

# Case Study

## Highway 1 Stabilization

### Problem

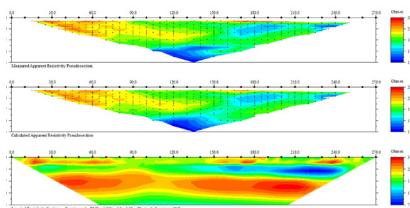
A 300 foot section of Historic HWY 1 was experiencing some cracking and road faulting. After engineers tested the roadbed, it was discovered that there was poor soil compaction ranging 3-12 feet under the highway. HWY 1, is a major road connecting communities from Los Angeles all the way up to San Francisco. This historic highway is a scenic drive that most choose for their daily commutes. When the California Department of Transportation (CALTRANS) planned to complete maintenance on the highway, they needed to take into consideration the shut down time and how it would impact residents commuting for work. They estimated a complete shut down of the highway would add hours onto their uninterrupted commute time. CALTRANS needed to find the best solution to stabilize this roadbed without a complete shut down.

### Summary

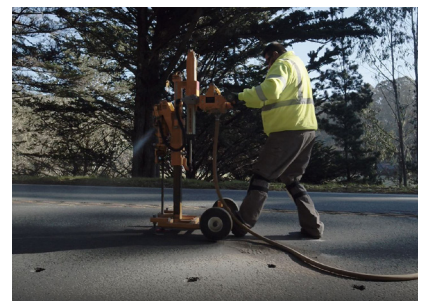
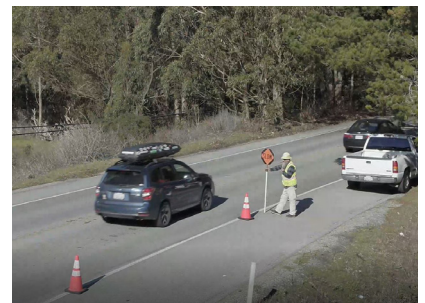
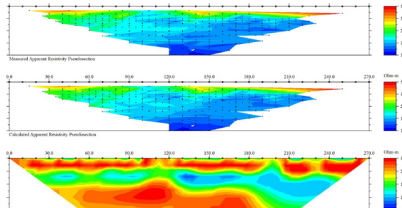
One option was to shut the road down and have heavy equipment come in to rebuild the road, this option would have huge impacts on the environment and community. CALTRANS choose to do a customized plan to stabilize the road and ground below using HMI polyurethane foam by a local concrete lifting company. They first pre-drilled their grid pattern; which the engineers requested to be 3 feet apart. Next, they inserted pipe 3 feet down, and pumped polyurethane until they had movement. The team monitored the movement using multiple laser levels. Once they had a 3 foot layer of foam installed, they injected deeper at 12 feet down until there was movement detected. They pulled the pipe up to 9 feet and again pumped until there was movement. Each hole averaged approximately 60 lbs. of material. Some points took more than 200 lbs. of material until they were able to see movement.

### Solution

#### Pre Injection Test



#### Post Injection Test





## Solution

The team was able to keep traffic moving, and completed work on one lane at a time. After all the injections were complete, they were able to resurface the newly stabilized road. They did all this with minimal impact to the environment and community. When they were not working on the road CALTRANS was able to open both lanes so there was no impact at all. The project only took 15 working days to complete. A total of 37,800 pounds of HMI HF 402 polyurethane was injected beneath the failing road. The engineering team completed a final analysis to show the difference they were able to achieve beneath the roadbed. A huge success for the local residents and tourists to enjoy the scenic drive once again with no worry!

