

## Third Street Light Rail Program

San Francisco, California

Simultaneous execution of multiple foundation techniques at three small sites with limited staging availability and laydown areas in a densely populated downtown setting required top-level planning, coordination, and performance.



### The project

The Central Subway (Contract 1300) is the second phase of San Francisco's Third Street Light Rail Program. It is a 1.7-mile extension that will expand light rail service within the city, improve regional connections to Caltrain, BART, Muni Metro, and provide an alternate transportation option to congested surface traffic. Four new stations will be constructed along the project alignment, with three of them situated below ground.

## The challenge

This complex project took place in the heart of San Francisco within highly populated neighborhoods, which required high-level planning, and presented logistics challenges. Soil conditions on-site included artificial fill, dune sands, undifferentiated deposits, colma sands, undifferentiated bay mud, colluvium, and bedrock (Franciscan Formation – mélange). In addition, the complex design of the stations required significant technical expertise in diaphragm walls, jet grouting, and compensation grouting.

## The solution

Keller provided excavation support and ground improvement for the underground subway tunnel stations. Scope of work included the installation of approximately 185,000 square feet of reinforced Concrete Slurry Walls at Chinatown Station (CTS-1254R) and Yerba Buena/Moscone Station (YBM-1255); Compensation Grouting at Union Square / Market Street Station (UMS-1253), Chinatown Station (CTS-1254R), and Jet Grout Soil Stabilization at the Union Market Street Station (UMS-1253).

## Project facts

### Owner(s)

Bay Area Rapid Transit (BART) Authority

### Keller business unit(s)

Keller

### Main contractor(s)

Tutor Perini Contracting

### Solutions

Ground improvement  
Support of excavation

### Markets

Infrastructure  
Transportation

### Techniques

Diaphragm walls  
High mobility (cement slurry) grouting  
Jet grouting

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