GeoStabilization International

Founded in 2002, GeoStabilization International grew from a passion to protect people from the risk of geohazards and a drive to do so with cutting-edge solutions that increase efficiency, decrease cost, and minimize environmental impact. Today, our leading mitigation firm in North America has grown to a team of more than 600 people composed of geologists, geotechnical engineers, equipment operators, geohazard mitigation technicians, data analysts, and rockfall remediation technicians.

With a primary focus on supporting geohazard mitigation in emergency response scenarios, the team is strategically decentralized across the United States and Canada – ensuring crews are available to respond within 24-48 hours. GeoStabilization's engineering and construction offerings provide seamless integration of design and construction and allow for rapid assessment and implementation of changes when unexpected subsurface conditions are encountered.

NORTH AMERICA'S LEADER IN SHOTCRETE WALL AND SCULPTED SOLUTIONS

GeoStabilization International has applied nearly 2 million ft^2 (186,000 m^2) of shotcrete on more than a thousand projects across the United States and Canada to date. By using the most advanced shotcrete and sculpted concrete technologies available, we are able to decrease environmental impact and give customers a solution that saves significant time and money. Spraying concrete onto vertical or overhead surfaces with high velocity, results in similar strength, density, and durability as traditional methods like cast-in-place but is more versatile, economical, and better suited in hard-to-access areas.

To create earth retention systems and structural support and to emulate natural-looking architecture, GeoStabilization uses sculpted concrete – a method of shaping concrete shortly after spraying it, while it is still wet and malleable. This technology is used when constructing shotcrete wall retention systems like soil nail walls, shotcrete-faced soldier pile walls, and shotcrete-faced lagging walls.

TRANSFORMING SHOTCRETE APPLICATION

In 2022, GeoStabilization developed the Shotcrete Robot[1], providing a new technology for shotcrete application by enabling technicians to spray concrete remotely rather than manually holding a shotcrete nozzle and hose. A remote allows the operator to easily see and reach hard-to-access areas and spray from a safe distance. This innovation provides countless advantages, including faster application, low environmental impact, better visibility of the shotcrete face, and overall higher-quality installations. It also enhances the safety of the technicians, crews, and anyone surrounding a jobsite.

Fig. 1: Shotcrete Robot.

FEATURED PROJECT

Fig. 2: Beginning Stabilization of SR 27.

When State Route 27 near Chattanooga, Tennessee, experienced distress due to its rocky colluvium-based geology, GeoStabilization implemented a cost-efficient solution through value engineering. Instead of constructing a traditional H-pile wall, the team opted for a soil nail wall with a stained and sculpted shotcrete finish.

Due to the site's unique geological conditions, GeoStabilization determined that drilling and grouting soil nails into the slope would be the best method for stabilization. This approach offered an economical solution without compromising performance. With a relatively quick construction process, it also helped accelerate project deadlines to minimize disruptions along the active state route.

Fig. 3: Progress Photo of Geological Facing Installation and Sculpting.

Ensuring that the structure blended in with the natural surroundings was crucial in determining the right solution. The team used a stained and sculpted shotcrete finish over the soil nail wall to resemble in situ rock formations. Their meticulous approach included studying the surrounding environment, capturing the right colors, and paying attention to minute details. With the use of aerial drone footage, they were able to match the natural geology of the area successfully.

Through its innovative techniques, environmentally conscious practices, and enhanced visual appeal, the project not only elevated industry standards but also positively impacted the client, community, and construction industry.

Fig. 4: Final Wall with Geological Facing, Facing South.

[1]https://www.geostabilization.com/techniques/technology/shotcrete-robot/

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