Innovative Solutions for Landslide Repair & Rockfall Stabilization

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Geohazard Mitigation Experts

Agenda

GEOHAZARD OVERVIEW

What is a Soil Nail?

SR 271

I-35 EMERGENCY ROCKFALL

BRIDGE ABUTMENTS
Project and Personnel Expertise

› North America’s GeoHazard Mitigation Leaders
› Averaging 12 GeoHazard repairs per week
  › >650 in 2018
  › >3600 since 2002 worldwide
› 45+ geotechnical engineers on staff that focus exclusively on GeoHazard mitigation (landslide repair & rockfall mitigation).
› 55+ drill rigs/launchers
› 50+ experienced crews
› 100% success rate on landslide repair
Our passion is to develop and install innovative solutions that **protect people and infrastructure from the dangers of geohazards.**
What is a soil nail wall?

- Reinforce & strengthen soil
- Top down construction
- Nails are passive reinforcement
- Nails limit the displacement of the soil
Self-Drilling Soil Nails

- Suitable for collapsing soil
- Suitable for actively moving landslides
- High installation rates
- High pullout capacity
- High bending/shear capacity
- Suitable for rock and soil
- FHWA design guidance
Launched Soil Nails:
Inserts a 20 ft long, 1.5 in diameter bar or tube using high pressure (3,000 psi) compressed air at speeds above 200 miles per hour.
Soil Nail Launcher

GalvaDized™ Launched Nails
Before Installation

150 CALIBER
SILVER
BULLET
Horizontal Drains

LAUNCHED OR DRILLED SuperNails™
Horizontal Drains
Comparative Cross Sections

LAUNCHED SuperNail™
SUPERIOR CORROSION PROTECTION

Traditional Drilled Soil Nail

Grout
Galvanization
Steel
Epoxy
Hwy 271 Clayton Lake
Pushmataha Co.
SH-271 EMERGENCY NEAR CLAYTON LAKE
I-35 Rockfall
I-35 EMERGENCY ROCKFALL PROJECT

Project Location
Major Oklahoma, Texas highway partly reopened after landslide

Published: Thursday, June 18th 2015, 3:30 pm MDT
Updated: Thursday, June 18th 2015, 3:30 pm MDT

By The Associated Press

4:10 p.m. CDT

Authorities have partly reopened a section of a major highway connecting Oklahoma City and Dallas but say it could be days before it can be completely reopened due to a rockslide and high water.

The Oklahoma Highway Patrol says northbound traffic on Interstate 35 is being detoured for a four-mile stretch while transportation crews and contractors look to stabilize the rock face next to the road.

A tropical depression dumped an estimated 10 inches of rain on the area and helped trigger the rockslide.

It says the northbound closure through the Arbuckle Mountains could last for several days is urging motorists to use alternate routes on U.S. Highways 81 or 69.

Meanwhile, the agency has reopened the southbound lanes of I-35. Traffic is heavily congested.

2 p.m. CDT
Evaluate Lateral Extent of Slide Mass

Dilation Visible in Rock Mass

Evaluate uppermost blocks for overall and long term stability

Visible displacement

Need to evaluate lateral extent of slide mass

Evaluate Lateral Extent of Slide Mass
Multiple tension cracks

Investigate for top most movement

Large tension crack
## Note:
- Approximately 55 Rock Dwellers (455 LFT)

### Sheet Revision

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<th>Sheet No.</th>
<th>Elevation View with Remediation</th>
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<td></td>
<td>Location: I-35 Oklahoma</td>
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<td></td>
<td>Date: September 2015</td>
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### Project No./Date:
1500X0002

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Bridge Abutments
West Beaver Mountain Road, Haskell Co.
Key Points

- Geohazards can affect Public Works infrastructure
- Geohazard repair techniques can be deployed to support Public Works Infrastructure projects
- Maintenance of Geotechnical Risks is a more economical approach than waiting until total failure.
  - A maintenance philosophy especially minimizes ancillary economic impacts to the public.
- Rapid Response with a Good Plan is Better than Slow Response with A Perfect Plan – (Economy, Safety, Education)
- Performance-Based Design/Build or Design/Build/Warranty Contracting Allows for Innovative Approaches that Can Save Time and/or Cost
Thank You