

# **67th Annual Highway Geology Symposium (HGS 2016)**

Better Highways Through Applied Geology

Colorado Springs, Colorado, USA  
11 - 14 July 2016

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***Tuesday, July 12th cont.***

**Technical Sessions I – Young Authors**

**Location: Colorado II**

Chris Ruppen, Moderator

9:00 AM – 9:15 AM

**Emergency Repair of a Failing MSE Wall Utilizing Hollow Bar Soil Nails and Compaction Grouting .....9**

Presenter: Justin Petersen

9:15 AM – 9:30 AM

**Claystone, Steep Slopes, and Water, Not Again! The SR 2018 West Smithfield Street Landslide Remediation, Allegheny County, PA .....151**

Presenter: Stephanie Chechak

9:30 AM – 9:45 AM

**Understanding Rockfall Behaviors Using Wireless Sensor Network System Through Laboratory Experiments .....232**

Presenter: Prapti Giri

9:45 AM – 10:00 AM

**Comparison of 2D and 3D Rockfall Modeling for Rockfall Mitigation Design .....274**

Presenter: Brett Arpin

10:00 AM – 10:30 AM

**Morning Coffee Break – Sponsored by Ameritech**

Location: Colorado I

**Technical Sessions I – Young Authors cont.**

**Location: Colorado II**

Chris Ruppen, Moderator

10:30 AM – 10:45 AM

**K-7 Highway Realignment in Cherokee Co. Kansas - the Past, Present and Future .....362**

Presenter: Kyle Halverson

10:45 AM – 11:00 AM

**Geologic Exploration for Ground Classification of the I-70 Veterans Memorial Tunnels .....378**

Presenter: Todd G Hansen and Samantha Sherwood

11:00 AM – 11:15 AM

**3D Monitoring of Rockfall Sources in Colorado .....398**

Presenter: Cole Christiansen

11:15 AM – 11:30 AM

**Glenwood Canyon Rockslide Emergency Response and Construction in a Major Interstate Corridor .....N/A**

Presenter: Nicole Oester

11:30 AM – 11:45 AM

**Use of Anchored Drilled Shafts to Stabilize a Landslide: Construction and Instrumentation .....21**

Presenter: David Vara

11:45 AM – 12:00 PM

**Roller Coaster Highways - The Implementation and Execution of Settlement Monitoring Program at Two Colorado Highway Projects .....289**

Presenter: JG McCall

12:00 PM – 1:15 PM

**Lunch**

Location: Mountain View Dining Room

***Tuesday, July 12th cont.***

**Technical Sessions II – Slopes and a Sinkhole**

**Location: Colorado II**

Barry Siel, Moderator

1:15 PM – 1:30 PM

**Umbrella Structures for Avalanche Protection Per Western North American Snow Conditions Designed according to the Swiss Guidelines .....455**

Presenter: Luca Bobbin

1:30 PM – 1:45 PM

**A Cost Effective Design for Stabilization of a 40-Year-Old Landslide: Construction and Instrumentation .....189**

Presenter: Khalid Mohamed

1:45 PM – 2:00 PM

**Rapid Response to Post Fire Debris Flow Event .....216**

Presenter: Mallory Jones

2:00 PM – 2:15 PM

**Nanos Cattle Pin Embankment Instability Investigation SH 99 in Osage Co. Oklahoma .....471**

Presenter: James Nevels

2:15 PM – 2:30 PM

**Plymouth Road over Plymouth Creek A Sinkhole that Stopped Traffic .....438**

Presenter: Sarah McInnes

2:30 PM – 2:45 PM

**Turkey Creek Stream Bank Stabilization, Mission, Kansas, July 2015 .....99**

Presenter: Levi Sutton

2:45 PM – 3:15 PM

**Afternoon Break**

**Technical Sessions III – Geological and Geotechnical Exploration**

**Location: Colorado II**

Peter Ingraham, Moderator

3:15 PM – 3:30 PM

**Concerns about Siting an Aggregate Quarry in a Dolomite Reef Deposit, Central Indiana.....141**

Presenter: Terry West

3:30 PM – 3:45 PM

**Geotechnical Aspects of an Off-line Walkway Addition to the Route 28 Project .....420**

Presenter: Chris Ruppen

3:45 PM – 4:00 PM

**Electrical Resistivity in the Kansas Ozarks: US 166 Bridges in Cherokee County .....1**

Presenter: Neil Croxton

4:00 PM – 4:15 PM

**How not to Build on Karst - A Case History .....41**

Presenter: Joseph Fischer

4:15 PM – 4:30 PM

**Value Engineering the Sunbelt Rentals Equipment Yard Rehabilitation .....491**

Presenter: John C. Folts

***Tuesday, July 12th cont.***

4:30 PM – 4:45 PM

**Utility Mapping Using Multichannel 3D GPR Array Technology .....84**

Presenter: Manuel Celaya, PhD

4:45 PM – 5:00 PM

**Overview of HGS Field Trip on July 13 .....552**

Presenter: Jon White

6:00 PM

**Optional Colorado Luau – Sponsored by BGC Engineering**

Location: Resort Lakeside

***Wednesday, July 13th***

7:00 AM – 8:00 AM

**Breakfast**

Location: Mountain View Dining Room

**Highway Geology Symposium Field Trip**

8:00 AM

**Meet on Mountain View Terrace for Area Geology Overview**

8:15 AM – 4:00 PM

**Field Trip**

**Lunch sponsored by GeoBrugg, afternoon beverages sponsored by Golder Associates**

Buses load from Resort Lobby

5:30 PM – 6:30 PM

**Highway Geology Symposium Social Hour – Sponsored by IDSNA**

Location: Cheyenne Courtyard

**Highway Geology Symposium Banquet Dinner**

6:30 PM – 9:30 PM

**Keynote Address – *Colorado Roadside Extinctions***

**by Dr. James Hagadorn, Denver Museum of Nature & Science**

Location: Grand Rivers Ballroom

***Thursday, July 14th***

6:30 AM – 7:45 AM

**Breakfast**

Location: Mountain View Dining Room

8:00 AM – 10:30 AM

**Highway Geology Symposium Exhibit Hall OPEN**

*Exhibitors need to break down after morning coffee break*

**Thursday, July 14th cont.**

**Technical Sessions IV – Geohazard Management and Monitoring**

**Location: Colorado II**

Beth Widmann, Moderator

7:45 AM – 8:00 AM

**Remote Sensing Model - Drone flight over Waldo Canyon .....N/A**

Presenter: Cole Christiansen and Beau Taylor

8:00 AM – 8:15 AM

**Displacement Measurement of Slow Moving Landslides using Sub-mm LIDAR Scanning .....338**

Presenter: Norbert Maerz

8:15 AM – 8:30 AM

**An Introduction to NCDOT's Performance-Based Geotechnical Asset Management**

**Program .....319**

Presenter: Jody Kuhne

8:30 AM – 8:45 AM

**Probabilistic Geohazard Assessment: Accounting for Engineered Mitigation .....70**

Presenter: Alex Strouth

8:45 AM – 9:00 AM

**Utilization of a Geotechnical Asset Management Program - Lessons Learned from a Highway Improvement Project in Alaska .....522**

Presenter: John Thornley

9:00 AM – 9:15 AM

**Proposed Rockslope and Rockfall Design Guidelines and Proposed Geotechnical Asset Management Methods for Evaluating Rockfall Sites .....206**

Presenter: Ben Arndt

9:15 AM – 9:30 AM

**The Contribution of Satellite and Terrestrial Radar to the Management of Geohazards .....N/A**

Presenter: Alfredo Rocca

9:30 AM – 10:00 AM

**Morning Coffee Break**

Location: Colorado I

## **Technical Sessions V – Rockfall**

**Location: Colorado II**

Ben Arndt, Moderator

10:00 AM – 10:15 AM

**Single Rope Access .....413**

Presenter: John Duffy

10:15 AM – 10:30 AM

**D3 Rockfall Mitigation Project, Interstate 15, Helena to Great Falls, Montana .....118**

Presenter: Benjamin George

10:30 AM – 10:45 AM

**Logistics and Considerations Surrounding the Opening of Glenwood Canyon After a Major Rockfall Event .....502**

Presenter: Cameron Lobato

10:45 AM – 11:00 AM

**Rockfall Barrier Foundations and Challenges Associated with Estimating Design Basis Loads .....305**

Presenter: Dave Scarpato

11:00 AM – 11:15 AM

**Inner-City Rockfall Hazards - Systematic Investigations of Rock Slopes in the City of Hamilton Ontario .....50**

Presenter: Gabriele Mellies

11:15 AM – 11:30 AM

**Rockfall Hazard Assessment and Mitigation for the TH-53 Bridge over the Rouchleau Mine Pit near Virginia, Minnesota .....169**

Presenter: John Turner

11:30 AM – 11:45 AM

**Attenuator's for Controlling Rockfall: First Results of a State-of-the-Art Full-Scale Testing Program .....534**

Presenter: Tim Shevlin, PG

11:45 AM – 12:00 PM

**Emergency Response to Rockfall on Oklahoma Interstate 35 .....354**

Presenter: Marty Woodard

12:00 PM – 12:15 PM

**Closing Remarks**

Ty Ortiz

# ***Transportation Research Board Midyear Session 2016***

*Engineering Geology and Exploration and Classification of Earth Materials Committees*

## **“Geological Modeling: Methods and Methodologies”**

***Monday, July 11, 2016 | Colorado II***

The Transportation Research Board (TRB) Standing Committee on Geotechnical Site Characterization (AFP20) and the Standing Committee on Engineering Geology (AFP10), traditionally hold their midyear session during the Highway Geology Symposium. This year’s theme is “Geological Modeling: Methods and Methodologies”. The session will include four 30 minute invited presentations followed by a 30 to 45 minute open discussion on the state of practice in the transportation industry.

### **Agenda**

#### **1:00 pm to 1:30 pm**

Alexandra Wayllace, PhD - Colorado School of Mines - “Infiltration-induced instability of an embankment along interstate highway near the Colorado continental divide” .....N/A

#### **1:30 pm to 2:00 pm**

Paolo Mazzanti, PhD – NHAZCA - “On the importance of displacement monitoring for the prediction of landslide time of failure” .....N/A

#### **2:00 pm to 2:30 pm**

Dave Gauthier, PhD - BGC Engineering – “Rock slope monitoring and rockfall prediction from LiDAR and photogrammetry: state of art” .....N/A

#### **2:30 pm to 3:00 pm**

Paco Gomez, PhD - University of Missouri – “Modeling implications from observations of rockfall and earth slope movements using ground-based interferometric RADAR” .....252

#### **3:00 pm to 3:15 pm**

BREAK

#### **3:15 pm to 4:00 pm**

Open Discussion

#### **4:00 pm**

Adjourn