

PANAMA CANAL: CREATING A WONDER OF THE MODERN WORLD



The idea of creating a water passage across the isthmus of Panama to link the Atlantic and Pacific Oceans dates back to at least the 1500s, when Charles V of Spain sent expeditionary teams to survey the area. The realization of a route that would cross the mountainous, jungle terrain was deemed impossible at the time. The idea, though, remained tantalizing as a potential trade shortcut from Europe to eastern Asia.

France was ultimately the first country to attempt the task. Led by Count Ferdinand de Lesseps, the builder of the Suez Canal in Egypt, the construction team broke ground on a planned sea-level canal in 1880. Even though the prospective canal would only be a quarter of the size of the Suez Canal, the French soon came to realize that this “smaller” project would be a monumental challenge. Four months of incessant rains caused heavy landslides; additionally, there was no effective means for combating the spread of yellow fever and malaria that devastated the workforce. The isthmus itself was the low point between various mountain ranges, and the rocky terrain was too difficult to excavate for a sea-level canal. De Lesseps belatedly realized this and reorganized efforts toward a lock canal, which would use the force of water to lift ships through the canal passageways, but funding was pulled from the project in 1888.



Following the deliberations of the U.S. Isthmian Canal Commission and a push from President Theodore Roosevelt, the U.S. purchased the French assets in the canal zone for \$40 million in 1902. Seemingly not grasping the lessons from the French effort, the Americans devised plans for a sea-level canal along the roughly 50-mile stretch from Colón to Panama City. The project officially commenced on May 4, 1904, but encountered immediate problems. John Stevens took over as chief engineer in July 1905 and immediately addressed the workforce issues by ordering new equipment and devised efficient methods to speed up work. He also recognized the difficulties posed by landslides and convinced Roosevelt that a

lock canal was best for the terrain.

Rising numbers of yellow fever and malaria cases were relieved by the efforts of Dr. William Gorgas, who believed that mosquitoes carried the deadly diseases indigenous to the area. Gorgas embarked on a mission to wipe out the carriers, his team painstakingly fumigating homes and cleansing pools of water. The last reported case of yellow fever on the isthmus came in November 1905, while malaria cases dropped precipitously over the following decade.



Roosevelt named Lt. Col. George Washington Goethals the new chief engineer in 1905 after Stevens' resignation. Goethals focused efforts on the excavation of Culebra Cut; the 9-mile stretch became an around-the-clock operation, with up to 6,000 men working at any one time. Construction of the locks began with the pouring of concrete at Gatún in August 1909. Built in pairs, the locks were embedded with culverts that raised and lowered water levels. Ultimately, the three locks along the canal route lifted ships 85 feet above sea level. The entire enterprise was powered by electricity and run through a control board. Two

steam shovels working from opposite directions met in the center of Culebra Cut in May 1913, and in October, President Woodrow Wilson operated a telegraph at the White House that triggered the explosion of Gamboa dike, flooding the final stretch of dry passageway at Culebra Cut.

The Panama Canal officially opened on August 15, 1914. Completed at a cost of more than \$350 million, it was the most expensive construction project in U.S. history to that point. Altogether, some 3.4 million cubic meters of concrete went into building the locks, and nearly 240 million cubic yards of rock and dirt were excavated during the American construction phase. Of the 56,000 workers employed between 1904 and 1913, roughly 5,600 were reported killed due to unpredictable landslides and dynamite explosions.



Bolstered by the addition of Madden Dam in 1935, the Panama Canal proved a vital component to expanding global trade routes in the 20th century. The transition to local oversight began with a 1977 treaty signed by U.S. President Jimmy Carter and Panama leader Omar Torrijos, with the Panama Canal Authority assuming full control on December 31, 1999. Recognized by the American Society of Civil Engineers as one of the seven wonders of the modern world in 1994, the canal hosted its 1 millionth passing ship in September 2010.