



Southwestern USA A CRUSHING VICTORY

MAPEI UTT SOLUTIONS STABILIZED THE FOUNDATION OF ONE OF NORTH AMERICA'S LARGEST ROCK CRUSHERS... WITH NO DOWNTIME

Problems and solutions

The crusher needed to remain in operation, which required installation crews to work the "night shift" without interrupting production, saving time and money. Mapei UTT products (SILICAJET EXP and FOAMJET F), as well as the expertise and availability of UTT team members, quickly and efficiently solved the problem.

When the ground beneath one of a major aggregate-producing company's largest rock crushing machines, located in the Southwestern U.S.A. started to erode, a real problem loomed. The crusher sits upon a man-made foundation composed of crushed rock, sand and soil, all held in place with corrosion-resistant wire mesh.

More than 50 years of vibrations and general wear had created large voids in the foundation, which measures approximately 15.2 m deep and 45.7 by 91.4 m wide. The voids had to be filled to prevent further deterioration of the foundation and the ultimate collapse of the machine itself. Taking the crusher out of operation – either by collapse or forced stoppage – was not an option. Not only would it affect aggregate output, it could also reduce production at the entire facility by 66% for many months. And a product loss of this

magnitude could not be allowed to occur. The lost revenue would run in the tens of millions of dollars. So the mine's owners turned to Mapei's UTT (Underground Technology Team) group for help.

MAPEI UTT products at work

Assessing the situation, the Mapei UTT professionals quickly realized that in order to stabilize the foundation and consolidate the existing soil into a compact and supportive base, they would have to act quickly.

Two products were chosen to complete the task: SILICAJET EXP and FOAMJET F.

The former is a two-component, organo-mineral, fast reacting and high foaming resin. Thanks to the high fluidity obtained by mixing its two components, SILICAJET EXP is suitable for waterproofing, consolidating and filling voids, fractures, etc., in underground works whereas a very

high penetrating ability is needed in presence of narrow spaces. The high expansion capacity (over 40 times its initial volume), together with the high fluidity, makes SILICAJET EXP especially suitable for those applications where the ground formation must be made homogeneous and its mechanical properties must be improved. Due to the special formulation of the product, the presence of water or severe weather conditions do not influence the reaction of polymerisation and consequently the expansion of SILICAJET EXP.

FOAMJET F is an ultra-rapid setting, two-component, polyurethane resin with fluid consistency, to be injected, for consolidating and waterproofing structures subject to water ingress. Thanks to its high fluidity, it can penetrate through cracks of only some one hundred microns wide and seals the cracks even if they are subject to water infiltrations. At the end of the setting time, between 3 and 5 minutes, depending on the temperature, FOAMJET F becomes completely waterproof and ensures an adequate consolidation to the treated structure. Once the two components react and generate foam, this product has a good adhesion to rock substrate, it is self-extinguishing, non-toxic and not polluting. This combination of materials allowed for optimum cost control and overall performance.

With the use of a two-component, high-pressure pump, the Mapei UTT products were injected into the strata to stabilize the foundation, fill the voids and stop the erosion. The installing crew worked every night from 4 p.m. to 4 a.m. for about 2 weeks until all of the voids were filled, and the soil was stabi-

lized. With work taking place on the "night shift," the mine was able to remain in operation. Working on the night shift was also a large selling factor for Mapei UTT in a highly competitive market. Mapei UTT staff's on-site support and constant availability by phone made a huge difference in the customer's selection of materials.

Ultimately, the project consumed an excess of 285,000 U.S. dollars of material in less than two weeks, a figure that represents a huge savings in relation to the millions that the company stood to lose had there been a collapse or a shutdown of the rock crusher.

Mapei UTT solutions helped the mine efficiently and effectively repair a half-century's worth of damage in a matter of days without losing production or equipment.

This article was taken from Realtà Mapei North America, no. 30, the in-house magazine published by Mapei Corp., whom we would like to thank.

FOAMJET F

Ultra-rapid setting, two-component, polyurethane resin with fluid consistency, to be injected for consolidating and waterproofing structures subject to water ingress.

FIND OUT MORE



1. One of a major aggregate-producing company's largest rock-crushing machines, located in the Southwestern of the U.S.A., sits upon a man-made foundation composed of crushed rock, sand and soil. The ground beneath it lately started to erode causing real problems.

2 and 3. With the use of a two-component, high-pressure pump, the Mapei UTT products (SILICAJET EXP and FOAMJET F) were injected into the strata to stabilize the foundation, fill the voids and stop the erosion.

TECHNICAL DATA
Rock crusher's foundation in limestone mine, Southwestern USA
Year of original construction: 1964
Year of the Mapei intervention: 2019

Intervention by Mapei: supplying products used to stabilize the foundation underneath the rock crusher, filling the voids and stopping the erosion
General contractor: Tri-State Waterstoppers, LLC

Installation company: Green Orange Construction Pro, LLC
Project manager: Green Orange Construction Pro, LLC
Mapei coordinator: Haydn Whittam, Mapei Corp. (USA)

MAPEI PRODUCTS
Products for underground constructions: Silicajet EXP, Foamjet F
For further information on products see mapei.com