

Hoover dam: project risk and reward

Countries



The PMBOK Guide 4th ed. defines a project as: project [n. proj-ekt, -ikt; v. pruh-jekt]- a temporary endeavor undertaken to create a unique product, service, or result. The construction of the Hoover Dam is an example of a project. It is considered a project because it was a temporary endeavor and it had to go through the five stages of a project. There was an initiation phase. This phase defines the needs and of the project. The Hoover Dam construction project was initiated due to the flooding of the salt mines in the area. By damming the Colorado River, flooding could be reduced while having electricity produced.

There are many tools that can be used in this phase. Among those tools, the problem definition tool, the problem tree tool, and the IS-IS NOT tool are all examples that may have been used during this phase, because they help define what the project need is. Then the planning phase was conceptualized. This phase is responsible for establishing the scope of the project, defining objectives and the course of action. It took place during 1920's to pacify the Colorado River because of the constant flooding of the Imperial Valley. The planning phase took over 15 years.

Tools that may have been used in this phase might include the information gathering plan, the organizational structure tool, and the information matrix tool. “ These tools provide information such as team member responsibilities, quality control tests, and other information that is crucial to the success of the project. ” (Office Design Concepts, n. d.) The third phase of the project is the execution phase. In this phase, the processes that were agreed upon in the planning phase are performed. The processes of building Boulder City up to the completion of the dam were included in this phase.

Tools that would be useful in this phase would be the Gantt chart tool, the project communication plan, and the project contract. These are all useful tools because they help lay out time lines, communication expectations, and stakeholder expectations. The monitoring phase is the fourth phase of the project. This phase tracks, and reviews the progress of the project, to help regulate the standards of quality. This phase was actually done throughout the execution phase, by inspection of the setting concrete and the monitoring of tunneling standard of the period. One of the tools that would be useful in this project is the Pareto tool.

The Pareto tool lists all the defects that occurred by frequency from most frequent to least frequent. This helps to identify where the greatest problem areas occurred. The final phase of the project is the closing phase. This phase takes place after all the other phases are completed. The phase is usually identified with change management, and the signing off by the stakeholders of the project. The tool that would be most useful in this phase is the stakeholder communication plan. This is useful because it allows the project team to get feedback from the stakeholders.

The feedback can be used for future use as a “lessons learned” tool, and can also help decide whether to undertake a similar project in the future. Overview Even with today's standards, the construction of the Hoover Dam is considered a mega project. When the dam was completed, it was the world's largest project made with concrete. The construction project is also the largest public works project in US history. To this day it is still a great engineering feat. After fifteen years of planning, the project broke ground

during the middle of the Great Depression in 1931. This made it easy to find workers.

The construction took five years to complete. The average crew had about 3500 men that worked daily. 21,000 individuals that worked on the dam worked over this period. The first job was to divert the river. (Hoover Dam Info, n. d.) It was done in two stages. The first part was done by building two cofferdams to prevent flooding. The second part was to “divert the water around the construction site” (Hydraulic Ram Pumps Textbook, n. d.) using diversion tunnels. While the diversion phase started, another phase to prepare the canyon walls to hold the new dam began by removing loose rocks with dynamite and bulldozers.

The rocks that were removed were then used in the building of the cofferdams. The dam is a massive 725 feet high, and produces over 2000 megawatts of power. Besides being a dam that creates electrical power, it also provides a great recreational area for outdoorsmen, Lake Mead. The lake is named after the dam’s project manager, Elwood Mead who became a giant in the engineering industry for finishing this historic feat. The Problems As with any project, there are a number of issues that occurred during the construction.

Things like having a construction site near the desert, concrete issues, and having little housing, food, or goods available for site workers. Before construction could get started certain concerns had to be met. The first concern was the housing shortage. The area was deserted, rough and hot, with an average temperature reaching 119 degrees in the summer and the thermometer dropping below freezing in the winter. With the <https://assignbuster.com/hoover-dam-project-risk-and-reward/>

Great Depression not showing an end in sight, every type of worker imaginable rushed to the dam project. It was then Boulder City was erected. The city development housed both government and contract employees.

When Boulder City was completed in 1932 it had large dorms for single men to reside, and 1-3 room buildings for men with families. Once the city was completed, a highway was built from the city to the construction site. Along with the highway, a railroad that reached from Las Vegas, Nevada to Boulder City was created. The thick concrete has its own set of problems. As the dam height increased, a new mixing plant needed to be constructed. Instead of pouring a single block of concrete, the dam was built in sections of individual columns. It resembled a trapezoidal in shape, and the columns were built in five foot sections.

One of the problems that this created is that to produce the level of strength the concrete required, dry mixed concrete needed to be used. Using this type of concrete was difficult because it left very little time for it to be moved from the mixing plant to the dam. This meant that it took too much time for the concrete to reach where it needed to be poured; the concrete would initially set still in dump buckets, and would have to be removed by chipping it out by hand. The construction solved this problem by paying the crane operators higher wages and having them lead teams of seven, to make sure the buckets made it to the right place.

The buckets would be lifted and lowered into place by overhead cranes. There were a total of nine cranes used to place the concrete. As each bucket reached its destination, it was then dumped, while seven puddles would use “shovels and rubber-booted feet to distribute the concrete” (Bureau of <https://assignbuster.com/hoover-dam-project-risk-and-reward/>

Reclamation, n. d.). The forms were also fitted with pneumatic vibrator to make sure the concrete had no voids. Another problem with using the dry mix is that the curing process created heat. This made it difficult for the large sections of concrete to cure evenly. If concrete is not cured its strength will become brittle and start cracking.

The uneven curing issue also led to the problem of staying on schedule. If the concrete did not set fast enough, the next section would not be able to be started. To address these problems the concrete sections were embedded with cooling pipes, to run water through the concrete. This helped to cool the concrete evenly and quickly. There was more than 580 miles of one inch pipe that was embedded throughout the dam. When the concrete was first poured it was initially cooled with river water. Then the chilled water circulated through the pipes to finish the cooling.

Once each block cooled, the pipes would be cut off and pressure grouted. The final problem I will discuss is the rugged working conditions. The work was dangerous and hot. There were no official number about how many lives were lost from site accident, but it ranged for about 96 to 112 lives lost from accidents such as, heat stroke and heartfailure, falling rocks, and blasting accidents. In the early phases of the construction there was a worker's strike attempt that failed because of so many people willing to work during the depression, however the strike did bring attention to keeping workers hydrated more regularly.

The Outcome At its completion, the Hoover Dam was the tallest dam in the world. It is a national land mark, and considered a modern marvel. “ The Hoover Dam stands at a massive 725 feet high, 1244 feet wide, and <https://assignbuster.com/hoover-dam-project-risk-and-reward/>

measuring 660 feet thick at the base while tapering to 45 feet at the top” (Wilson, n. d.). The dam had a total cost of \$165 million to build and was completed two years ahead of schedule. The name of the dam has changed several times. The original name of the dam was Boulder Dam, because it was constructed at the base of Boulder Canyon. It later became known as Hoover Dam when Secretary of the Interior Ray L.

Wilbur named it that during a strike diving ceremony, in honor of President Herbert Hoover. Then, in 1933 President Franklin D. Roosevelt’s Secretary of the Interior Harold Ickes, changed it back to Boulder Dam. Fourteen years later, Congress changed the name back to Hoover Dam. References A Hoover Dam History - Aerospace Engineering Courses page. (n. d.). Retrieved from http://aeweb.tamu.edu/whit/Classes/214_WEB/C_7_heatTransfer/A%20Hoover%20Dam%20History%20-%20Concrete.htm Barber, P. (09/28/2010). Hoover Dam Construction. Online Nevada Encyclopedia.