



**The Allegheny-Ohio Section of AEG and the Pittsburgh Section of the ASCE-GeoInstitute  
will be hosting AEG's President Matthew B. Morris, P.G.  
on October 18, 2012**

**The History and Progression of Rock Slope Stabilization for Menoher Boulevard (aka Easy Grade Highway  
or S.R. 271, Section 13), Cambria County, Pennsylvania**

Menoher Boulevard (PennDOT S.R. 271) is the main arterial roadway connecting the City of Johnstown with Westmont Borough in Cambria County, Pennsylvania. The roadway was originally constructed by the Pennsylvania Department of Transportation (PennDOT) in the 1940's as a major roadway improvement project to connect Johnstown with not only Westmont Borough, but also Grand View Cemetery, one of the largest cemeteries in the state of Pennsylvania. The construction of Menoher Blvd. created an alternative route to climb the 460 vertical feet for travelers coming from Johnstown to Westmont, as opposed to traveling the steep carriage road that switch-backed up Yoder Hill. Many local residents still refer to this section of Menoher Blvd as the "Easy Grade Highway".

Given the construction methods of the period and understanding of rock slope stability performance, the 170 foot high cut slope was originally constructed nearly vertical by means of mass excavation and blasting. The rock units present in the slope are Pennsylvanian in age and belong to the lower Conemaugh and Upper Allegheny Formations. These formations are comprised of cyclic sequences of sandstone, shale, and claystone with several workable coal seams. Over time differential weathering between the claystone/shale and overlying more resistant sandstone has resulted in undercutting, generating a rockfall hazard to the public and adjacent facilities along this 2,000 foot long section of roadway.

Gannett Fleming, Inc. was retained by PennDOT to evaluate the nature of the failures occurring in the rock slope and the effectiveness of the existing rockfall mitigation measures, as well as to prepare a preliminary mitigation plan to reduce the hazard. Upon completion of the Preliminary Report, PennDOT selected Gannett to complete the Final Design of the rockfall mitigation system and ultimately deliver the Plans, Specifications, and Estimate package. Given the variable nature of the rock comprising the slope and predominant discontinuity orientations, Gannett developed a mitigation scheme that included a combination of excavation, rock scaling, rock bolting, high tensile steel wire mesh installation, and shotcrete. The project was bid in September of 2012 and construction is anticipated to begin in 2013. This presentation highlights the development history of the Johnstown area, previous rockfall mitigation efforts, summary of the evaluations conducted, and the various techniques proposed for future stabilization of the slope.

**1 pdh will be awarded for attending the presentation**

**DINNER RESERVATIONS ARE REQUIRED BY THURSDAY, OCTOBER 4, 2012**

**Date: October 18, 2012**

**Time: 5:45 p.m. Social Time (Cash Bar)**

**6:30 p.m. Dinner**

**7:15 p.m. Presentation**

**Cost: \$35 AEG/ASCE-GeoInstitute Members  
State/Government Employees**

**\$40 Non-members**

**\$10 Students**

**Location: Penn Brewery**

**Eisenhalle Room**

**800 Vinial Street**

**Pittsburgh, PA 15212**

**(free parking in lot/garage behind  
building)**

**Contact: Nichole Wendlandt**

**[nwendlandt@gfnet.com](mailto:nwendlandt@gfnet.com)**

**412.922.5575**