

# Long-Span Bridge Resilience

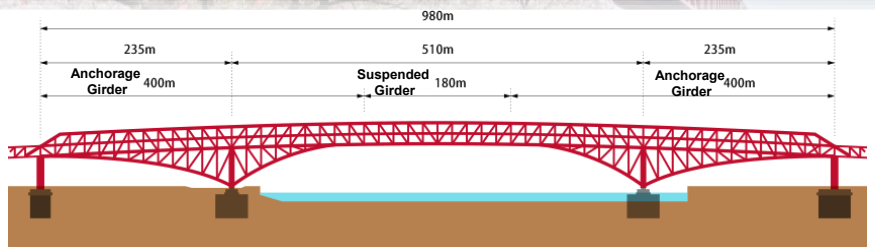
## Seismic Technology and Innovative Inspection

### Résilience des ponts à longue

#### Technologies parasismiques et inspection innovante



<b>Open to Traffic</b>	<b>July 15, 1974</b>
<b>Bridge Type:</b>	Three-span Gerber Truss Bridge
<b>Foundation Type</b>	Pneumatic Caisson
<b>Steel Weight</b>	41,000 tons
<b>Construction Cost:</b>	¥25 billion



## Seismic Safety Improvement

During the 1995 Kobe Earthquake, six sections of the Hanshin Expressway collapsed or tilted, underscoring the need for seismic safety and their role as lifelines. In response, we adopted a resilience-based approach, focusing on control and recovery rather than mere resistance.



### Seismic Isolation

The deck is separated from the main structure to allow sliding during earthquakes.

- Sliding bearings let the deck move.
- Rubber bearings help return the deck to its original position.

### Seismic Damping

Minato Bridge is the first long-span bridge to use damping braces.

- The braces absorb earthquake forces by stretching and compressing, preventing damage to other parts of the structure.

## Efficient Bridge Inspection – Dr. RING

Repair & Inspection equipment for *Nanko Gate* (Dr. RING)  
 Minato Bridge, located at the entrance of Osaka Port, has a complex structure that makes scaffolding difficult. Hanshin Expressway has developed Dr. RING, a new inspection vehicle since 2016, aiming at improving safety and inspection quality. Dr. RING has a rectangle shape that moves vertically to access the underside of the bridge. It also includes safety features that do not hinder ship operations and reduce sway caused by the wind.

