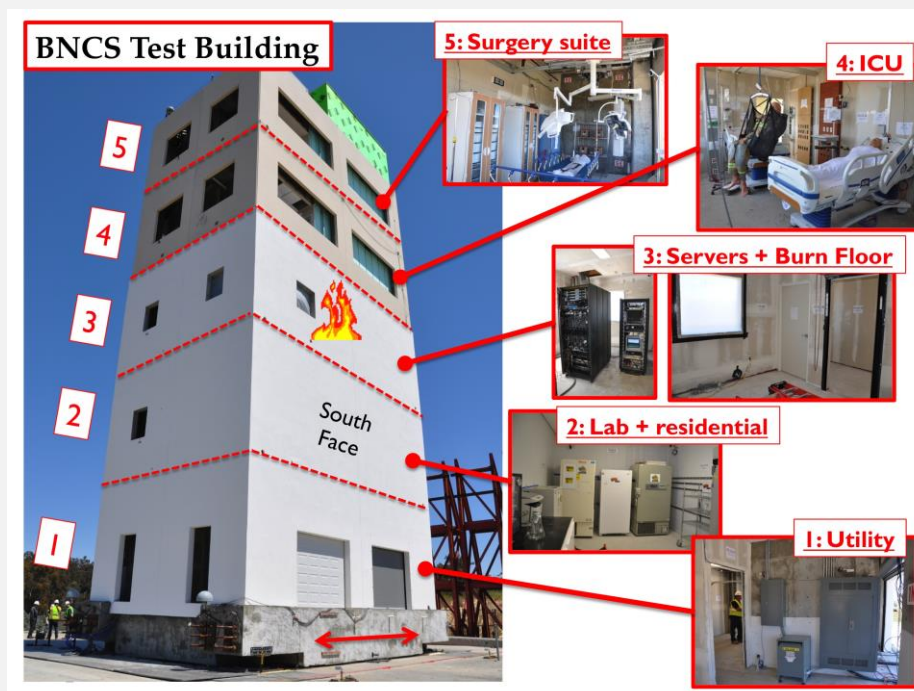


## Earthquake and Post-Earthquake Fire Testing of a Full-scale 5-story Building outfitted with Nonstructural Components on the World's Largest Outdoor Shake Table

Monday, July 6<sup>th</sup> 2015  
 16:00-17:00  
 Auditorium HIL E 1  
 ETH Zürich, Hönggerberg, 8093 Zürich

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Earthquakes and post-earthquake fires have demonstrated extensive losses, both monetary and humanitarian, in past earthquakes. Much of this has been due to the reduced integrity of nonstructural components and systems (NCSs) housed in buildings. Yet, remarkably until recently, very little research has been conducted to investigate the performance of NCSs during earthquakes and particularly considering fire following earthquake scenarios.

In this presentation, a large multi-disciplinary project is described, in which a full-scale five-story building furnished with a broad array of nonstructural components and systems is tested first under increasingly damaging earthquake motions, and subsequently under live fire conditions. The test building incorporated, among other things, a functioning passenger elevator, stairs, a complete exterior facade, interior partition walls, piping, HVAC, ceiling, sprinklers, building contents, as well as passive and active fire systems. The building-NCS system is first supported on high rubber damping isolators, and following a suite of earthquake motions it is lifted and subsequently fixed to the shake table platen, in an effort to demonstrate the effectiveness of isolation technology in protecting the NCSs and preserving the buildings functionality. The live fire tests are performed in select compartments, which suffer reduced integrity due to prior imposition of seismic motions. Data obtained from this program is being used to inform and improve current seismic design practices in the United States and key advancements in this regard related to precast cladding, stair systems, and elevators will be highlighted.