

# Japan's high-quality steel bridge construction technology

تكنولوجيا جسور الصلب اليابانية العالية الجودة

Since its foundation in 1964, Japan Bridge Association has contributed to the society through construction and maintenance of steel bridges. The Association in recent years pursued five policies; "Building a Safe and Sound Town", "Quality Assurance", "Protecting the Environment", "Human Resource Development" and "Living Together with the Community". The benefits of having a steel bridge includes good lifecycle cost economy including that of initial construction, a number of maintenance and management advantages including easy inspectability and partial repairability/replaceability, and the ease and convenience of reuse and recycling. The Association will actively promote these benefits in the society to encourage understanding so that the steel bridge industry will continue to grow and prosper. We also focus on maintaining and further developing the nation's excellent steel bridge engineering skills to produce and maintain truly long-life bridges toward the goal of "100-year Service Life". We are also committed to overseas projects where our long-accumulated bridge construction and maintenance expertise can be transferred to other countries in the form of high-quality infrastructure exportation as international contribution.

## Good maintenance and management to achieve a 100 year service life quality

These more than 100-year old bridges are a strong evidence that good maintenance and management will enable bridges that are originally designed for a service life of 50 to 60 years to be used in a safe manner beyond the originally planned service life.

**Kinokawa Bridge, Nankai Electric Railway  
116 years old (Completed in 1903)**



Kinokawa Bridge is a railway bridge that forms part of the section between Kinokawa Station and Wakayama City Station of Nankai Main Line of the Nankai Electric Railway. The bridge is an American style 200-foot simple curve Pratt pin truss structure. The upper bow describes a parabolic curve and is slightly different from the standard design but is nevertheless still beautiful after all these years. The truss height is 34 feet. Adequately servicing small components such as the eye-bars and pins is critical in maintaining these American style truss structures, but Kinokawa Bridge is still in active service keeping one of the main arteries of Nankai Electric Railway network. The bridge also has newly added earthquake resistance features such as the structural collapse prevention system and the pin roller support disengagement stoppers to be able to withstand future Tonankai and Nankai Great Earthquake events.

**Minamitakabashi Bridge  
115 years old (Completed in 1904)**



Minamitakabashi Bridge, alternatively referred to as "Sakura Dori" (Blossom Street) spans the Kamejima River in Chuo Ward, Tokyo. After the old Ryogoku Bridge, which was a threefold truss structure and was the first bridge in the Sumidagawa river system where a double-track railway line was built, was severely damaged by the Great Kanto Earthquake of 1923, its least damaged center section has been renovated in 1932 into what is the Minamitakabashi Bridge today. At present, the Minamitakabashi Bridge is the sixth oldest steel truss bridge in the country and is a Tangible Cultural Asset of the Chuo Ward. The fact that the bridge is still in active service after more than 100 years is an evidence that the original structure was robustly designed and also that very good maintenance service has been provided through the years.

**Shirahigebashi Bridge  
88 years old (Completed in 1931)**



When first built in 1931 the Shirahigebashi Bridge was a reinforced concrete base structure, but was renewed in 1989 to a grating floor base construction. After further antiseismic and other reinforcement features were added in later years, the bridge was again updated from the grating floor base structure to a steel floor base structure to reduce dead weight to reduce anticipated seismic stress on the piers in the event of earthquake.



It is already 150 years since the first iron bridge was built in Japan. Through those years, the Japanese industry has successfully completed numerous steel bridge construction projects both in and outside the country. Now the nation's steel bridge engineering is rated to be among the top of the world. International engineering transfer activities, which have expanded through ODA projects and other channels, has contributed to infrastructure development in 128 countries throughout the world to date. Our wide-ranging bridge engineering expertise helps people of the world both financially and in everyday life, and also leads the global steel bridge construction industry toward further development into the future.