

# Project Spotlight



Los Angeles North Outfall Replacement Sewers: Annular Backfill - Los Angeles, CA



## Background Information

The city of Los Angeles public sewer system consists of more than 6,500 miles of underground pipes ranging in size from 6 inches in diameter up to 14 feet in diameter. The North Outfall Sewer (NOS) is the backbone of the City's sewer system. Built in the 1920's, the semi-elliptical, ceramic tile lined concrete sewer has deteriorated over time. Coupled with the major population growth the city's sewage generation has grown to a level where the flow in the NOS system routinely exceeds the design capacity of the sewer. In the early 1990's the city embarked on a phased approach to relieve over 30 miles of the NOS. The first phase was the North Outfall Replacement Sewer. (NORS) an 8 mile sewer tunnel with a finished pipe diameter of 14 feet.



Map of Los Angeles Sewer System Projects ; Green NORS Line

## Project Details

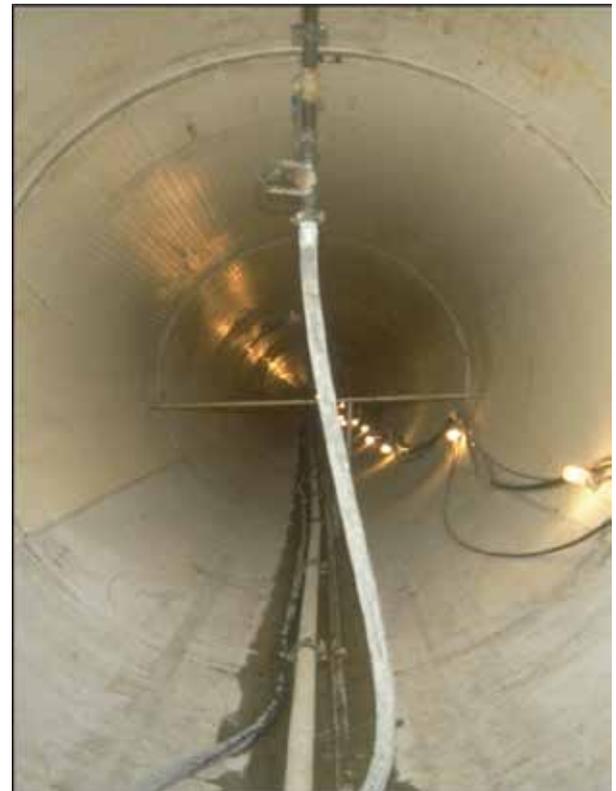
A record 84,000 cubic yards of cellular concrete, produced using the AERLITE™ family of foaming agents, was placed as tunnel backfill in the annular space between the 14 ft. diameter prestressed concrete cylinder pipe (PCCP) and the segmented initial lining.

For this specific project, Aerix engineers developed a special mix design to provide a minimum compressive strength of 130 psi. The low-density cellular concrete contains 80% air by volume and is one quarter the weight of traditional concrete. Custom high output mixing and pumping equipment was designed to operate within the PCCP.

The contractor installed the AERLITE™ cellular concrete at record rates up to 105 cubic yards per hour, pumping the material distances up to 1,000 linear feet.

## Aerix Added Value

The integrity of the bubble produced by Aerix Industries™ family of foam liquid concentrates was able to withstand vigorous mixing and extended pumping distances without degradation. Producing the cellular concrete on site saved the owner significant time on the construction schedule. After completion of the project, compressive strengths were well over the desired 130 psi minimum.



Injecting cellular concrete in the annular space through a port in the 14 ft. diameter pipe