



ASSOCIATION OF ENVIRONMENTAL AND ENGINEERING GEOLOGISTS
San Francisco Section

Announcing the December 2008 San Francisco Section Meeting

**GEOLOGICAL MAPPING AND ANALYSIS AT DEVIL'S SLIDE TUNNELS UTILIZING
TRADITIONAL METHODS ENHANCED WITH 3D LASER SCANNING DATA**

Jeremy Decker

MEETING DETAILS

Restaurant:

Sinbad's
Pier 2 Embarcadero Street
San Francisco, CA

Date and Time:

Tuesday, December 9th, 2008
6:00 pm—Social Hour and Sign-in
7:00 pm—Dinner
8:00 pm—Presentation

Cost: \$35 AEG members, \$40 non-members, \$15 Students

Meal Choice: Chicken, Beef, Fish, and Vegetarian – you do not need to send in your meal choice.

Reservations: To RSVP, fax or e-mail Sachiko Tanikawa by **12 PM, Tuesday, December 9th**.
(fax # 866-400-4068, email: treasurer@aegsf.org) with the following information:

(1) Name (2) Phone number/e-mail

Driving Directions: From the Bay Bridge, take the Fremont Street Exit and the Folsom Street Ramp. Go left (east) on Folsom Street, then left (north) onto the Embarcadero (Herb Caen Way). The driveway for Sinbad's is on the right, south of the historic Ferry Building. Please watch out for the pedestrians and cyclists when turning into the driveway. Thank you.

BART Directions: Exit the Embarcadero Station; walk up Market Street toward the Ferry Building (less than ½ a mile toward the Bay and to the east). Cross Embarcadero and Sinbad's is located next to the Alameda ferry pier on the south side the historic Ferry Building.

Parking: \$3 valet parking is available or you can park at a meter somewhere on a side street off the Embarcadero.

****Walk-ins are welcome!****

See next page for abstract and speaker biography.

GEOLOGICAL MAPPING AND ANALYSIS AT DEVIL'S SLIDE TUNNELS UTILIZING TRADITIONAL METHODS ENHANCED WITH 3D LASER SCANNING DATA

Jeremy Decker

ABSTRACT

The Devil's Slide Tunnel project consists of two ~1,200 meter long highway tunnels being excavated for a new alignment of State Highway 1 utilizing the New Austrian Tunneling Method (NATM). As with all tunnels, the sight geology is an essential part of the everyday excavation and support decision making. Several different methods are being employed at Devil's Slide to determine and analyze the geology as the tunnel is advanced. Most of these methods are traditional methods, such as face mapping with a compass, probing ahead of the face, and convergence readings. However, another method being applied involves 3D data gathering by a state-of-the-art tunnel scanning system. The scanning data is visualized utilizing software developed at Virginia Tech, which also allows engineers and geologist to make remote orientation measurements of the discontinuities. This state-of-the-art tool is used to verify and enrich, or supplement, the geologic data that is gathered during hand mapping of the face. The scanning data also provides excellent 3D documentation.

In this presentation Dr. Decker will give a brief overview of the geology at Devil's Slide with some discussion on the expected geology ahead and what has actually been encountered thus far. He will then briefly discuss face mapping, probing, and convergence readings at Devil's Slide. Then he will explain the process behind obtaining the laser scanning data. Last, will be a presentation of several examples of what the laser scanning data can produce and how it is being used at Devil's Slide.

SPEAKER BIOGRAPHIES

Dr. Jeremy Decker obtained a BS degree in Civil Engineering from Brigham Young University in 2000 and a MS degree in Civil Engineering from Brigham Young University in 2001. His civil engineering studies at Brigham Young University had an emphasis in geotechnical engineering and his Master's thesis is titled "Corrosion Rate Evaluation and Prediction for Piles: Salt Lake, Utah Case Histories." After getting his MS degree, he worked as a geotechnical consultant for Speedie and Associates for two years in Phoenix, Arizona. He earned a PhD degree in Civil Engineering, with an emphasis in rock mechanics, from Virginia Tech in 2007, and conducted research in statistical fracture sampling, and 3D visualization and virtual sampling in underground space. His dissertation is titled "Building, Updating and Verifying Fracture Models in Real Time for Hard Rock Tunneling." After completing his graduate coursework, he started working in May 2007 with Kiewit Pacific as a North American Tunneling Method (NATM) engineer at Devil's Slide Tunnel on Highway 1 South of San Francisco.