**[Brooklyn Bridge Research Paper](http://liliyathroughtheyears.blogspot.com/2014/02/brooklyn-bridge-research-paper.html)**

When you drive over the Brooklyn Bridge, don’t you want to know the important story of the making of the bridge? The Brooklyn Bridge is [A[http://cdncache-a.akamaihd.net/items/it/img/arrow-10x10.png](http://liliyathroughtheyears.blogspot.com/)](http://liliyathroughtheyears.blogspot.com/) proud, monumental bridge made in the United States and  is a very substantial part of history that everyone should learn about. It is one of the oldest bridges in the United States. It was also the longest suspension bridge in the world when it was built. The amount of time and effort put into this project still impresses us.  It is a very beautiful sight that millions of people see every day. The Brooklyn Bridge is one of the wonders of the world because of the innovation of its construction, its beauty and its importance to the development of the city of New York.

John A. Roebling was the man who made the Brooklyn Bridge become the way it is today. John A. Roebling was the engineer and the designer of the Brooklyn Bridge (“John A. Roebling”). He was born June 12th, 1806. Roebling initially estimated that the bridge would take five years to complete.  It took almost fourteen years (Brooklyn Bridge Opens), nine years longer than estimated. He was the youngest child of four. His mother allowed him to be tutored in mathematics and science. Roebling first decided to work as an engineer. His work involved the [improvement](http://liliyathroughtheyears.blogspot.com/) of  river navigation and the building of canals. He worked for the Pennsylvania canal system which led to a job surveying for a railroad route over the Allegheny Mountains (“John A. Roebling”). In 1840, he wrote to Charles Ellet Jr, the suspension bridge designer, and offered to help design a suspension bridge near Philadelphia.  In 1851, he worked on a railroad bridge that linked the New York Central and Great Western Railway of Canada over the Niagara River. In 1867, when Roebling was asked to work on the Brooklyn Bridge, he accepted. During the process, he was injured. While gazing at the   bridge, a ferry that arrived accidentally crushed Roebling’s foot. Some of his toes had to be amputated. During his recovery, a few weeks later, he was infected with tetanus. He died about 24 days later.  Roebling's son Washington Roebling and his daughter-in-law Emily Warren Roebling continued his work on the Brooklyn Bridge (“Building the Brooklyn Bridge”)after his death.

In the "Report" to the New York Bridge Company on September 1, 1867 John [A](http://liliyathroughtheyears.blogspot.com/). Roebling wrote, The contemplated work, when constructed in accordance with my design, will not only be the greatest bridge in existence, but it will be the great engineering work of the continent and of the age.  Its most conspicuous feature - the great towers - will serve as landmarks to the adjoining cities, and they will be entitled to be ranked as national monuments.  As a great work of art, and a successful specimen of advanced bridge engineering, the structure will forever testify to the energy, enterprise, and wealth of that community which shall secure its erection. (Maher)

Roebling thought that this bridge would be the greatest creation that he had ever made.

Washington Roebling’s early life influenced his ability to go and help his father on the Brooklyn Bridge. When John A. Roebling was sick, his son Washington Roebling joined constructing the bridge. He took over his father’s project when he passed away. Washington Roebling was the oldest of John A. Roebling's children. Same as John, he was also being tutored to help him become a better learner. Later in Washington’s life, he decided that he wanted to join the militia. On April 16, 1861, during the American Civil War, Washington engaged as a private in the New Jersey Militia. He wanted more than garrison duty. He didn’t want to do just garrison activities, such as troop parades or honor guards. So he decided that he wanted to resign. Just two months after he decided to join the militia, he resigned (Mellinger). After he resigned he re-enlisted in a New York artillery battery. He was very exceptional at this [job](http://liliyathroughtheyears.blogspot.com/) and he continued to rise in the ranks and he was soon commissioned as an officer. Washington had also helped his father with many of his bridges that he had built (Mellinger).

When his father died he was named chief engineer. When that happened Washington said, "Here I was 32 years old, suddenly in charge of the most stupendous engineering structure of the age, with only preparatory plans, nothing fixed or decided.  The prop on which I hitherto leaned had fallen. Henceforth, I must rely on myself" (Maher). He was now the person to make the Brooklyn Bridge succeed. While Washington was on the site a fire broke out. He was lucky to extinguish the flames before a big disaster happened, but some men still did get hurt (Maher). Many of these unpredictable and scary events happened while building the bridge. While working in the compressed air that helped to prevent the surrounding water to leak, Washington got decompression sickness, which is also called the bends (Maher).  This didn’t help his health; it only made him worse. It made him very ill and he could not visit the construction site any longer. But he still continued to survey the project to make sure it was successfully completed. He would look through his window to see how the bridge was coming along. Roebling still continued to battle the after-effects from the caisson disease and he had its treatment for the rest of his life (Maher).

In 1870, the new immigrants who were arriving to the Northeastern part of the United States seeking employment on this major construction project faced many challenges. During the construction of the Brooklyn Bridge, sicknesses that included smallpox, typhoid, malaria, yellow fever, cholera, and tuberculosis were spreading rapidly throughout the increasing population of New York City. The new immigrants who traveled to large urban areas wanted to settle down with families and start working. (Immigrants, Cities and diseases: immigration and health concerns in late nineteenth century America). The total of 600 workers were hired to construct the Brooklyn Bride. At least 27 of them  died. Most of the deaths were due to accidents on the job but many became sick as well due to the rapid spread of disease. Living conditions were very poor for most workers. Then the towns turned into cities. More houses that were being built were very small. Most of the houses did not have running water, ventilation or toilets. These situations were usually an additional cause of the spread of disease.

The construction of the Brooklyn Bridge was [a](http://liliyathroughtheyears.blogspot.com/) long and arduous process. Many ideas and workers helped the construction process continue. Washington Roebling had to design the two large pneumatic caissons that would become the foundations for the two towers. The first objective to building the bridge was to make sure that the bridge’s two towers were securely anchored on the solid bedrock (Building the Brooklyn Bridge). It was found under the many layers of mud that was below the East River. This bridge was the first steel bridge and helped others make steel wire bridges later. Now it is very common to drive over steel wire bridges. Caissons are airtight cylinders that were sunk to the riverbed. Caissons are still important for the bridge because it keeps it in place.[A](http://liliyathroughtheyears.blogspot.com/) huge wooden caisson that resembles a giant box was assembled on land. It was then towed to the site at the Brooklyn side (Building the Brooklyn Bridge). It was then let go and sunk into the water. Caissons allowed workers to build a foundation for the towers into the bedrock. The caisson's false floor was ripped out and allowed the workers to dig up the river bottom (Building the Brooklyn Bridge). Soon after ground was broken, problems became immediately apparent with the two 3,000 ton caissons As the caissons settled on the waters grounds, the masonry towers were able to be built on top, and their weight helped to sink the caissons deeper. A lot of compressed air was pumped into the chamber to avoid the water that was around the caissons from leaking in (Building the Brooklyn Bridge).

E.F. Farrington, master mechanic for Washington Roebling once said that, "Inside the caisson everything wore an unreal, weird appearance.  There was a confused sensation in the head, like the rush of many waters.  The pulse was at first accelerated, then sometimes fell below the normal rate.  The voice sounded faint, unnatural, and it became [A](http://liliyathroughtheyears.blogspot.com/) great effort to speak.  What with the flaming lights, the deep shadows, the confusing noise of hammers, drills and chains, the half-naked forms flitting about, if of [A](http://liliyathroughtheyears.blogspot.com/) poetic temperament, get a realizing sense of Dante's inferno.  One thing to me was noticeable, time passed quickly in the caisson" (Maher). This was very important to the building process. E.F. Farrington (master mechanic) took soil samples and he discovered that the soil hadn't shifted in millions of years. Because of this, Farrington decided it was stable enough to hold the place where the  bridge would be located. To this very day, one of the towers of the Brooklyn Bridge rests on bedrock, while the other rests on sand.

Many workers put their life on the line to make this wonderful bridge because of the hazardous conditions. The working conditions for the men were very hard and terrible. The tremendous pressure, the suffocating heat, the lack of oxygen and the noise all combined to limit a worker's time (Building the Brooklyn Bridge). Because of these conditions, this only let them work in the caisson for a maximum of two hours. Many events slowed down the workers timing and building. Brave men died  in the making of this wonderful bridge.  There are 27 known deaths (Brooklyn Bridge Opens). Workers fell, were hit by loose cable strands, and were caught in the drums. Many workers were trapped under a derrick on top of the Brooklyn tower. In addition to this, numerous workers suffered the bends.

Finally,  the construction of the bridge was complete.. Washington wanted to show the world that the bridge was [A](http://liliyathroughtheyears.blogspot.com/) magnificent piece of work. The Brooklyn Bridge was formally opened on Thursday, May 24th, 1883 with ceremonies, and in the presence of the largest multitude that ever gathered in the two cities. On the first day of its opening, [A](http://liliyathroughtheyears.blogspot.com/) total of 1,800 vehicles and 150,300 people crossed the bridge. Each person that crossed the bridge had to pay one cent (Maher). The people who crossed the bridge in [A](http://liliyathroughtheyears.blogspot.com/) car were to pay five cents. The opening week was not without controversy, as a week later, a rumor that the bridge was going to collapse caused a stampede that killed twelve people. This was not a good first showing of the bridge. Soon after, to publicize his famous circus, P.T. Barnum led 21 elephants across the bridge and calmed any doubts about its stability. The people who thought it could not hold a large amount of people were truly wrong (Maher).

The bridge was instrumental in connecting Brooklyn to Manhattan and in the development of Brooklyn as a metropolitan area. Many of the working people who lived in Brooklyn worked in Manhattan. This meant that they had to take the ferry. There was no other way to travel to work and back home. Before the bridge was built approximately one tenth of the population of Brooklyn crossed the East River twice daily by ferry to get to work and home.  In 1860 Brooklyn had less than 500 factories. By 1880 the factory count had gone up to 5,000. The East River “forms a barrier between them (Manhattan and Brooklyn) which, however frequency passed, still form and must forever continue to form an unsurmountable obstacle to their union” (Trachtenberg). History proved that the construction of the Brooklyn Bridge had much to do with the development of brooklyn as a city on its own.

The Brooklyn Bridge as it has shaped the way bridges have been built ever since. Its story also has to do with the people who designed it and who built it, and their sacrifices. The many thousands of people who cross it every day may see the amount of effort put into this amazing bridge. It also helped New York a lot by connecting Brooklyn with Manhattan .Two towns became part of one large city. Before the Brooklyn Bridge was constructed, everyone had to travel by ferry between Brooklyn and Manhattan. It still stands as one of New York’s proudest landmarks and is a very important link between the two most important sections of New York City. Some people know it as just a bridge but not the story that helped make New York what it is today.

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