

Civil, Architectural and Environmental Engineering



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Visiting Scholars Seminar

4 p.m., Wednesday, April 25

Room 315 Butler-Carlton Hall



Dr. Gian Paolo Cimellaro, Associate Professor of Structural Engineering

Dr. Cimellaro is a faculty member in the Department of Structural, Geotechnical and Building Engineering at the Politecnico di Torino in Italy. He was a visiting professor at the University of California, Berkeley from 2014-2016. He obtained his M.S. degree in 2005 and Ph.D. degree in 2008 from the University at Buffalo (SUNY). He graduated with a B.S. degree in civil engineering from the University of Rome La Sapienza in 2001. Currently he chairs the ISHMII Committee on Resilient Structures and Infrastructure (CORSI).

The Impact of Human Behavior During Emergencies on Civil Infrastructures

Resilience is a broad and multidisciplinary subject and measuring it is one of the most challenging tasks due to complexity involved in the process. In this seminar, the fundamental concepts of “community resilience” are analyzed and a common reference framework is established. Several applications of the framework are presented for strategic facilities (e.g. hospitals) and infrastructure networks (e.g. transportation, gas, water, power etc.) that form the basis of life and economy of every community. During a crisis, the Hospital Emergency Department should not only be safe and damage resistant, but it should be also functional. Therefore, an organizational model of Emergency Department is presented using a discrete event simulation model and applied to the hospital network of San Francisco. Evacuation models from large-scale spaces such as malls and museums, while considering the effect of the human behavior and its emotions, are included. Interdependencies triggered by the debris between the built environment and the transportation network are analyzed. A new formula to evaluate the debris affected area as a function of the geometric characteristics of masonry buildings is proposed. This strategy can be implemented in a virtual city model that has been recognized to be useful for decision makers to quantify the performance of critical infrastructures following a disaster and to plan better resilience strategies to reduce losses and downtime. Finally, the use of new information technologies to improve resilience and disaster management is investigated. For example, a new sensor system is used during emergencies to track indoor victims.

For more information about this seminar, contact
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