

## Stringtown Limestone Quarry

Stringtown, OK

### Project Highlights

- Multiple retaining walls of similar construction
- Rapid deployment of instrumentation
- Cloud data tracking and streaming for rapid monitoring
- Client able to return safely to work within one week of shutdown



The Stringtown Quarry, owned by LafargeHolcim Ltd., and operated by Lattimore Materials Corp. is one of the oldest and largest limestone mines in Southern Oklahoma. The mine has been in operation for approximately 100 years.

**Challenge:** During the early Winter of 2019 a small retaining wall failed, forcing operations at the main processing plant to be shut down. Other retaining walls at the Stringtown Quarry, including a 40-foot-tall retaining wall at the main rock crusher, were constructed in a similar manner to the wall that failed. In order to return to full operations, the plant needed a monitoring system to ensure the safety of plant operators and the stability of the main rock crusher. If the retaining wall at the main crusher were to fail the plant would be forced to completely shut down causing large losses in revenue.

**Solution:** LafargeHolcim retained GZA GeoEnvironmental, Inc. to implement an automated instrumentation and monitoring program. GZA deployed one (1) automated total stations (Leica TM50) and two (2) automated wireless biaxial tilt meters to monitor deformation of the retaining wall at the main rock crusher. Sensemetrics THREADs were used to stream data to the sensemetrics Cloud Platform. GZA was able to quickly mobilize to the site, install the system, and begin monitoring of the structure.

**Benefit:** Thanks to GZA's efforts, plant operations were back to full operation within one week of being shut down. The system has provided LafargeHolcim a cost-effective solution to comprehensively measure and visualize movements daily, thereby mitigating risk and enhancing safety. LafargeHolcim has since extended the monitoring duration to continue plans to build a new rock crusher closer to the main pit.