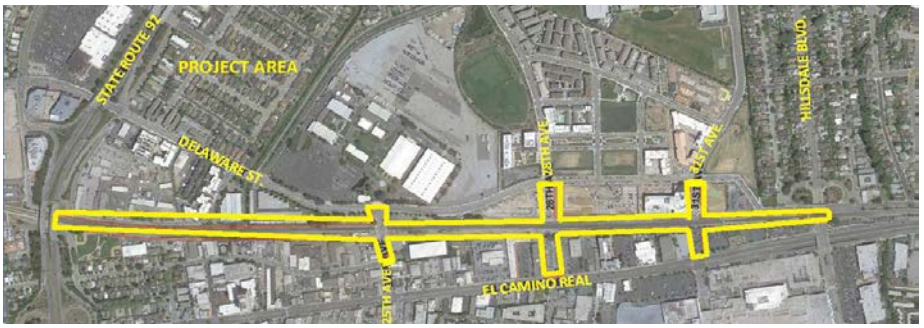
Project Spotlight

25th Ave Grade Separation - San Mateo, CA

Owner: CalTrain
Installer: Throop Lightweight Fill
Engineer: HDR
General Contractor: Shimmick Disney JV

Background Information

One of the most prominent suburban areas outlying San Francisco, San Mateo sees a flurry of activity, especially in the mornings and evenings as commuters drive to and from the city and trains roll through the stations. Each day, 92 commuter trains blow through the station, carrying people on the Caltrain rail between the suburb and the city, and extending as far as Gilroy, California. These rails also carry daily freight trains, further adding to the suburban congestion.



For the last 12 years, the city of San Mateo has been in discussions with Caltrain, reconfiguring the design of the Caltrain rails that cut through the suburb, which, until 2017, sat level with the roadways, running alongside those roadways often in close proximity. This configuration caused significant delays in traffic for motorists and pedestrians and increased the potential for vehicular accidents.

Considering the layout of the railways and roadways, the design team decided that the best solution was to elevate the railways and lower the roadways at the 25th Avenue intersection, creating a grade separation between the two that would allow commuter and freight trains to pass above vehicular traffic. A massive undertaking, this $180 million construction project is still in process. Construction began in the fall of 2017 and is anticipated to be completed by the fall of 2020.

Project Details

This ongoing project comprises a number of smaller projects and steps within the construction process—this includes lowering multiple road surfaces; building approximately one mile of mechanically stabilized earth (MSE) wall; constructing five bridges; constructing elevated railway tracks; and designing a new, elevated train station.

The construction of the MSE wall, in particular, requires the use of a lightweight geotechnical fill material. Installer Throop Cellular Concrete chose to use a non-pervious Low-Density Cellular Concrete (LDCC) containing a foaming agent manufactured by Aerix Industries for this phase of construction.

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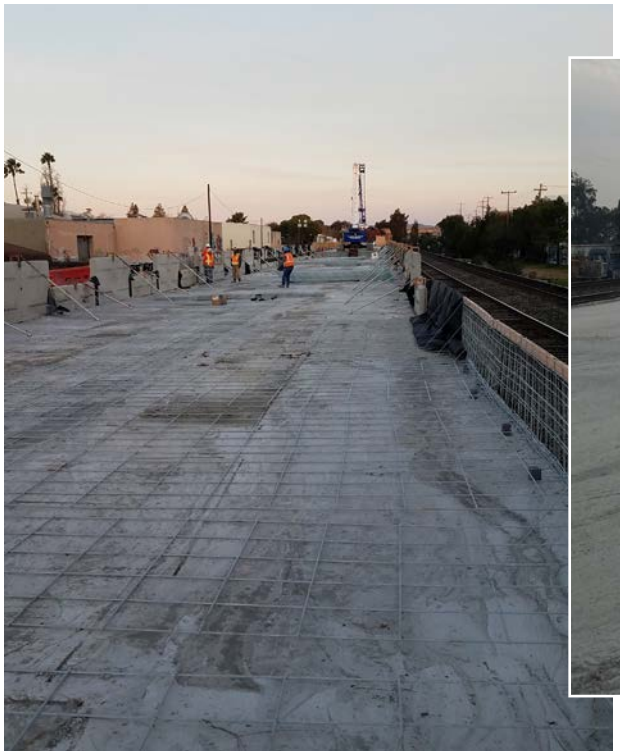
Project Details (continued)



The installation crew from Throop Cellular Concrete began installing the LDCC in October 2018, utilizing a total of 80,000 cubic yards, and installing the material at a rate of more than 1,500 cubic yards per day. Because the LDCC is extremely fluid during placement, the crew was able to pump it for a distance of more than 2,000 linear feet. With incredible light weight and high compressive strength, LDCC is an ideal material for this application, as it will be able to bear the weight of the wall while also stabilizing surrounding soil.

Aerix Added Value

This grade separation project, once complete, will overhaul the traffic patterns in San Mateo and enhance safety for all travelers through the suburb. Additionally, the increased efficiency created with the construction of the elevated railway will reduce system-wide railway delays for both commuter and freight trains, promote safe rail operations, and support the electrification of the Caltrain rail.

With the use of LDCC, San Mateo will soon enjoy the benefits of an upgraded railway station, safer walkways and bike paths, and shorter commutes to and from neighboring cities. This project might have taken ten years to design, but it will be well worth it to the residents of San Mateo.