Defending Against Natural Disasters

Amy Cerato

Rapp Foundation Presidential Professor, Civil Engineering and Environmental Science

CURRENT RESEARCH

Providing sustainable foundation systems that protect against multi-hazards

In the next thirty years, the U.S. will need to provide cost-effective infrastructure repair for expanding populations while simultaneously protecting the natural environment. The U.S. infrastructure problems have been well-documented in the American Society of Civil Engineers' (ASCE) 2013 Report Card for America's Infrastructure, which gives the U.S. an average grade of a D+ and estimates that renewal would cost $3.6 trillion by 2020. Dr. Amy Cerato is creating and testing resilient and sustainable foundation systems in her 1.5 acre experimental facility to mitigate human and economic losses, as well as social disruption caused by infrastructure failures due to natural hazards. Recent natural disasters and terrorist acts have added a new dimension: now infrastructure must not only be adequate, it must be robust, it must be resilient and it must minimize risk. The implementation of Dr. Cerato's research will reduce life loss and make our structures more resilient to multi-hazards so that we can recover and re-establish our lives in days or weeks, rather than months or years.

Dr. Amy Cerato, Rapp Foundation Presidential Professor of the University of Oklahoma's Civil Engineering and Environmental Science Department is designing, testing and implementing resilient and sustainable foundation systems that will anchor our nation's infrastructure and allow it to withstand a host of multi-hazards, including extreme wind events (hurricanes, tornadoes), earthquakes, landslides and expansive soils. Various soils react differently to the environment, and so the foundation of a bridge, building, or dam must be built specifically for its soil conditions to protect society and reduce damage to the structure...

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AFFILIATION

University of Oklahoma

AWARDS

- Shamsher Prakash Prize for Excellence in Teaching of Geotechnical Engineering, 2015
- UMass-Amherst Outstanding Young Alumni Award, 2011
- ASCE Arthur Casagrande Professional Development Award, 2010
- Presidential Early Career Award for Scientists and Engineers (PECASE), 2009
- Rapp Foundation Presidential Professorship, 2009
- and 1 more...

RESEARCH AREAS

Environment, Ecology, Natural Disasters / Emergency

FUNDING REQUEST

Your contributions will allow Dr. Cerato to implement her largely experimental research by performing full-scale experiments at her outdoor lab. Materials and other costs associated with the outdoor testing facility remain high, as well as stipends for graduate and post-graduate researchers. Your contributions will alleviate these costs so that more testing can occur and our infrastructure and society can be better protected from catastrophic natural hazards.