COST EFFECTIVE LOW ENERGY ROCKFALL SOLUTIONS

Bob Lyne
Geobrugg North America, LLC
Regional Manager – SE USA
Introduction

Geohazard Solutions

The Use of Flexible Systems for Natural Hazard Mitigation

ROCKFALL
- Low Energy Barriers
- High Energy Barriers
- Drapes

ROCK and SLOPE
- Anchored Mesh
- Slope Stabilization
- Protection Meshes

SNOW
- Avalanche Barriers
- Snowslide Protection
- Ice Drapes

HYDRO
- Debris Flow
- Shallow Landslide
- Erosion Control

Geobrugg Protection Systems

SNOW – Avalanche Prevention Structures

Historic installation from the 1950’s
Geobrugg Protection Systems

SNOW

Natural Hazard Protection Systems

ROCKFALL - Barriers and Catchfences
Introduction

Geobrugg Protection Systems

ROCKFALL – Barriers and Catchfences

Geobrugg Protection Systems

ROCK & SLOPE – Drapes and Attenuators
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ROCK and SLOPE – Anchored Mesh Solutions for Unstable Slopes

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Geobrugg Protection Systems
ROCK and SLOPE – Anchored Mesh Solutions for Unstable Slopes

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Introduction
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Geobrugg’s Greatest Hits

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ROCKFALL PROTECTION BARRIERS

- Full range of applications

- From 35 kJ – 8000 kJ (164kg – 20,000kg @ 25m/s)

- Tested and approved to relevant guidelines (BAFU & EOTA)
Available Low Cost Low Energy Options

Jersey Barriers (K-rail)
Lock Blocks
Guard Rail
Chain Link Fencing
T35 Barrier

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**LOCK BLOCKS**

- Heavy (difficult to move)
- Costly

**GUARD RAIL**

- Good for angular impact (Cars)
- Not designed for perpindicular impact (Rocks)
- Impact from upslope rockfall tears metal from posts
- Height limitations
**Introduction**

**CHAIN LINK**

- Not designed for rockfall impacts
- Impacts +10 kj
- Limited post options
- No force transmission between panels

**T-35 RADSIDE BARRIER**

- Tested to 50 kj (rated 35 kj)
- Simple design
- Range of heights
- Multiple anchoring options
- Light weight
- Easy Installation
- Cost effective
Introduction

**T35 BARRIER**

- Originated in Australia
- Low energy protection
- Protection from rockfall upslope.
- Tested for perpendicular impacts (1:1 and projectile tests)
- Cost effective

**T35 BARRIER LOCAL EXAMPLES**
Introduction

T35 - TESTING

Table 1

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<tr>
<th>Lining</th>
<th>Noise Reduction</th>
<th>Exposed</th>
<th>Screened</th>
<th>Lab Tested</th>
<th>Field Tested</th>
<th>Installers</th>
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Installation:

1. Mark out post locations and staple anchors. The distance between the staple anchors and the end post varies depending on the frame height over 5. Make sure that the staple anchor is a minimum of 1.5 times the height of the barrier.
2. Drill holes in the ground anchor to accept the stakes. The depth of the hole shall be equal to the depth of the stake.
3. Drive the anchor into the ground, making sure that the hole is large enough to accommodate the anchor.
4. Place the T35 barrier on the frame. Make sure that the barrier is aligned with the holes for the stakes. Secure the frame to the stakes using the appropriate fasteners. The fasteners shall be a minimum of 1.5 times the height of the barrier.
5. Insert the fastener through the top edge of the frame. Make sure that the fastener is aligned with the hole in the frame.
6. Drive the screw into the top edge of the frame. Make sure that the screw is driven into the frame.
7. Repeat the process above for all of the T35 barriers. This process shall be repeated for all of the T35 barriers.
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Note: The process shall be repeated for all of the T35 barriers. This process shall be repeated for all of the T35 barriers.

Make sure to keep the distances between the staple anchors and the frame. This distance shall be equal to the height of the barrier.

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VARIETY OF POST OPTIONS

Adaptable to site conditions

- Fixed
- Hinged
- Embedded
CONCRETE MOUNTED POST
Introduction

CONCRETE MOUNTED POST

ADDITIONAL POST OPTIONS
Introduction

**ADDITIONAL POST OPTIONS**

**WITHOUT LATERAL ANCHORS**
EASY INSTALLATION

- Lightweight
- Simple design
- No braking elements
- Adaptable to site conditions
- Installed by local maintenance division

DESIGN AND SUPPORT

- Site support, evaluation
- Technical support, information, consultation, drawings
- Pricing, options
- Support district maintenance with materials, product/installation manuals
QUESTIONS?