

Seismic Isolation Systems Protect Irreplaceable Historical Works of Art

Our museum opened on April 14, 2017, and exclusively features ancient Chinese bronze mirrors. Tadashi Sengoku, an art collector from the city of Kasai, generously donated and loaned 316 mirrors to our museum. This collection includes ancient Chinese bronze mirrors that can be found nowhere else in the world, and a number of them are on display to the public.

At our museum, you can see the different ways people have viewed mirrors over the ages. 3,700 years ago, during Ancient China's legendary Xia Dynasty, objects resembling mirrors were created out of bronze. While the general perception today is that mirrors are cosmetic tools that reflect a person's face, at the time, they were apparently used by shamans as magic objects meant to enchant people through the reflection of light. Bronze mirrors are typically circular in shape; the choice to model them after the sun and moon in this way seems to emphasize how they shine in light. During the Han Dynasty, mirrors were used to signify the bond between a man and woman and were used as wedding gifts. A couple that pledged to reunite after being separated would split their mirror in two and carry their halves with them. Even in the present day, Japan still maintains the tradition of the vanity being the first thing a bride brings with her when she marries. I hope that, through our displays, visitors to our museum can gain a sense of the feelings encapsulated in mirrors of different eras.

Due to the common usage of mirrors as cosmetic tools to reflect one's face, it is important to make sure they are polished to the brightest silver-white possible. Copper is a common component of the most ancient bronze mirrors. This makes them a reddish-brown color that darkens over time, preventing them from clearly reflecting an image. Increasing the tin content makes the mirror more silver-white in color, but adding too much will result in a brittle and breakable mirror. It takes a high level of technical skill to make such mirrors without causing them to break. The techniques required to create these Chinese mirrors were perfected during the Han Dynasty, but much of this technology was not passed



A seismic isolation system is installed within this display case to protect these ancient Chinese bronze mirrors from earthquakes



Hyogo Prefectural Museum of Ancient Bronze Mirrors
Chief Curator

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down to future generations. Even with modern technology, we cannot recreate their techniques.

These historical, artistic works are so precious, yet they are disc-shaped and as brittle and breakable as glass. Because of this, we must be extremely careful to prevent these bronze mirrors from getting damaged. The Chinese mirror specialists that make up the Sengoku Collection Research Committee proposed that we install seismic isolation systems in our museum. This was motivated in particular by Hyogo Prefecture having suffered through the Great Hanshin-Awaji Earthquake. We decided to install THK's seismic isolation system under exhibits at risk for earthquake damage.

Our display cases were designed first, so the seismic isolation systems had to fit inside of these cases while also leaving enough room for the stroke to accommodate how much the cases move with long-period ground motion. The flexible structure of THK's seismic isolation system allowed for an extremely effective design in the limited space inside the display cases. Furthermore, the company itself was flexible and worked within the short time frame we had before the day the museum was set to open.

In the future, the need to secure valuable artifacts with seismic isolation will only increase. When designing both exhibition displays and buildings, we hope to include greater involvement from specialists in seismic isolation technology as it relates to cultural artifacts. This will allow us to incorporate these specialists' insight into our designs, thereby creating a solid risk management system that will surely aid us greatly in protecting and making use of cultural artifacts.