Tim Reinhold

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Tim Reinhold joined the Institute for Business & Home Safety in 2004 as Director of Engineering and Vice President after twelve years with Clemson University where he was a professor of Civil Engineering. He was promoted to Senior Vice President of Research and Chief Engineer in 2008. His professional career includes ten years as a consulting engineer with firms in the US, Canada and Denmark and five years at the National Institute for Standards and Technology. He earned BS, MS and Ph.D. degrees in Engineering Mechanics from Virginia Tech in 1973, 1975 and 1978, respectively.

Dr. Reinhold has conducted research on wind effects and structural resistance for most of his professional career. In addition to directing numerous studies to determine wind loads for tall buildings and specialty structures, he has been heavily involved in research relating to the performance of housing and low buildings in hurricanes and other severe wind events. His research includes post event assessments, model and full-scale laboratory studies, and in situ field structural testing. Tim Reinhold serves on the American Society of Civil Engineers ASCE 7 Committee, the ASCE 7 Wind Loads subcommittee and the ASCE 7 General Requirements subcommittee, served for about eight years on the Southern Building Code Congress International (SBCCI) Wind Load subcommittee and is a past member of the Board of Directors for the American Association for Wind Engineering. Tim has authored or co-authored numerous journal papers, chapters of books and conference publications.

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Institute for Business & Home safety

Mega-City/Mega-Disaster Reduction

At the Institute for Business and Home Safety, IBHS, an emphasis is placed on mitigation of the built environment. Much of the damage and related injuries, deaths and disruptions to communities can be reduced by having a physical infrastructure that is better able to resist the event. Table 1 outlines some preliminary thoughts on the elements that affect the performance of the physical infrastructure and organize them in terms of an event timeline.

Table 1. Elements that Affect the Performance of the Physical Infrastructure

	event phase		
Changes in …	Before	During	After
Where you build	➢Land use planning ➢Protective barriers ➢Understanding risks ➢Laws & regulations ➢Incentives/disincentives	➢Event magnitude ➢Evacuation ➢Communication	➢Access to services ➢Access to property ➢Power availability ➢Community planning ➢Risk mitigation
How you build	➢Code adoption ➢Adequacy of code ➢Test standards & ratings ➢Code plus construction ➢Code enforcement ➢Education & certification ➢Public awareness ➢Incentives	➢Life safety ➢Shelter ➢Continued operation ➢Property damage	➢Recovery time ➢Extent of damage ➢Emergency repairs ➢Use of property ➢Rebuilding better ➢Code improvement ➢Community resiliency ➢Recovery costs
How well you maintain	➢Incentives/disincentives ➢Public awareness ➢Education	➢Extent of damage ➢Scale of damage ➢Loss of function	➢Recovery time ➢Recovery costs

Clearly there are many other layers to both the problems and solutions that have to be interwoven in order to mitigate the impacts of a disaster striking a major urban area. Ultimate, each layer must involve actions that change the status quo so that individuals, communities and regions are more resilient when an event occurs. Perhaps a similar matrix can be developed outlining actions that need to be taken before, during and after an event to empower people to take responsibilities for themselves and their neighbors in the immediate aftermath and that help organize the post disaster response in such a way that needs are identified and resources deployed quickly and efficiently.