

Void fill and soil stabilization case studies

Pre-excavation Grouting with AR 800

Contractor:CJ Geo

PROBLEM: When CJ Geo, a geotechnical and utility services contractor, received a call about machinery being stuck underneath a roadway, they knew they were in for an interesting challenge.

A tunneling machine was boring under a both sides of a three lane interstate. It made it completely through one side, past the median, and became stuck on the opposing side with a few feet of the equipment still underneath the road.

SOLUTION: The Department of Transportation drove a sheet pile wall next to the median, right next to the guardrail, and dug down. They put in new dewatering systems, and then cut ports in the wall and drove in needles. The machine was stuck 4.5 feet from the sheet pile wall. CJ Geo drove needles in at 12 feet and then grouted 7.5 gallons of AR 800 for the first six feet, which would be from 12 to 6, and then as they got within 6 feet of the sheet pile, they increased to between 10 and 15 gallons per foot. This was done around the entire circumference to prevent wash-out when they cut the sheet pile open to hand mine back towards the machine to free it.



This product was chosen because of its superior ability to permeate, saturate and bind soils as opposed to creating ‘bubbles’ of grout. It is ideal for geotechnical applications in humid environments, and the variable set time range is long—from minutes to more than an hour—and is adjustable in the field. The resin remains fluid until polymerization, allowing for excellent penetration, so it is a great choice for sandy or silty soils.

They we were expecting decent-sized voids. In the process of cutting holes, they were getting 6 foot geysers shooting laterally out of the wall and carrying out sand. There was legitimate concern of large voids. They not only wanted to saturate the soils, but also wanted to fill voids from where this soil was washing out.

Prime Flex 900 XLV cartridges from Prime Resins was also used when torching holes in the wall due to the large volume of water coming out was extinguishing the blow torch. CJ Geo grouted the placement holes with XLV cartridges to create a plug so that they could continue to cut the hole open and then drive needles in through the newly formed grout plug to inject the AR 800.



CHALLENGE: Between the first and second injections, the water temperature dropped at least 15 degrees, so the TEA and SP additives were adjusted to accommodate this environmental change and not affect the set time.

OUTCOME: The tunneling equipment was removed safely with no issues. Reflecting on the job, Dustin Roberts says “this is an incredibly easy system to use. It’s just easy math on the TEA and SP additives. I’m a fan of the material for sure!”

