

**IIS-062**  
**Development of Structural Damper Utilizing Ultra High Damped Elastomer**

**Richard Sause**

Professor, Department of Civil and Environmental Engineering,  
Director, ATLSS Center  
Lehigh University, Bethlehem, PA

**James Ricles**

Professor, Department of Civil and Environmental Engineering,  
Deputy Director, ATLSS Center  
Lehigh University, Bethlehem, PA

**Choung-Yeol Seo**

Graduate Student, Department of Civil and Environmental Engineering, Lehigh  
University, Bethlehem, PA

**Kyung Sik Lee**

Graduate Student, Department of Civil and Environmental Engineering, Lehigh  
University, Bethlehem, PA

**Robert Michael, Shannon Sweeney, Diane Parente**

School of Engineering and Engineering Technology  
Penn State Erie, The Behrend College

**Industry Participants**

Corry Rubber Corp.

**Abstract**

Passive damping devices incorporating elastomers bonded to metal have been successfully used to control vibration for years. Major areas of application include vehicles, railways, and the offshore and aerospace industries. This project focuses on infrastructure applications.

The project will complete the development of a prototype structural damper utilizing an ultra high damped elastomer (UHDE). Significant progress was made in the first two years of this work. Candidate materials were developed and tested, and background research on structural dampers was completed. The UHDE damper is targeted for structural applications such as buildings and bridges for protection against seismic and wind conditions. This project builds on previous work done by Lehigh as well as work done by Lord Corporation. Lord Corporation had previously supported the project, but has decided to not continue support of the project. The Corry Rubber Corporation, is however, interested in developing the damper as a potential commercial product.

The current year will focus on final design and fabrication of the prototype damper, and conducting a commercial feasibility study. The final design and construction of the prototype damper will be undertaken by researchers at Penn State Erie, Lehigh, and

Corry Rubber. This work will build on last year's effort which has established required stiffness, damping properties, candidate materials, and a likely geometry for the damper. The commercial feasibility study, initiated last year, will be completed by researchers at Penn State Erie. The feasibility study involves includes: application identification, product information, survey of potential customers, and a market study.