Challenges at the Kiyomizu Temple and Surrounding Area

Japan II

Kiyomizu Temple

The Kiyomizu Temple in Kyoto was founded 1200 years ago in 778 at the end of the Nara period and is oldest known wooden structure. The main hall and its stage which is a National Treasure and the 15 halls and towers that are National Heritage sites are built on a vast 130,000 square meters, making a beautiful contrast with mountain background. The scenery is beautiful throughout the four seasons with cherry blossoms in the spring, greenery in the summer, colorful leaves in the autumn and snow in the winter.

This was registered as a World Heritage site by UNESCO in 1994. There are many historical and traditional shrines, temples and other buildings at Sannenzaka, a prosperous temple town in the vicinity of the Kiyomizu Temple.

Disaster management issues in the area

< Present conditions >

- The area along the foot of Mt Higashiyama has a gradual east-west slope.
- The area is designated as a specific conservation area for traditional buildings and wooden houses that are built close together.
- 300 million tourists a year makes this a crowded area.
- The dwindling birthrate and aging population is significant, and Kyoto has a population with the highest age level.

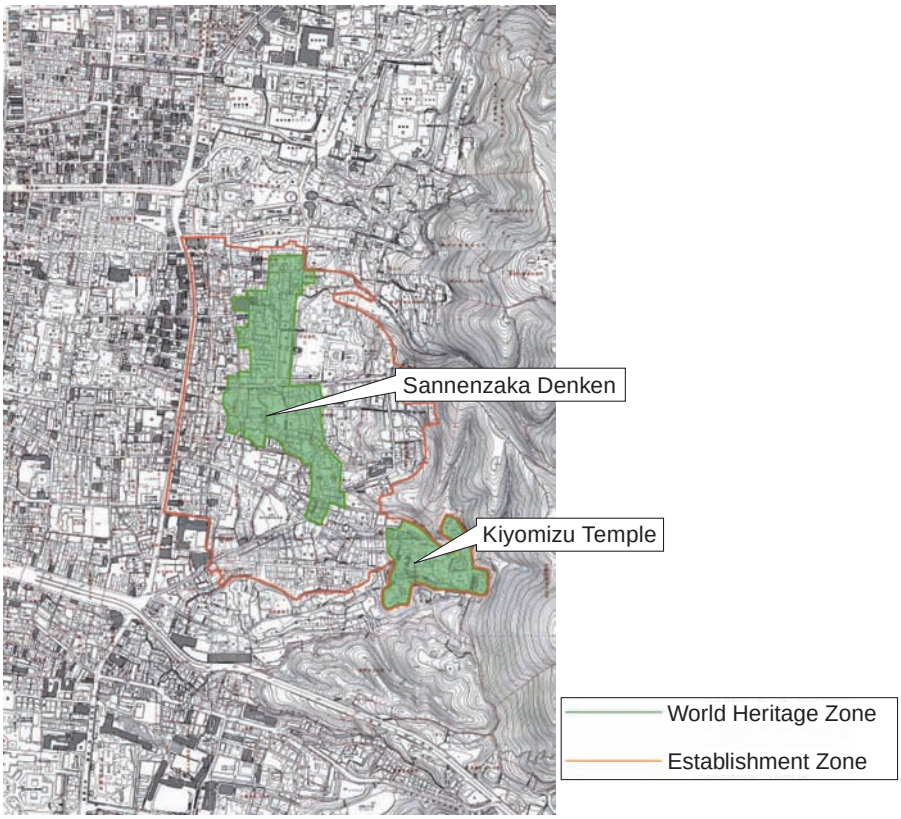
< Challenges >

- The approach of emergency vehicles is difficult due to the irregular streets and inclines.
- It is difficult to modify the houses so that they are fireproof and to widen the streets of the town.
- Voluntary firefighters and voluntary disaster prevention organizations have promoted the cooperation of communities up to the present.
- A response and the measures to deal with tourists in the case of a disaster should be required.

Establishing a Zone as Model

The communities of the area have been active and require the establishment of a zone as model. The condition of the Denken lot in particular is problematic due to the intricate formation of the buildings, which makes the blocks difficult to re-lot. A zone was established, after reasonable consideration, in accordance with the existing roads and the borders of the blocks in order to prevent the spread of fire.

As a result, the orange line on the map below shows the establishment of a zone.



Map of Kiyomizu Temple and the Sannenzaka Area

Design of Firefighting Facilities

Firefighting facilities have been designed based on computerized fire simulations. By this means, the amount of water required for fire hydrant water facilities, the water supply capacity, the layout of the piping and the diameter of the water pipes have been established. As a result, the installation of new water storage tanks, the modification of the existing water tanks and a new water main were all required.

Water supply for local residents

Sprinklers (preventing the spread of fire)

To prevent spread of fire from outside/inside the area, sprinklers have been positioned along the line. (The amount of water emitted is 20L / min / m.)

Use of well water

Well water is used to secure water for the water supply.

Use of hydrants by civilians

Fire hydrants have been put into place that can be handled by individual citizens to prevent the fire. (4 points / 100m mesh)

The water supply for firefighting

- Increase the earthquake resistance of water pipes for firefighting.
- Allocate the fire tanks and fire hydrants so as to be able to spray a wide area near the buildings.
- Make a defensive line on Higashioji Street in order to prevent fire spread; the fire department plans to procure a water supply from the Kamo River.

The water supply for resident firefighting

Maintenance of water

A total water volume of 5,100m^3 is secured by use of well water, water from the Kikutani River, and the expansion of the water tanks of the Kiyomizu Temple.

Main water pipes

Water is supplied by two main pipes from the reservoir to the area under discussion.

Use of water from the Kikutani River

In addition to the water retention of the existing Sabo Dam, a new dam should be built to secure 4,500m^3 of capacity. If there is a shortage of rainfall, water should be obtained from the wells.

Water for firefighting used by the cultural heritage owner

Expansion of the water tank of Kiyomizu Temple

The current water tank capacity (600m^3) assumes a normal fire and should be expanded to double its current size in order to use water in collaboration with local residents in response to fires and earthquakes.

In the Sannenzaka area the water supply via fire hydrants should be shared with local residents.

Modification of the urban structural formation

- Promote the noncombustibility of the buildings along Higashioji Street while taking into consideration the beauty of the town scenery.
- Promote the seismic strengthening of buildings including wooden Cultural Heritage buildings.

Countermeasure for software sort

Establishment of voluntary disaster prevention organizations

A voluntary disaster prevention organization has been established and will coordinate with the Kiyomizu Temple Security Team in the core area, the Association of Autonomous Towns and the Shimizu Area Safety and

Security Committee. Also, the participation of administrators and owners of other heritage sites like Kodai Temple should be encouraged.

Carrying out fire drills at Cultural Heritage sites

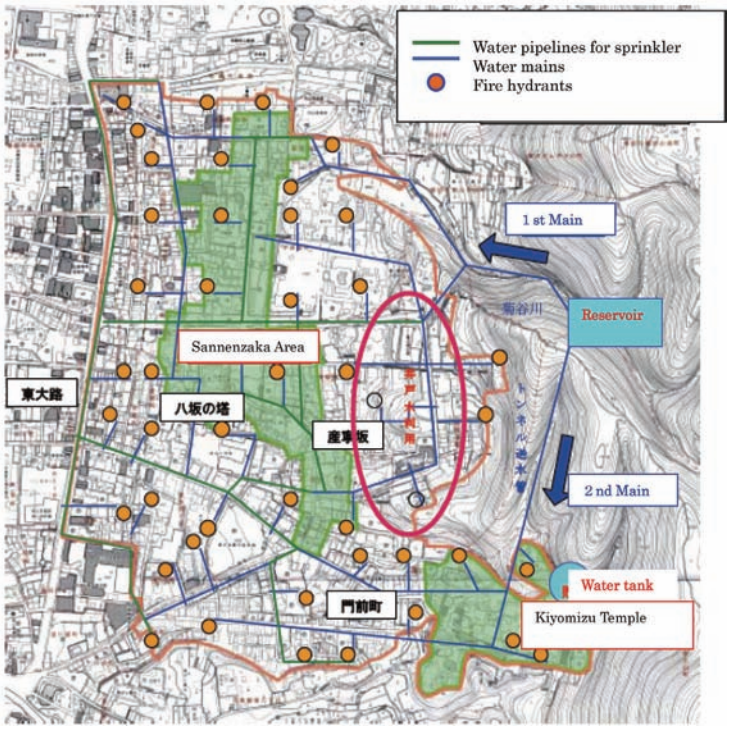
Train and drill voluntary disaster prevention organizations as a model of the activities of Kiyomizu Temple security. In addition, create a manual for several of the activities.

Information sharing

Promote public relations in regard to information of various kinds such as hazard maps and seismic forecasts in this region. Encourage the use of signage that shows the location of water supply facilities and how to handle tools and equipment easily during emergency operations.

Other

Local administration, residents and cultural owners should discuss the evacuation process and maintenance manuals for tourists.



Fire Hydrants and Facilities Distribution Map
for Kiyomizu Temple and the Sannenzaka Area