

Infrastructure Rehabilitation/Replacement

"Dedicated to creative, responsive, quality solutions for those we serve."

Carollo Provides Site-Specific Solutions to Infrastructure Challenges

The Hidden Challenge

Cities face significant challenges as they develop and age. Many of these challenges are readily understood by the public because they are visible (e.g., traffic congestion, deteriorating streets, the ever-changing skyline). Other challenges are not so obvious. One of these involves the inadequacies of hidden infrastructure (water/wastewater collection and distribution systems). These systems are "out-of-sight, out-of-mind" to the public —until they fail. The need to assess and provide cost-effective rehabilitation/repair of forgotten infrastructure continues to be a pressing challenge.



Multiple Diameter Pipe Bursting Project, Hillsborough, California.

Carollo Engineers is a full-service firm that can assist in meeting this challenge. We have worked extensively with cities, public utility districts, and local neighborhood groups to implement infrastructure projects that meet public expectations. We match infrastructure rehabilitation/repair technologies to each specific project for successful results. We find the combination that works best for your project.

We have planned, designed and assisted in the construction of infrastructure projects incorporating standard cut-and-cover, jack and bore, microtunneling (MT), horizontal directional drilling (HDD),

tunnel boring machines (TBM), pipe bursting, fold & form pipe, cured-in-place pipe (CIPP), and sliplining techniques. We have worked with pipe diameters ranging from 4 inches to 120 inches with pressures from 0 psi (gravity flow) to 600 psi. Carollo is ready to assist you in defining your needs and providing new and innovative solutions for the design and implementation of your infrastructure project.

Infrastructure Rehabilitation

The primary goal of rehabilitation is to return structural integrity and reliability to a system without necessarily increasing its flow-carrying capacity. The key to rehabilitation planning is matching the appropriate rehabilitation techniques and costs to specific project constraints. Several pipe materials (HDPE, PVC, etc.) are available that will maintain existing flow capacity with a smaller than existing pipe diameter. This allows in-situ lining and pipe bursting to be competitively compared with traditional cut-and-cover techniques. We often call for two or more appropriate technologies in a single project for contractor selection during competitive bidding. This strategy provides cost-saving benefits for our clients.



HDD Project under the Rogue River, Shady Cove, Oregon.



Infrastructure Replacement

Provisions for increased flow-carrying capacity or re-alignment of an existing pipe usually require system replacement. Again, we correctly match the available technologies and costs to the site-specific installation conditions to ensure a cost-effective project. For example, we have found it beneficial to use trenchless methods in sparsely populated areas with unrestricted access for pipe replacement to avoid disturbing sensitive environmental zones. Where traditional cut-and-cover methods seem to be the obvious least-cost alternative, consideration of less apparent costs involving regulatory agency permitting and public acceptance will sometimes dictate selection of alternative trenchless technologies. Our experience allows us to bring these considerations to the table, in order to guide your project based on your needs.

Experience Counts

Carollo has the practical, field-tested knowledge and proven experience to guide your infrastructure project from conceptual planning through installation, while providing the most cost-effective solution. Our infrastructure engineers are specialists, having completed numerous and diverse infrastructure projects on schedule and within budget. We measure our success by the number of repeat clients that we maintain. We look forward to customizing a project to fit your needs.

Recent infrastructure experience includes:

City of Shady Cove, Oregon - Sewer Force Main Replacement

- ▼ Design and construction management to install a new 8-inch-diameter force main including 1,000 feet of horizontal, directional drilling beneath the pristine Rogue River. Using HDD allowed the



Fold & Form PVC Lining Project, Piedmont, California.

overall force main length to be reduced five-fold. Challenges overcome included difficult subsurface geologic materials and public sensitivity during drilling on private properties.

City of Piedmont, California - Sewer/Collection System Rehabilitation/Replacement

- ▼ Program management for trunk sewer and collection system rehabilitation projects. This ongoing 25-year program has involved the design and construction of several pipeline rehabilitation and replacement projects in sensitive residential and commercial areas, the assessment and implementation of several trenchless sewer replacement/rehabilitation technologies, utility coordination, and the initiation of active public information/notification programs.

Town of Hillsborough, California - Multiple Diameter Pipe Bursting Project

- ▼ Upsizing of an existing trunk sewer from 15 to 28 inches via multiple diameter pipe bursting. The work was completed in an area with severe environmental and technical constraints, including proximity to San Mateo Creek and three large (44-inch, 60-inch, and 79-inch-diameter) water transmission mains. Use of cutting-edge trenchless technology saved both time and money.



Multiple Diameter Pipe Bursting Project, Hillsborough, California.

South Tahoe Public Utility District, California - Effluent Force Main Replacement

- ▼ Design and construction management to replace 14 miles of high-pressure (250 to 600 psi) effluent force main, including the installation of 1,500 feet of 30-inch-diameter pipe under the Upper Truckee Meadow using HDD, 500 feet of jack and bore, and significant blasting to install the new pipe in granite prevalent in the area. All work had to be coordinated with the agencies involved in the heavily-regulated Tahoe Basin.