



Crystal Springs Bypass Tunnel San Mateo County, CA

Construction noise & vibration monitoring

Owner
SFPUC

Contractor
Shank/Balfour Beatty

Project Cost
\$56M

VACC Project Scope
Construction Noise
Construction Vibration
Real-time monitoring / alerts

Total Tunnel Length
4,200 feet

Project Duration
2008-2011

The San Francisco Public Utilities Commission (SFPUC) awarded Shank/Balfour Beatty the construction contract for the New Crystal Springs Bypass Tunnel project. The 4,200 foot long pipeline is one of 85 projects in the SFPUC's \$4.3 billion Water System Improvement Program.

The project required excavation with a tunnel boring machine (TBM). Surface blasting was needed to establish shafts on either end of the tunnel; spoils were handled at an on-site Muck Area at the southern end of the tunnel.

The contractor asked us to develop a plan for monitoring and controlling noise and vibration from blasting, TBM excavation and construction activities, based on the SFPUC specifications and the Environment Impact Report (EIR). Our scope included predicting construction noise and vibration impact on nearby residences; developing a monitoring plan; implementing measurement systems to monitor and report noise and vibration levels; and generating weekly monitoring reports.

During planning, we generated a 3D noise model of the site; the results revealed that noise barriers (originally required by the construction documents) would be ineffective. Per SFPUC specifications, we developed a unique remote monitoring system to measure vibration and noise levels (including air overpressure for blasting), and distribute alarms via email and text message.

Our mitigations designs generated significant cost savings for the Owner and Contractor.

