the non-designated area of the storehouse and behind the fermentation room - so that they would not be obtrusive to the view. These reinforcement members were designed with simple lines and in places equipped with interior lighting fixtures, in an effort to blend them into the historic environment.



Figure 2.5 Chateau Kamiya Former Distillery Facilities, exterior

### 2.1.3 Chateau Kamiya Former Distillery Facilities

Within the premises of the wine distillery built in mid-Meiji era, the three structures of the office, fermentation room, and storehouse are nationally designated Important Cultural Properties. They are all brick buildings vulnerable to earthquakes, and at the time of the Great East Japan Earthquake, numerous cracks appeared on their walls. Particularly, the gable end of the washing room attached to the fermentation room was severely damaged to the extent of near collapse.

For seismically reinforcing these structures, stain-



Figure 2.6 Mortar joints of the brickwork were removed to insert aramid fiber for reinforcement

## 2.2 Wooden Buildings

### 2.2.1 17th Century Educational Facility of Yubikan

The Yubikan main building was undergoing refurbishment for wear and tear when the earthquake hit and caused it to collapse. We believe that the building would not have collapsed completely if the earthquake had happened after the restoration work was finished. Continuance of the work and further repair was delayed since the area had to be tested for radiation released from the Fukushima Daiichi Nuclear Power Plant. Rising material costs also affected the work schedule.

The remaining elements were dismantled entirely and we inspected them individually for the damage. After the inspection, we found light damage to the roof supports and floor joints but severe damage to the structural elements. In particular, horizontal elements such as threshold, head jamb, connection of vertical posts and horizontal beams were all seriously damaged. As for restoration we decided not to make changes to the original plan and bring them back to the condition of Meiji period. We will try to keep all usable original elements and replace only those that are not usable. Specifications followed traditional construction techniques and materials throughout the restoration work. The only exception is that on the east and south elevation, where wall elements were small and weak in structure, seismic reinforcements that would not affect the total design and value of the building were added.

Reassembly of the main building parts, plastering, and re-installment of the doors and screens will follow. The work is scheduled to be completed in 2015. After partial dismantling, restoration of the annex building that did not collapse is almost complete.



Figure 2.7 Dismantlement of the roof

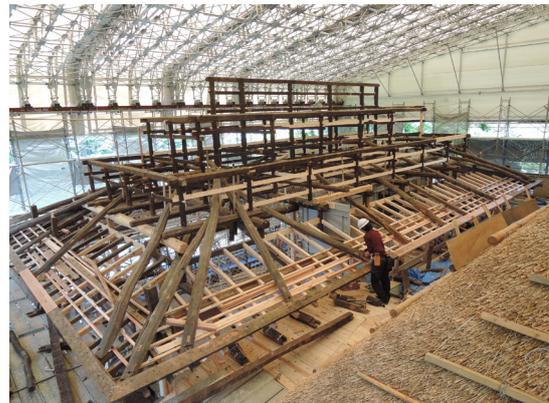


Figure 2.8 Construction of the roof structure



Figure 2.9 Roof thatching

### 2.2.2 Ishinomaki Saint John the Apostle Orthodox Church

Former Ishinomaki Orthodox Church (Church of Saint Ioan the Apostle, located in Nakase, Ishinomaki City, Miyagi Prefecture) is a wood-frame two-storied church structure believed to have been built in 1880 (Meiji 13). Heavily damaged by the Miyagi Earthquake that occurred about one-hundred years later on June 12, 1978, this structure ended its life as a church. At that time, the structure was relocated from Sengoku-cho, its original location, to Nakase (a sandbank in Kitakami-kawa River) to house a museum and was designated as an Ishinomaki City Cultural Property. Though the building was again severely hit by the tsunami of the Great East Japan Earthquake on March 11, 2011, it luckily escaped total destruction and being washed away. With seawater having rushed through the building, almost all fittings were broken and most of the interior and ex-

terior finishes had fallen off, revealing the substrate. It was almost a miracle that the only major damage to the framework was breakage of a continuous column on the north façade.

In 2014, damage surveys of structural members were made while dismantling the building by hand. Structural members that could be reused in the relocated and reconstructed structure also had to be selected through this process. Mainly, detailed measurements of structural members were taken; the members from the first relocation in 1979-1980 were identified; and surveys of traces on major members from the first relocation, to determine the building's original composition, were made. It was found that there were a few building members - columns and beams - from the original construction with a numbering system inked in Chinese characters. All members excluding those of the walls were renumbered to mark their locations for relocation, and the disassembled building was removed from the site, for storage in a prefabricated storehouse standing

in the parking lot of Ishinomaki City Archeological Cultural Property Survey and Storage Facility. Where the church structure will be reconstructed for restoration has not yet been decided.



Figure 2.12 Disassembled building members in safe storage



Figure 2.10 Former Ishinomaki Orthodox Church after having braved the tsunami waters



Figure 2.11 The structure was carefully dismantled for relocation

### 2.2.3 Kesenuma City's Historic Buildings from Tsunami Damage

In the city center of Kesenuma, there is a wide variety of Japanese Modern architecture from the early Showa era (latter half of the 1920s to 1930s) of which many have been nationally registered as Historic Buildings. The past Great East Japan Earthquake brought severe damage to these structures. For example, with Kadoboshi Store, its lower story was completely washed away while the upper level was discovered outside the store's premises. Due to the extent of damage and the fact that the site on which it stood was scheduled for infrastructure development for disaster recovery, at one time, demolition seemed inevitable. However, one year after the earthquake, "Kesenuma Kazamachi Cityscape Preservation Association for Community Recovery" was established and while they made continuous efforts through support from the Agency for Cultural Affairs, additional provisions from Save Our Culture project was made available. This enabled emergency treatment of the historic structure, as well as pulling of the store building back to its original place. (Furthermore, funding from the Freeman Foundation was made possible through World Monuments Fund.) In the days ahead, they will seek for further support, while making plans for reconstruction after the completion of infrastructure

development. Methods for adaptive use of the structure that would contribute to the recovery of the Kesennuma area will also be considered.

Though the thatched-roof Ogata Family Residence in the village of Kogoshio in Kesennuma City was destructed and washed away by the tsunami, building members were retrieved through the efforts of many who participated in activities headed by Professor Osamu Goto of Kogakuin University. With the cooperation of a building contractor in Yamanashi Prefecture, individual building members are presently being repaired and restored. This

building will also be made available for public adaptive use, after being reconstructed in Kogoshio following infrastructure development. (Restoration work on disassembled building members in storage is supported by World Monuments Fund.)



Figure 2.13 Kadoboshi Store, immediately after the earthquake



Figure 2.16 Ogata Residence, before the earthquake



Figure 2.14 Kadoboshi Store was pulled back to its original location, employing a traditional relocation method



Figure 2.17 Ogata Residence, immediately after the earthquake



Figure 2.15 Otokoyama Headquarters, immediately after the earthquake



Figure 2.18 Reassembling of the Ogata Residence

## 2.3 Masonry Structures

### 2.3.1 Fukushima City Museum of Photography

Fukushima City Museum of Photography is a two-story stone building, constructed in 1922. It is now a city-designated cultural property. The stone used for the building is called Kunimi Ishi, a type of volcanic tuff. A cementitious material was used for joints of 5 mm in thickness. The typical dimension of a stone block is about 50 cm to 55 cm x 85 cm x 35 cm. It is not certain whether some kind of connector was used for the joinery, but at least metal is not used. The framework of the truss is made of wood reinforced with steel for vertical load. Foundation is of reinforced concrete. Major damage found after the earthquake includes inclination and cracks in the decorative pediment above the entrance (Figure 2.19) and cracks and movement of the stone of the southeast corner (Figure 2.20). There were cracks at the corners of openings. Some plastering of interior walls fell as well. For safety reasons, the museum has been closed since the disaster occurred. In April of 2011, an investigation was conducted by the Architectural Institute of Japan. In November of the same year, Cultural Properties Doctor Dispatch Project also examined the building. From Dr. Mitsuji and his colleagues who monitored the microtremor of the building, we now know the natural frequency of the building is 3.5Hz in shorter direction and 4.8Hz in longer direction. The characteristic of this earthquake was that the short-period element was predominant even though the scale of the earthquake was very strong. Masonry buildings with short natural frequency like the Fukushima City Museum are particularly affected.

As a remedial measure, temporary scaffoldings were erected to prevent further fall of the pediment (Figure 2.21). In September 2014, Fukushima city decided to restore the building to use as a regional cultural asset. A new plan will be made for the building's revival as a symbol for earthquake recovery, including seismic countermeasures.



Figure 2.19 Damage on the decorative pediment above the entrance



Figure 2.20 Damage on the stone of the southeastern corner



Figure 2.21 Temporary scaffoldings were erected to prevent further fall of the pediment

### 2.3.2 Sekinoichi Sake Brewery and Registered Traditional Buildings

Sekinoichi Shuzo, a traditional sake brewery in Ichinoseki City, in Iwate Prefecture, owns seven nationally registered cultural properties. Built in early 20th century, these buildings were all designed as sake storehouses by Yusuke Obara who studied under Kingo Tatsuno. Now some of them are used as a beer factory, and others are used as a restaurant and a museum. Two buildings are of masonry structure using local stone called Nobiru stone from Shiogama region in Miyagi Prefecture, while the rest are wooden structures.

The biggest damage was sustained by the two masonry buildings and one large scale kura-style storehouse called tori-kura. As seen in Figure 2.22 the upper part of the gable side wall collapsed outward. As a remedial measure, wooden boards have been placed as seen in Figure 2.23. As of September 2014, one stone building is still closed to the public for safety reasons. The other stone building, which suffered a large crack on the unreinforced wall on the gable side, was restored and people began using after the crack was grouted and filled in remedial repair soon after the earthquake. The mud wall of the tori-kura (Figure 2.24) inclined 1/30 in the direction of the shorter beam. 17 wire ropes are now used to prevent further distortion. These restoration measures for progressive reinforcement were mostly finished by October 2012, but the plan for the stone building is still in progress. Restoration works for these buildings are supported by both the national and regional government. Additional support was also received from the World Monuments Fund in 2012.



Figure 2.22 The collapse of the stone wall caused by the earthquake



Figure 2.23 Wooden boards were placed as an emergency measure for the collapsed wall



Figure 2.24 The tori-kura is open to the public after its restoration

### 2.3.3 Old Covered Cavalry Training Facility

This facility was built in 1909 for indoor training of the Japanese army's mounted soldiers. Of the six one-story brick buildings that were constructed originally, two remain standing. While these two buildings have no designation status, citizens have requested preservation of the buildings in light of their previous use as a residence for evacuated people (from Korea and China, etc.) and as a confectionery factory after the War. The buildings are now owned by the Morioka City government. Each building is 24 m wide and 49 m deep (Figure 2.25). The original steel roof truss structure still remains. Brick walls with no reinforcement are of 45 cm thick and 400 cm high and have buttresses.

The Great East Japan Earthquake hit these buildings while their renovation construction was underway, causing distortion of the north wall and particularly severe damage, including cracks and distortion, in the waiting room at the north entrance (Figure 2.26).

A structural investigation was conducted in June 2011. By comparing the current conditions with records from a survey conducted in 2006 prior to the renovation construction, the investigation found the inclination of the walls and uneven settlement of the foundation to be relatively insubstantial. The roof trusses were all safe. Renovation construction was for a while interrupted by the earthquake but resumed afterward.

The remaining buildings of the covered cavalry are now open to the public as a civic arena called “Morioka Fureai Ooi Baba Plaza” (Morioka Friendly Covered Calvary Training Plaza) which can host multi-functional activities including indoor tennis matches. Before resumption of the renovation, the plan for damage repair and seismic reinforcement was revised to allow accommodation of large, indefinite number of people. The newly added structural reinforcements include foundation reinforcement with H-steel horizontal beams with reinforced concrete. Furthermore, H-steel pillars are bolted with inorganic material anchors to the brick pillars and their tops are tied together with horizontal H-steel beams (Figure 2.27). The brick wall’s structural calculation was not performed for this structural reinforcement plan.



Figure 2.27 Structural reinforcement with the steel frames



Figure 2.25 The cavalry building after its restoration



Figure 2.26 Damage to the brick counterfort and its emergency treatment

### 2.3.4 Tokiwabashi Bridge

Tokiwabashi is a twin stone arch bridge that spans the Nihonbashi River in central Tokyo. Built in 1877, Tokiwabashi is now designated as a National Historic Monument. The bridge is 28.8 m in length and 12.6 m in width. During the Great East Japan Earthquake, the bridge sustained structural damage including rotation of arches, several cracks and displacements in the arch stones, bulging of spandrels, and depression of a part of the bridge floor.

After inspection of the damage, it was decided that major repair incorporating the dismantlement of stone elements was required to restore structural stability. The project involves installation of falsework for safety and the implementation of research including laser scan and boring survey for documentation prior to restoration work.

As the bridge is located in the middle of the busy metropolis, these surveys and restoration work had to be carefully undertaken while maintaining steady water levels and flows in the cross-sectional river area. Meticulous calculation is required so that the falsework would cause minimum disturbance. The construction was carried without interrupting the regular operation of small vessels.

The stone-built Tokiwabashi replaced an older wooden bridge to accommodate increasing traffic in the early Meiji period, when Japan as a whole experienced sudden influx of new western culture. The bridge was constructed using a mix of traditional Japanese stone

bridge building techniques and newly acquired western technology, which is evident in the bridge design itself. As the oldest standing stone bridge\*<sup>1</sup> in Tokyo, having survived two intense earthquakes (the bridge bears traces of restoration work on damage caused by the Great Kanto Earthquake of 1923), Tokiwabashi is an important historical monument.

The dismantlement phase began in 2013. Now the dismantling of the railing, the bridge floor and the stones right above the arch stones has been completed. The restoration phase will begin over the next year. During this phase, the falsework will be taken down after the arch stones are completely dismantled. The condition of the foundation stones will be inspected and a decision will be made on the final foundation refurbishment. It is believed that pine pile woods were used for foundation. The plan is to use the same piles if the condition allows, and to use concrete piles if the deterioration is too severe. We plan to limit replacement rate of the stone element to less than 30% but that will depend upon the condition of the individual stones.

Reassembly work is planned to begin in 2015 and end in 2017.

\*1 not counting small-scale stone bridges in Japanese gardens

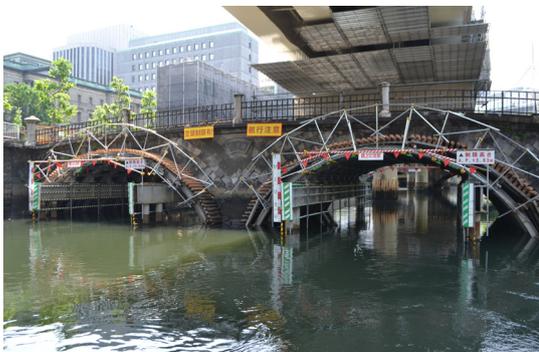


Figure 2.28 Construction of the temporary timbering



Figure 2.29 Dismantling of the bridge



Figure 2.30 Bulging of the arch stones

### 2.3.5 Ishii Lockage

Ishii lockage links the North Kitakami Canal and the Kitakami River which runs from northeastern Japan into the Pacific. Completed in 1880, it is the first western style lockage and the oldest remaining example of operating lockage in Japan. The lockage was designed by a Dutch technical expert and built as part of the Nobiru Harbor development that took place in early Meiji period.

The ground shaking and tsunami of the Great East Japan Earthquake destroyed its opening and closing apparatus, and caused displacement and uneven settlement of some stone and brick elements. Luckily, because the first shockwave came from the canal side, the miter gate was forced to open, which saved the fundamental function of the lockage. Post-disaster investigations included 3D laser scanning, structural survey of masonry, strength tests of bricks, ground radar investigation, strength test of existing concrete, soil tests, test for apparatus degradation, and documentation survey. After this series of tests, the functional stability for operation was confirmed.

The investigation revealed that the brick-laying method used in the original construction of the lockage was an unusual one that is very rare in Japan.

The restoration work included repair of bricks and capping stones and re-laying of stone steps, which was completed in March 2014. The Ishinomaki area, where Ishii Lockage is located, suffered ground settlement of about 60 cm. The banks were of insufficient height even before the earthquake. As it is unrealistic to raise and adjust the lockage to this level, there is a plan to build a new water management system in front of Ishii Lockage.



Figure 2.31 Dismantling and custody of the stone blocks



Figure 2.32 Brick restoration



Figure 2.33 Repairs on bricks and stone blocks

### 2.3.6 Masonry Walls of Sendai Castle

The remains of the old Sendai Castle Ruins were damaged by the Great East Japan Earthquake on March 11, 2011. Built by Masamune Date in 1601, Sendai Castle was remarkable in its use of surrounding natural features. The principal compound was located at the top of a hill at 112 m above sea level, whereas the secondary and tertiary compounds were situated at the foot of the hill. Upon his visit in 1611, Spanish explorer Sebastian

Vizcaino wrote in his travel report, the “Gold and Silver Island Report”, that “the castle is the best and most invincible one because it soars in the rocky hill surrounded by deep rivers. It is protected by cliffs over 100 ‘estades’ (195 m) and has only one entrance.” The original buildings of the castle are all lost; the remains include masonry walls, an earthen mound and the remnants of moat.

Damage from the earthquake included displacements and/or rotation of masonry stone walls and the gates of Nakamon, Shimizumon and Nishimon as well as the northeastern wall of principal compound. Restoration work supported by national subsidy began in 2011 and is planned to be completed in 2015.

When the stones were dismantled as part of the current restoration process, it was discovered that concrete had been cast behind the stones during the restoration undertaken in 1978. For the current restoration, the decision was made to follow traditional construction methods and remove all concrete mass except for the foundation. Instead of concrete mass, small filling stones of various sizes were used. The earthen wall north of Otemon or the main gate was found to be constructed with layers of roof tiles and clay mixed with chopped up straw. These roof tiles and clay were collected after the collapse and reused during the reconstruction of the earthen wall. While modern material had been used for the surface of the wall in the previous restoration, traditional plastering material was used in the current restoration.

The masonry wall of the western gate has suffered damage by multiple earthquakes in the past, not only the one in 1978. Since no survey data or photographs from before the fall are available, the style and angle of existing stones used in the foundation area was followed.

The northwestern wall of the principal compound



Figure 2.34 The northeastern wall of principal compound, immediately after the earthquake (taken on 2011/3/11)

is 200 m in length, 5 m in height. Apart from collapse in three locations, the entire wall is distorted. Restoration is carried out based on survey maps, photographs and position measurements made before the collapse. So far most of the fallen stones are back in place. Stone elements that had been broken or shortened during the previous restoration have been replaced by new ones.



Figure 2.35 Stones were dismantled from the wall (taken on March 15, 2013)



Figure 2.36 The northeastern wall of principal compound, after its restoration (taken on April 3, 2014)

## 2.4 Stone Monument

### 2.4.1 Stone Monument of Kodokan

The Kodokan opened in August 1841. The Kodokan stone monument is made of marble called Kansuiseki. The spirit of Kodokan is curved on the surface of the stone monument. The Great East Japan Earthquake of 9.0 magnitude occurred in March 11, 2011. The stone monument collapsed due to the ground movement of the earthquake (Figure 2.37). After this, The Agency of Cultural Affairs organized a committee of experts for the restoration project. First, the investigation was carried out to identify the cause of the damage. The wood shelter of this stone monument burned and the stone

monument was damaged by the bombardment at the end of World War II. The restoration was carried out to strengthen the stone monument by installing concrete plate behind it. The research results revealed that the installation of concrete plate behind the stone monument at the previous restoration had a bad effect during the vibration due to the earthquake. The following procedures were decided by the committee of experts for the restoration. The stone monuments and concrete plate was moved to the restoration facility and the concrete plate was removed. The stone monument was strengthened by using stainless steel rod, aramid fiber and epoxy resin. The broken surface stone with inscriptions were returned to the original position and strengthened with inorganic adhesive. The concrete cover of stone base applied at the previous restoration was removed and strengthened by using epoxy resin. In order to make the stone monument anti-earthquake structure, barycenter of the monument should be lowered and it is necessary to increase the moment to resist against the moment induced by the earthquake force. Based on the results of structural analysis, the stone monument and base stone was firmly glued. The restoration program was completed in fall of 2013 (Figure 2.38).



Figure 2.37 Damaged Kodokan stone monument due to the earthquake



Figure 2.38 Kodokan stone monument after the restoration work

### 3. Cases of Groups of Traditional Buildings Recovery

Six Nationally Selected Important Preservation Districts located in the Tohoku and Kanto regions were affected by the great earthquake of 2011. The largest damage was seen in the selected districts of Makabe in Sakuragawa City, Ibaraki Prefecture and Sawara in Katori City, Chiba Prefecture. Although their national district selection was only after the earthquake, Kauemon-cho district in Tochigi City, Tochigi Prefecture and Murata district in Murata Town, Miyagi Prefecture also were hit hard by the disaster. In this report, the recovery processes of the two districts of Sawara and Makabe will be dealt with, followed by the introduction of an effort in research and development of a comprehensive disaster prevention program for national preservation districts.

At five Important Preservation Districts for Groups of Traditional Buildings of Kanagasaki Town, Semboku City, Shimogo Town, and Kawagoe City, as well as Sawara District, Katori City which will be explained in detail below, disaster recovery projects have nearly all been completed.

#### 3.1 Sawara District in Katori City, Chiba Prefecture

The historic district of Sawara, a city that once prospered as a major port town along the grand Tone River, is located along Katori Highway and Ono River. The buildings and their environment convey to this day the atmosphere of a merchant town from the 19th and early 20th century. Its value was recognized and in 1996, the area was nationally selected as an Important Preservation District for a Group of Traditional Buildings. With Sawara Matsuri Festivals that take place in the district also having been nationally designated as an Important Intangible Folk Cultural Property in 2004, Sawara is well known as a place where history and culture from bygone eras can be experienced today. In recent years, Sawara's historic streetscape is visited by many and the historic fabric is now regarded highly as a local resource for tourism.

This district of Sawara with such backgrounds was hit by the Great East Japan Earthquake. About half of

the buildings in the district were damaged, more or less, when the area experienced strong horizontal oscillation of 5 higher on the Japanese seismic intensity scale. (As a result of an "emergency safety check process for disaster-stricken structures," 116 structures were judged to be dangerous and 246 requiring caution.) Immediately after the earthquake, owing to support from the municipality as well as private organizations and specialists, confirmation of the extent of damage and emergency procedures were made possible, and great confusion was avoided. However, this disaster brought a shock to the residents and the municipality whose preservation efforts had been carried out since 1994, and resulted in a temporary recession of their preservation actions relying on local cultural and environmental resources.

Damage to historic buildings was mostly seen as roof tiles slipping off or roof ridges falling, while damage to structural members was limited to only a few buildings. This can be considered to be the result of architectural restoration that had been carefully planned and executed since 1994. On the other hand, extreme damage was seen in structures that had been neglected regular maintenance for decades. Because many of these structures composed historically significant elements of Sawara's streetscape, their restoration became the district's next challenge. Particularly, restoration of severely damaged Chiba Prefecture-designated properties – 13 structures of 8 families – that comprise the cores of district preservation became a major issue.

At first, it seemed that smooth progress could be expected regarding architectural restoration and recovery projects to be worked on under on the national historic district preservation system. However, owing to the lack of craftsmen and increase in prices of building supplies, repair work was delayed. After one year, the confusion ended and repairs were begun and the planned restoration work was nearly completed within three years after the earthquake. Regarding prefecture-designated cultural properties, the ratio of funding for construction costs from Chiba Prefecture was raised from 50% to 75%, and city funding from 17% to 20 %, so as to lessen the property owner's burdens, enabling the execution of restoration projects.

The Ono River and Sawara Cityscape Preservation Association, a local NPO, established a "support commission" immediately after the earthquake and began to provide support and talk to property owners not to demolish their historic structures damaged by the earthquake. While donations were being gathered, sup-

port from World Monuments Fund was requested. A 200 thousand dollar funding from American Express was made possible, which strongly helped the district's recovery. As a result, all historically significant structures in the district were restored with none lost. Nevertheless, there are still problems ahead that need to be solved. There remain several structures that have not yet been restored, due to further damage caused by aftershocks or the owners' financial difficulties.

### 3.2 Makabe District in Sakuragawa City, Ibaraki Prefecture

It is believed that the town of Makabe had been planned and established by around the early 17th century. In the Edo period, Makabe prospered as a zaigocho or "country town" centered on the jinya government house, where various products gathered from all around. The district was nationally designated in June 2010 as an area with numerous traditional structures intact from the latter half of the 18th century up to mid 20th century, that well convey the historic environment to this day. In March 2011, when the district was just about to embark on full-fledged architectural restoration, Makabe was struck by the Great East Japan Earthquake.

Sakuragawa City experienced an earthquake with a main shock of 6 lower on the Japanese seismic scale and more than 80 percent of 106 listed traditional structures were damaged. Nearly all of the Nationally Registered Historic Buildings in and around the district were affected as well. With these historic structures, the roof and walls fell or sunk and there was fear of them being demolished and removed from the site, if judged to be



Figure 3.1 Sawara, Katori Highway (Left: After restoration Right: Before restoration)



Figure 3.2 Sawara, Mercantile house (Left: After restoration Right: Before restoration)

unsafe.

Therefore, Sakuragawa City immediately started surveying the extent of building damage and providing emergency treatment. Aiming to start disaster recovery projects without delay, assistance from Japanese Council for Preservation Districts for Groups of Historic Buildings (Denkenkyo) was asked for. In response to this request, specialists from six cities were sent to Makabe to provide support. In order to minimize monetary burdens on the part of property owners for restoration, the funding rate for recovery projects was greatly raised to strongly support the owners. Under normal circumstances, there would not have been any funding systems applicable to

restoration or recovery of Nationally Registered Historic Buildings outside the district. However, relying on the Plan for the Maintenance and Improvement of Historic Landscape, approved by the country, which the city had introduced in 2009, the Nationally Registered Historic Buildings were additionally designated as Constructions Forming Historic Landscape, enabling generous funding for recovery projects.

However, because these individual post-earthquake restoration projects involved not only recovery of damaged areas, but were intended to achieve full-scale restorations at the same time, there were delays in project planning and the owners' decision-making process be-



Figure 3.3 Gojinnya-mae Street (The Shiota Residence)  
 Top: Before the earthquake  
 Middle: After the earthquake (taken on March 12, 2011)  
 Bottom: After restoration (taken on July 1, 2014)



Figure 3.4 Registered Tangible Cultural Properties (The Tanimura Residence)  
 Top: Before the earthquake  
 Middle: After the earthquake (taken on March 12, 2011)  
 Bottom: After restoration (taken on December 13, 2013)

fore execution. In addition, the rise in costs of construction materials and lack of skilled workers brought further troubles to be dealt with prior to starting of recovery projects. Thereafter, architectural restoration was carried out and as of September 2014, there are 39 restored buildings, 26 presently undergoing restoration, and 25 more waiting for restoration. Regarding Nationally Registered Historic Buildings, when work on the three buildings presently being restored is finished, all restoration projects will have been completed.



Figure 3.5 Traditional buildings after restoration

### 3.3 Development of a General Disaster Prevention System for Preservation Districts for Groups of Traditional Buildings

Since after the Great Hanshin Earthquake in 1995, the Agency for Cultural Affairs has established guidelines and such for seismic capacity evaluation, as an earthquake-resistant measure aimed at Japan's cultural property structures. Following the recent disastrous earthquake in 2011, the guideline was revised and a funding system for seismic analysis undertaken by the property owners themselves was newly established. Additionally, a promotional pamphlet titled "Questions and Answers: Protecting Cultural Properties from Earthquakes" was published to enable easy understanding by property owners and the general public of preventive measures.

However, these materials pertain mainly to seismic protection of individual Important Cultural Property structures and are not directly applicable to historic districts where many people actually live and numerous historic structures are concentrated.

Therefore, regarding Preservation Districts for Groups of Traditional Buildings and their surrounding historic streetscapes, research and development of a general disaster prevention program is presently under way, for assuring safety and comfort as well as inducing community revitalization. This aims at solving social problems of the area (aging population and lower birth-rate, increase of vacant houses, decline of industries, etc.), while at the same time seeking for more effective methods of fire and earthquake protection.

A research team led by Oyama College, National Institute of Technology has been established, including participants from institutions such as Waseda University and Tokyo Metropolitan University, with a focus on the selected preservation districts of Makabe, Tochigi, and Kiryu, as well as those affected by the earthquake in the northern Kanto region. The team works closely together with the local residents, municipalities, and organizations such as the Japanese Association for MACHI-NAMI Conservation and Regeneration and has produced substantial results. Their goal is set not only on disaster re-

covery from the recent earthquake, but also on actions to better support future community development. They include (1) establishment of a voluntary disaster prevention system, (2) establishment of a technical system for restoration planning, (3) fortification of disaster recovery abilities in buildings, and (4) creation of sustainable communities and policies. By autumn of 2015, they are planning to draft and enforce a general disaster prevention plan that would be applicable not only to the preservation districts of the northern Kanto region, but also to preservation districts nationwide and furthermore, to common extant urban areas and villages.



Figure 3.6 Testing structural strength of an earthen wall seen in storehouses

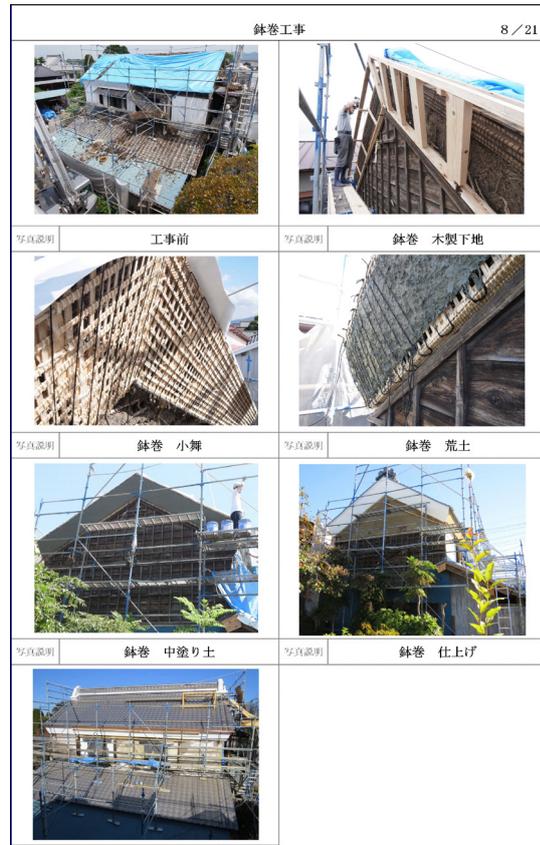


Figure 3.7 Editing of restoration reports

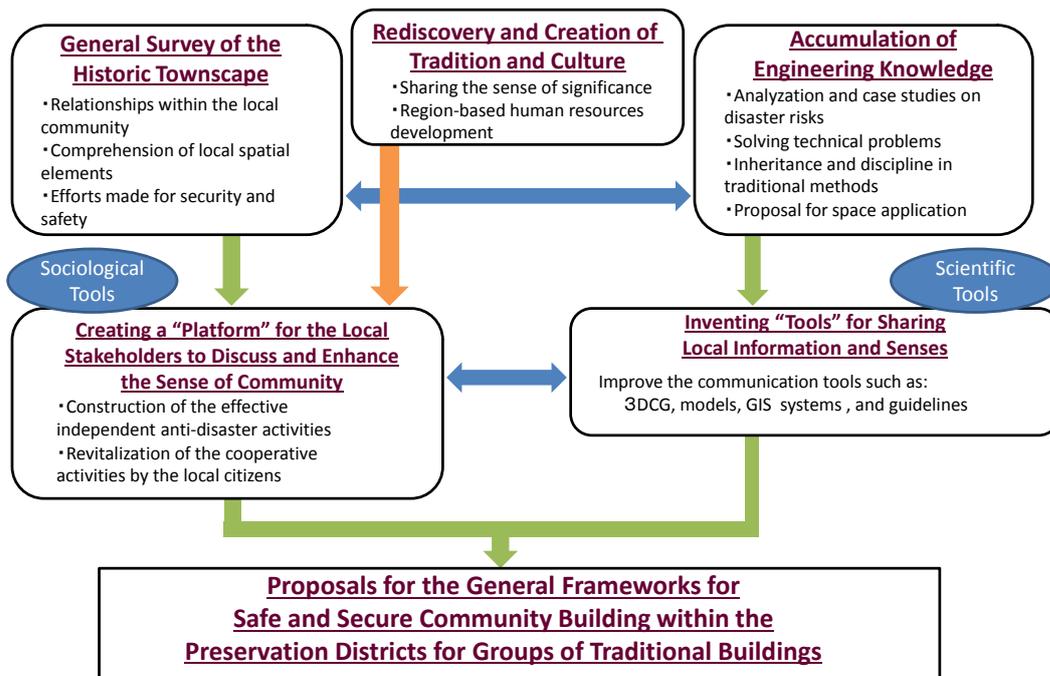


Figure 3.8 Major research topics and keywords for fiscal years 2013 to 2014 in the research “Development of a General Disaster Prevention System for Preservation Districts for Groups of Traditional Buildings”

## 4. Cases of Historic Garden's Recovery

### 4.1 Special Historic Site Motsuji Garden

Located in Hiraizumi Town in Iwate Prefecture, Motsuji temple is an important component of the World Heritage site "Hiraizumi – Temples, Gardens and Archaeological Sites Representing the Buddhist Pure Land." Most of Motsuji was built by Motohira Fujiwara, the second lord of the Oshu Fujiwara clan, in the Heian period or late 8th century. The temple's Pure Land garden, which depicts the Pure Land of the Buddhist afterlife, is nationally designated as a Special Historic Site and a Special Place of Scenic Beauty. One prominent feature of the garden is a standing rock that rises about two meters from a small island in the garden's Oizumi-ga-ike pond.

In May 2011, immediately prior to discussion of the Hiraizumi nomination at the 35th World Heritage Committee in Paris, the standing rock was found to be leaning about 8 degrees as a result of the Great East Japan Earthquake and several aftershocks. The Agency for Cultural Affairs promptly reported this finding to UNESCO and Hiraizumi Town launched an ad-hoc project for the restoration of the rock. Following the advice of the committee experts, surveys and excavation were conducted in the area surrounding the rock and island in order to come up with a conservation plan. The project took two years and finished in 2012.

The standing rock was carefully hoisted by chain block at an angle. A mixture of clay and new stone was used to fill a void that had resulted from earthquake damage, and the rock was returned to the position where it was surveyed in 1990. The excavation survey, which was the first of its kind to be conducted in the said area, provided new knowledge on traditional garden construction techniques, including methods used for erecting the rock and creating the island. Through successful restoration, the value of the standing rock and island has been preserved.

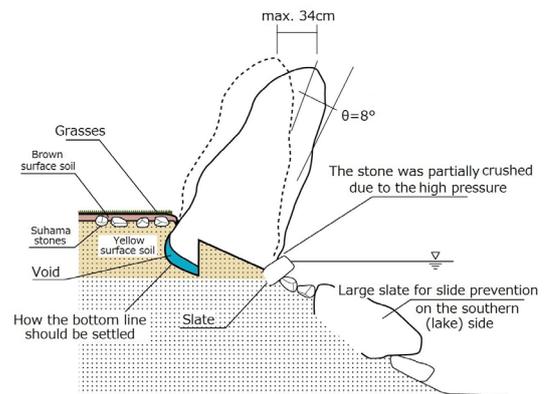


Fig. 4.1 Conditions of the disaster-affected standing rock and its rescue measures



Figure 4.2 Hoisting the standing rock



Figure 4.3 After the restoration

## 4.2 Special Historic Site and Special Natural Monument Koishikawa Korakuen Gardens

Koishikawa Korakuen located in Tokyo is a historic Japanese garden of stroll-garden style, dating from the Edo period (1600-1868). It is designated by the national government of Japan as a Special Historic Site and a Special Place of Scenic Beauty.

The East Japan Great Earthquake, which occurred March 11 2011, damaged parts of this historic garden, including a stone bridge situated on the major visitor trail in the garden. It was decided to restore the bridge and, prior to recovery works, on-site investigation was conducted, which resulted in the new findings of the historical changes in the location, material, and structure of the bridge (remains of an old wooden bridge were discovered) and also the records of past earthquakes in the pond together with those of reactive measures that have been taken historically such as earth filling after earthquakes.



Figure 4.5 Survey of the stone bridge



Figure 4.6 Survey of the lotus pond



Figure 4.7 Panoramic view of Koishikawa Korakuen Gardens

## 5. Artifacts and Historic Record Recovery

### 5.1 Present state of Rescue Measures for Movable Cultural Properties

The “Committee for Salvaging Cultural Properties Affected by the 2011 Earthquake off the Pacific Coast of Tohoku and Related Disasters” which focuses on movable cultural properties affected by the Great East Japan Earthquake had conducted salvage activities on cultural properties within the evacuation zones imposed after the Fukushima Daiichi Nuclear Power Plant accident. The project has eventually lasted until March 2013 instead of its original plan for a one-year term. On the occasion of working within the evacuation zones a safety manual had been compiled after deep deliberation, and with some restrictions such as prohibition of carrying out objects which showed radiation dose above the threshold level, collections from public museums were successfully transmitted to the temporary storage buildings. Salvage activities on cultural heritage within the “difficult-to-return zone” still continues today at the initiative of Fukushima Prefectural Board of Education, even after the salvage committee was disbanded. This is not an exception to other areas either, as concerns remain that the cultural properties could get lost whilst the dismantlement of houses in the course of recovery, and thus the activities by Miyagi Shiryō Net and other NPOs continue.

On the contrary, in Miyagi and Iwate Prefectures where the Cultural Properties Rescue Program has been taken into action since a month after the disaster, emergency treatments or repair works are being carried out on the disaster-affected cultural properties that are



Figure 5.1 The rescue measure at Tomioka Town Museum of History and Folklore

temporarily kept under the custody of the related organizations, so that they could be returned back to their owners soon. Though we are starting to see the clear pictures of the recovery procedures for large-scaled general museums like Ishinomaki Culture Center, building museums on a safe land requires a time-span of more than five years, and the procurement of the temporary storage for the rescued cultural properties have always been a crucial issue. The Agency for Cultural Affairs have been providing support as the “Affected Museum Reconstruction Program”, where efforts are being made to resolve this issue by making use of closed school buildings and constructing prefabricated buildings.

### 5.2 Actions for Recovery and Protection of Privately-Owned Historic Documents Damaged by the Earthquake by Miyagi Shiryō Net (Miyagi Historic Documents Conservation Network)

In the Miyagi District, Miyagi Shiryō Net (Miyagi Historic Documents Conservation Network) was founded following the earthquake in July 2003 with the aim of protecting historic documents and other historic materials from disasters. Prior to the earthquake of March 2011, a listing of historic documents and archiving of digital records from 412 old-established families had been undertaken. Through these activities, a network of specialists, local municipality officers, and residents was gradually created.

At the time of the Great East Japan Earthquake, information obtained through surveys undertaken before the disaster was made full use of to clarify the extent of damage and take prompt actions for rescuing historic documents. As of December 2013, tens of thousands of items from 99 collections has been rescued. Continued efforts focusing on emergency treatment of tsunami-affected historic documents are presently being made. The national and local governments as well as specialists, together with the participation of countless local citizens, support these activities. This made us re-acknowledge the essential role citizens play in the protection of local historic documents.

A period of approximately ten years will be necessary for completing the treatment of rescued materials and returning them back to their owners. As valuable as these materials are, as records of areas where their landscapes have been greatly changed or as grounds for recovery of cultural traditions, provision of appropriate environments for their storage and use will still require a huge amount of work and time. One of the major problems we will be facing is seeking methods for continuing these activities, with regard to the acquisition of necessary fees and maintenance of systems for recovery.



Figure 5.2 Rescue measures on disaster-affected historic documents



Figure 5.3 Emergency treatment on the historic documents affected by tsunami

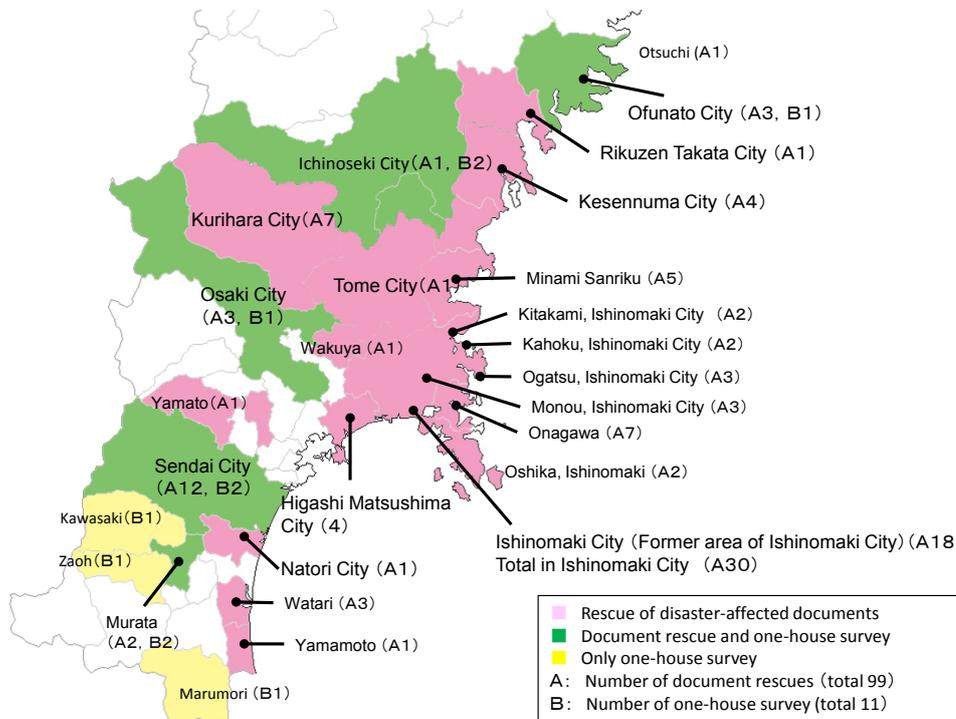


Figure 5.4 Map of the disaster-affected cultural properties rescued by Miyagi Shiryō Net after the Great East Japan Earthquake

### 5.3 Stabilizing Treatments by Rikuzen Takata City Museum

Since the earthquake disaster, the Rikuzen Takata City Museum had been continuously operating the “stabilizing treatment” on approximately 460 thousand cultural properties that have been salvaged from the four tsunami-hit cultural facilities immersed with seawater and brought to a closed elementary school building. The treatment aims to recover the objects back to their conditions where they could withstand the prolonged storage, by removing the adhering mud (mud removal), fungus and bacterium (sterilization), and salt (desalination). Disaster-affected objects are composed of a wide variety of materials including paper, wood, metal, plants, stone, fiber and bone, and therefore they each require different treatments. However, the stabilization techniques for objects immersed in seawater are yet to be established even in the global level, and the Rikuzen Takata City Museum is currently challenging this task and constructing new methodology with the cooperation of related organizations. Although the stabilization treatment of around 140 thousand objects—natural history specimens in particular—have been completed as of August 2014, a large amount of objects are still kept frozen due to lack of concrete methods for rinsing certain materials. Taking into account that establishing the stabilization techniques on these materials requires considerable amount of time and effort, the Rikuzen Takata City Museum is looking forward to the embracement of cooperation with related organizations, encourage the revival of museum activities in the disaster-affected areas, and the dissemination of the established techniques both nationally and internationally.



Figure 5.5 Cleaning work on a paper material (booklet)



Figure 5.6 Cleaning work on a paper material



Figure 5.7 Cleaning work on a folk material

## Afterword

This progress report aims to summarize the general conditions of the recovery projects being conducted on the cultural heritage that have been affected by the Great East Japan Earthquake. The direction of future examination on disaster countermeasures is also partially mentioned. However, we regret that these reports have yet remained very simple.

As an organization for the experts and practitioners in charge of cultural heritage preservation, Japan ICOMOS National Committee will continue to work in hand with the corresponding administrative bodies, researchers, and practitioners, for the recovery of disaster affected cultural heritage and furthermore develop the comprehensive disaster prevention plans on cultural heritage to confront wide range of disaster that could happen again in the future as well as establishing the theories and techniques related to the post-disaster recovery.

We are now planning on submitting the overall report on the recovery of disaster-affected cultural heritage by the Great East Japan Earthquake, at the 19th ICOMOS General Assembly three years later.

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