Using New and Old Technologies for an Economical Approach to Rock Stabilization on TN I-75

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Accident in June of 2010

- New rockfall along with historical evidence led to mitigation plans
- 2 mile long study area with most critical section less than 1 mile long
- 50 foot high benches built in mid 1960s
Development of Mitigation Plans

- Scanned the slope using LiDAR
- Pictures at every station number
- CRSP models showed benches would be adequate
- Benches to be drivable
- Cost management
Development of Mitigation Plans – Station 180+00

- Overhanging rock
- Bench filled with debris
- Highly weathered
- Geometry challenge
- Blasting

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Construction Planning

- Two lanes of traffic must remain open
- Used rolling road blocks when needed
- Scaling plans were developed
- Blasting plan was developed
- Contractor able to dump close by
Blasting

- Did not blast back to a solid face
- Only enough to allow for pinned mesh
- Remote detonators, stemming and “stepping” of explosives used
- Blasting and scaling had to be completed within 30 min of the start of the rolling road block
Blasting - Before
Blasting - After
Scaling and Bench Clearing

- Scaling done as little as possible
- Let the benches catch rocks
- Keeps cost down
Pinned and Draped Mesh

• Two types of mesh used
• TN DOT Type III drape
• TN DOT Type IV pinned mesh
• Station 180+00 due to potential of large scale failure treated with pinned mesh
• Other areas used drape to contain any rockfall to the bench
Mesh Installation

- Space limitations prevented the use of a crane
- Used rolling roadblocks
- GSI opted to use a helicopter to lift mesh panels
Mesh Installation
Lessons Learned

• Monitoring and cleaning of highway benches is imperative to success
• Combination of clean benches and wire mesh is an effective and affordable option
Questions??

“Good management is the art of making problems so interesting and their solutions so constructive that everyone wants to get to work and deal with them.”
— Paul Hawken