FEBRUARY 20TH LUNCH PRESENTATIONS

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Bio – Theresa Aragon

Theresa Aragon received her Bachelor's degree in civil engineering from New Mexico State University in 2011 and is now a 2nd year graduate student in the Department of Civil Engineering at NMSU working under the guidance of Dr. Brad Weldon. She is a National Science Foundation Graduate Research Fellow with her research focusing on the nonlinear behavior of multi-story coupled walls using unbonded post-tensioned precast concrete coupling beams.

Multi-story walls using unbonded post-tensioned precast concrete coupling beams

This research focuses on the nonlinear behavior of concrete shear walls coupled together using unbonded post-tensioned precast concrete coupling beams under lateral loads. Coupling of the reinforced concrete walls is achieved by posttensioning the beams and the walls together at the floor and roof levels. This system offers many advantages over monolithic systems such as simpler detailing for the beams and wall piers, reduced damage to the structure, and an ability to self-center. This innovative system looks to help mitigate the effects that devastating events such as earthquakes have on structures.

Bio – Andrew Giesler

Andrew Giesler graduated with his Bachelor's degree in Civil Engineering from New Mexico State University in 2012 and will be continuing his research at NMSU. Andrew is a Daniel P. Jenny Fellow through the Precast/Prestressed Concrete Institute with industry support from Coreslab Structures Albuquerque and guidance from Dr. Brad Weldon. His research focuses on the flexural behavior of large scale prestressed ultra high performance concrete girders and developing specifications and procedures for commercial precast manufacturers.

Ultra High Performance Concrete: feasibility, localization, and structural applications

Ultra high performance concrete (UHPC) is an innovative material that has proven to be effective in a variety of structural design applications. However, the use of this material is limited, particularly within the United States, by several factors including: high cost, availability, and the lack of design codes and analytical tools. To create a more readily available and economical UHPC, a UHPC has been developed using materials local to New Mexico. This concrete material differs from traditional high performance concrete in several ways: traditional aggregates are eliminated and replaced with fine sand as the largest particle; UHPC exhibits improved tensile strength and ductility due to the addition of high-strength steel fibers, allowing the concrete to deform and carry loads after initial cracking; finally, the dense nature of the UHPC matrix decreases the porosity of concrete improving the durability properties.