



The Golden Gate Bridge

Overview

Let's suppose that you had what you thought was a great idea to do something that had been dreamed about and wanted for a long, long time. Unfortunately, virtually all of the experts in your profession were of the strong opinion that it was impossible. Indeed, others had the same idea and abandoned it, because it was just too far-fetched for technology and people to achieve. Worse yet, because doing it would require more money than had ever been spent on any single project before (at least in modern times) it would require convincing a lot of people to make the commitment on your say-so! And even though you had a plan to recover the cost of the project eventually, there was still the enormous up-front cost that had to be paid. Add to this already interesting challenge, a powerful and very influential group of people who don't want you to succeed anyway, because it would mean the demise of their very lucrative businesses.

Would you spend 15 years of your life, get into countless arguments with your professional colleagues, endure the taunts and jabs of thousands of people who thought you were crazy, and spend days and weeks at a time trying to convince just one important person that what you were proposing could, in fact, be done? And what would you do when it finally looked as if you were winning at least, to see petty people try to shut you out of the project just for spite? And if the petty people weren't enough to slow you down, how about trying to start it just when the country was entering the most disastrous period of financial ruin in its entire history? What would you do? Would you keep going? Could you go through something like that? Would you spend your life's savings in the seemingly endless quest of this vision?

Well, fortunately for everyone, that's exactly what Joseph B. Strauss, visionary, architect, civil engineer, and builder of the Golden Gate Bridge did.

You can find the details of the history of how the bridge was built in a number of sources. It's 4,200 foot span, rising 220 feet above the water, with 742 foot high towers, and over 60,000 miles of wire produced a structure that is world renowned and instantly recognized.

This is a fine enough story as it is, but there's more to it (there always is) besides the world getting an awe-inspiring bridge. The Golden Gate Bridge project made two other contributions worth noting. Until that time, large construction projects used a rather interesting cost estimation metric: one human life per \$1 million spent. Strauss was determined to reverse that fact. He spent

almost as much time on safety problems as on the bridge design and construction itself.

Strauss also invented the “hard hat.” Likewise, he invented the safety net and tethered work lines, as well as the two-man model of redundant actions. Strauss’ methods produced radical changes in the construction industry in general. As a result, not only were there fewer fatalities and expenses, but safer practices also enabled designers to attempt more ambitious projects. Any structure built since, including most likely the home you live in, has been positively affected by Strauss’ attention to this long overlooked “detail.”

Joseph Strauss didn’t invent suspension bridge technology. That happened over 100 years earlier. But, during that 100 years, and after the successes of projects like the Brooklyn Bridge, “experts” came to know exactly what technology could—and couldn’t—do. They wrote the books and gave the speeches and taught the courses to apprentice bridge builders. They knew that you couldn’t build a bridge that spanned over 4,000 feet long, much less sink a foundation for a tower in 200 feet of cold, treacherous water! The idea was absurd, a \$30 million disaster in the making.

Remember what Mark Twain said: “it’s not what we don’t know that gets us in trouble; it’s what we know that ain’t so that really does us in.”

Professions and Trades

A project the size of the Golden Gate Bridge clearly required the efforts of hundreds of specialists and thousands of highly talented workers such as:

- Accountants (cost, tax, inventory, etc.)
- Artists and Illustrators
- Carpenters
- Contract and Purchasing Administration
- Draftsmen
- Foundation and Footings Engineers
- Health Care Specialists (physicians, nurses, EMT’s, supplies, etc.)
- Hoisting and Lifting Specialists (crane operators, barge operators, etc.)
- Human Resource Administration (payroll, taxes, benefits, etc.)
- Hydraulic Technicians
- Marine Biologists
- Mathematicians
- Materials Engineers
- Mechanical Engineers
- Millworkers
- Oceanographers
- Painters
- Politicians

- Riveters
- Steelworkers
- Stevedores
- Structural Engineers
- Welders