

Limestone mine rock crusher foundation repair – Texas, USA

Project overview

When the ground under the largest rock-crushing machine in North America started to erode, the owners turned to MAPEI’s Underground Technology Team (UTT) for help. UTT products (*Silicajet EXP* and *Foamjet F*) as well as expertise and availability of UTT team members quickly and efficiently solved the problem, saving time and money



Project information

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| Project category: | Infrastructure – Mine |
| Period of construction: | 1964 |
| Year of MAPEI involvement: | 2019 |
| MAPEI coordinator: | Haydn Whittam |
| Project owner: | Lehigh Hanson |
| General contractor: | Tri-State Waterstoppers, LLC |
| Installer company: | Green Orange Construction Pro, LLC |
| Project manager: | Green Orange Construction Pro, LLC |
| Photographer: | Haydn Whittam |



MAPEI products used

- *Silicajet EXP*
- *Foamjet F*

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Night shift prevents rock crusher's crash

When the ground beneath a major aggregate-producing company's largest rock crusher (that also happens to be the largest in the North American mine network) 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 structure that measures approximately 50 feet (15.2 m) deep and 150 by 300 feet (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 percent for many months. And a product loss of this magnitude could not be allowed to occur, as this mine happens to be the largest mine in the owner's family of mines and is responsible for providing most of the limestone for Texas. The lost revenue would run in the tens of millions of dollars. So the mine's owners turned to MAPEI's UTT group for help.

MAPEI products on the jobsite

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**, a lightweight but cost-effective void

filler, and **Foamjet F**, which is a stronger and more robust foaming resin, with higher technical properties and stronger stabilization behavior. 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 stabilized. 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's on-site support and late-night availability by phone made a huge difference in the customer's selection of materials, although other solutions were available in the competitive mining industry.

Ultimately, the project consumed in excess of \$285,000 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 helped the mine efficiently and effectively repair a half-century's worth of damage in a matter of days without losing production or equipment.

