



CASE STUDY SLAB LIFTING

Sinking Slab Under Tracks Causes Safety Hazard for Chinese Railway

Nowhere on earth are they building more railroad lines than in the People’s Republic of China. The most populous nation in the world is developing rapidly and with it comes a need for more and more freight and passenger rail - and the demand for higher and higher speeds. Unfortunately, these high speeds cannot be achieved on rail that is sinking and settling in various places, especially in tunnels. This slows down people and commerce and is also a concern for safety. The culprit is groundwater, soil consolidation, and in some cases poor compaction. This is the type of environment where AP Lift 475 does some of its best work.



The real beauty of AP Lift 475 is the ability to be traffic ready for a train or a jumbo jet in less than one hour.

Powerful Polymers

AP Lift 475 is a two component, hydrophobic, structural lifting polymer designed for airport, highway, and railroad applications. It can be used to stabilize structures, fill voids, and lift slabs supporting tremendous loads. The real beauty of it is the ability to be traffic ready for a train or a jumbo jet in less than one hour. In tunnels in the mountains of China it would be put to the test.



Physical Properties - Cured

AP LIFT 475			
Compressive Strength	(ASTM D-1621)	100 p.s.i. or 14,000 p.s.f.	6,895 millibar
Tensile Strength	(ASTM D-638)	100 p.s.i	6,895 millibar
Expansion	(Unconfined)	14-16 times	-
Density	(ASTM-D 1622)	4.5 to 5.0 lb/ft3	72.08 to 80.09 kg/m3
Shrinkage	(ASTM D-1042/D-756)	Negligible	Negligible

Properties will vary depending on application conditions.

Painless Procedure

With rails sitting on double concrete slabs (the top slab is 1 meter thick, the bottom 30 cm) a plan was developed to bring the low spots back into tolerance by injecting AP Lift 475 underneath both slabs through extra-long injection packers.

Monitoring with laser levels, the low spots in the rail were lifted back to the original grade. AP Lift 475 performed as advertised. The railroad track was raised and supported, while at the same time the ground water was displaced, literally jetting out of relief holes as it sought a place to escape.

Rapid Result

Working in 4 hour windows where the rail traffic is shut down at night, low spots in these tunnels are being lifted in hours. At 5 AM equipment and personnel have to be clear of the tracks and 15 minutes later the trains rumble through. Vibration monitoring by railway engineers show a smoother ride and the people and commerce of China are allowed to move once again at a frenetic pace.

About Alchatek

Alchatek is an international leader in the manufacture and supply of chemical grouts and construction products for Geotechnical, Leak Seal, and Seawall Repair applications. Providing solutions from its headquarters in Tucker, Georgia and its manufacturing facility in Reno, Nevada, Alchatek specializes in advanced construction technologies for sealing leaks, stabilizing soils, lifting concrete, and protecting infrastructure and seawall structures. To best serve its customers, Alchatek is organized onto three divisions:

The Leak Seal Division combines a full system offering of polymer chemical grouts and equipment with perhaps the most experienced technical team in the industry. It specializes in preventing water ingress through concrete infrastructure including parking garages, culverts, basements and foundations, and sewer manholes.

The Geotechnical Division offers a complete line of single component products for soil stabilization as well as two component polyurethane foams for concrete lifting, void filling, and stabilization of infrastructure. This includes lifting sunken structures such as warehouse floors, back into place.

Seawall Repair Network® is the only national network of certified contractors in the repair, preservation, and protection of Seawalls waterfront barriers. Its proprietary methods and materials are environmentally friendly and safe for use in all marine environments and provide a non-destructive solution for seawall repair at 80% less than the cost of replacement.

Tech Support:
404-618-0438
www.Alchatek.com

This information is provided in good faith, but without guarantee. The application, use and processing of the products are beyond our control and therefore your entire responsibility. Should Alchatek nevertheless be held liable for any damage, such liability will be limited to the value of the goods delivered by us. We are committed to providing high-quality goods at all times. This version supersedes all previous versions. Revision Date: April 26, 2023 4:35 PM