

# The Birth of Golden Gate Bridge



Fig. 1, *Golden Gate Bridge 24*

***“The Mighty Task is Done”*** --- Joseph B. Strauss

Before Golden Gate Bridge was built, taking ferry was the only choice to travel from San Francisco to Marin County. In order to improve the city growth rate, many people felt the need of a bridge that would connect the two places. However, building a bridge across the harbor was seen to be an impossible task. Not only was there too much strong wind (as high as 60mph), the oceanic current was also too violent to have anything built underwater. Because of that, a bridge was never constructed until much later.



Fig. 2, Golden gate circa 1891



Fig. 3, Golden Gate Bridge 5

In 1916, the demand of a bridge rose to the top due to the increase in population and traffic. Since it was the first bridge built at a harbor entrance, the navy was concerned that failure of the bridge would block the gulf. A bridge at the harbor would also mean a bridge that was tall enough for large ships to pass. To make things worse, the design also had to take San Andreas Fault into account because it was only 12miles away... Not to mention the weather condition at the site.

After years of debates and discussion, in 1921, Joseph B. Strauss, a structural engineer, came up with an idea of a suspension bridge. Although his proposal gained many support and attention, Strauss faced a finance problem. Because of the Great Depression, his plan could not receive any funding. To top it off, bay bridge was also being constructed at that time. Fortunately in 1930, the board decided to issues \$35 million bond to keep the project moving. Three years later, the construction of the world's known bridge finally began on Jan. 5, 1933.



Fig. 4, Joseph B. Strauss



Fig. 5, Golden Gate Bridge 11

The first challenge was to build the San Francisco tower. Workers had to lower fenders undersea to enclose an area, emptied out the water and filled in concrete so that a base could be formed. It was estimated that 9.7million gallon of water was drained out and the tower was eventually completed in 1935.

When both towers were done, the cabling work began. The idea was to have two main cables pass through the top of the towers and hang up the deck. Each cable consisted of 40,000 miles of galvanized steel wires and was tightly anchored to the ground. However, due to the heavy fog clustered around the area, the task was made even challenging.



Fig. 6, Golden Gate Bridge 20



Fig. 7, Traffic crosses the Golden Gate Bridge for the first time on opening day

After four years of construction, Strauss's biggest project, together with the effort of Charles Alton Ellis and Leon Moisseiff, was finally completed in 1937. Golden Gate Bridge was opened to vehicles on 28, May 1937. It has since then severed over 2,000,000,000 vehicles and remained to be the symbol of San Francisco.

## Interesting facts.....

Golden Gate Bridge is actually painted in ‘international orange’. It is painted in this color because it matches the natural surrounding perfectly. It also stands out in the fog and makes it easier for ships to see. The word ‘Golden’ refers to the strait that forms in the mouth of San Francisco Bay. It does not represent the color of the bridge!



Fig. 8, *Sunrise at the Golden Gate Bridge*



Fig. 9, *Ironworkers Place Safety First When Working atop the Bridge's 746-foot Tall Main Towers.*

During the four years of construction, only 11 workers died which was way below estimated. Strauss was highly concerned about the safety issues on the site so he insisted a net to be installed under the construction zone. 19 workers were saved by the net! However, towards the end of the completion a platform fell into the safely net carrying 10 workers down to the sea.

Since Golden Gate Bridge lies in an earthquake zone, 119 sensors have been installed on the bridge to monitor the response of the bridge caused by seismic activities. To better improve the stability of the bridge, the committee has also launched the Seismic Retrofit Construction Project. The whole project lasted for 11 years and was eventually completed in 2008.



Fig. 10, *New support tower under construction*

# General Information

Weight of bridge	887,000 tons
Length of bridge	1.7 mile
Width of bridge	90 ft
Height above water	746 ft
Total cost for construction	\$35 million (in 1937)
Length of the main cable	7650 ft
Weight of two main cables	24,500 tons
Gallon of paint	10,000 annually
Daily Traffic	118,000 vehicles

\*data obtained from <http://www.goldengatebridge.org>



*Fig11, Deer1. On May 19, 2004, a young deer bounding onto the Golden Gate Bridge and loped across the entire span as Bridge officials and motorists watched in amazement. The deer zipped through a FasTrak lane, took the 19th Avenue exit and then disappeared into the Presidio.*



*Fig12, Cranes1. On March 16, 2010, three massive cranes, bound for the Port of Oakland, aboard the Zhen Hua 15 passed under the Golden Gate Bridge just after 8:30 am. The ship originated its trip in China.*

## Photos Credit

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