“TEN YEARS AGO” the place where we are gathered was an unpeopled, forbidding desert. In the bottom of a gloomy canyon, whose precipitous walls rose to a height of 1,000 feet, flowed a turbulent, dangerous river.”

So began President Franklin D. Roosevelt, speaking in Nevada to a crowd of 10,000 and a radio audience of millions. What had once been a desolate chasm now was the site of “the greatest dam in the world,” and the president had come there to celebrate its completion. Today we know Hoover Dam as a national landmark, but in 1935 it was an engineering wonder. Beyond the heroic feat of harnessing the Colorado River, the dam had a psychological importance to the American people. It seemed a triumph over the Depression.

The construction of Hoover Dam is remembered as a hallmark of the New Deal. Yet the dam was rightfully named for Herbert Hoover. Now remembered as the hapless president in charge during the collapse of the American economy, Hoover had enjoyed the highest regard as secretary of commerce (1921–28). In that capacity, he was the advocate and arbiter of the plan to build a dam on the Colorado River. Hoover brought a unique insight to the project. Before his life in public service, he had made his name and fortune as an engineer. He fully understood all the project’s challenges—and he was engrossed by them.

River seems too placid a term for the Colorado, a 1,400-mile torrent. Its wild power carved out the Grand Canyon, but such raw energy also defied man’s attempts to utilize the river. In the early 20th century, Southern California had built channels on the river to irrigate the Imperial Valley. During one of its periodic floods, the Colorado raged through those channels, inundating the valley and creating California’s largest lake: the 350-square-mile Salton Sea. That disaster proved the futility of half measures and wishful thinking. If the river was ever to be controlled, it required the construction of a dam.

But where would that dam be located? The Colorado flowed through seven states: Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. All had to agree to a federal project on their land and the subsequent allocation of the river’s waters. In 1922, Secretary Herbert Hoover helped forge that agreement: the Colorado River Compact. Then began the groundwork—literally: Government surveyors spent four years along the river’s route looking for the most promising site for a dam. Geology was

Building Hoover Dam
An engineering wonder, it was an American triumph over the Great Depression
BY EUGENE FINERMAN

H.W. Goodall at Hoover Dam during the construction

Black Canyon showing conditions at the dam site prior to beginning of excavation between the cofferdams, 1933.
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not the only consideration. California, with its burgeoning population, had the loudest demand for the water and the electricity that would be generated by the dam. The sale of that electricity would recoup the dam’s cost. So politics and geology had to find a juncture: It was the Black Canyon, along the Arizona and Nevada borders.

Such a project would be under the U.S. Bureau of Reclamations. Its surveyors and engineers undertook a feasibility study of the site. Their report was favorable but contained significant and daunting concerns. The chosen site was a desolate canyon, 30 miles from any roads. Factories would have to be built in the middle of the desert. The dam itself would be the world’s largest and a masterpiece of engineering: taming the Colorado required nothing less. With the exception of wars, the construction of the dam would be the most expensive undertaking by the federal government to date. Yet, the dam was possible; it certainly would benefit the Southwest, and the costs eventually would be recouped. In 1928, with a booming economy and limitless optimism, Congress and President Coolidge could afford the world’s most expensive dam. The construction of Boulder Dam was approved.

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When Herbert Hoover was elected president that same year, the unemployment rate was 4 percent. When he was voted out of office four years later, the rate was 23 percent. The brilliant engineer proved a tone-deaf politician. He consistently underestimated the growing Depression, claiming “prosperity is just around the corner.” However oblivious he was to the Depression, Hoover remained committed to Boulder Dam. It would provide employment, stimulate the economy and foster future growth.

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In January 1931, the Bureau of Reclamations opened bidding for the construction of the dam. Described in a 100-page book, the project would require building a 700-foot-high dam; at the time, the world’s highest dam was only 420 feet. In addition, two power plants were to be built. All this was to be completed in seven years. The government would provide the construction material. As a guarantee of performance, a $5 million bond would be required of the construction firm. In the economy of 1931, no single construction company could afford that bond. However, a group of firms formed a joint venture to bid on the project. They named themselves Six Companies and calculated their lowest possible offer. It was $48,890,995 (about $748 million today)—and the winning bid.

In the spring of 1931, Six Companies could hire 3,000; four times that many people applied. The average wage was $.65 an hour ($11 an hour...
today). Men worked eight-hour shifts, every day of the week. The first phase of the project was the diversion of the Colorado River. Its waters would be diverted around the dam construction and flow out farther downstream. To channel that water, four tunnels were dug and blasted through solid rock. Each tunnel was 56 feet in diameter and three-quarters of a mile in length. Fifteen million cubic yards of debris were removed. That debris would be used in an earthen dam to block the river and divert its waters into the tunnels. By November 1932, the tunnels had been completed—11 months ahead of schedule.

With the river diverted, construction now began on the dam. The work started with the excavation of the riverbed, digging down through 40 feet of mud and silt to bedrock. A half million cubic yards of river bottom was dredged. The dam now had its foundation of solid rock. At the same time, the walls of the canyon were being blasted smooth by jackhammers and dynamite—work done by men suspended by ropes, harnesses and tenuous luck. Above the canyon the company had constructed a factory for making concrete. Through a series of aerial cables, a 20-ton bucket of concrete could be transported anywhere within the construction site. As the construction got underway, the buckets arrived every 78 seconds.

The work was nonstop: three eight-hour shifts a day, every day of the week, and the workforce was now 5,000. Those workers lived on the site in a community called Boulder City. The government subsidized housing and food. Neither Six Companies nor the government had anticipated that men would bring their families, too. So schools had to be improvised.

Millions of tons of concrete were being poured into trapezoidal blocks, which held steel pipes inside, through which cool water flowed to speed the concrete curing process. (Once the concrete block had stopped contracting, the pipes were filled with grout.) In turn, the blocks formed interlocking columns, and the dam began to take shape. It was convex; the curving arch would face the water. At the same time, two power plants were being built. One was on the Nevada side, the other in Arizona. Water from the river would power its turbines, which then would produce 2 billion watts of electricity. That would serve the needs of 1 million people.

On February 6, 1935, the last bucket of concrete was molded into the dam. The construction was not quite finished; some grouting was needed, and there were cosmetic touches as well. But its majestic structure was evident. Boulder Dam was 726 feet high, 1,244 feet wide and 660 feet thick at the base, tapering to a thickness of 45 feet at the top. It surpassed the masonry of the Great Pyramid of Egypt, the first man-made structure to do so. The diversionary tunnels were plugged, and the Colorado River began to fill behind the dam and form a lake—a process that would take two years. That lake, which would store 9.2 trillion gallons of water, would be named for the director of the Bureau of Reclamations: Edward Mead.

Boulder Dam was dedicated on September 30, 1935. The American public saw it as a triumph, a testament to the American spirit even in those dark times. The dam seemed like a reassuring promise. Its look was modern, clean and streamlined, ready for the future. In 1947, the dam was renamed for Herbert Hoover. He had described the dam as “the greatest engineering work of its character ever attempted by the hand of man”—and he was alive to enjoy some credit for that achievement.