Comments on NIST Recommendations
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by Jon Magnusson, PE, SE, Hon. AIA
Chairman/CEO – Magnusson Klemencic Associates – Structural/Civil Engineers
206-292-1200
jmagnusson@mka.com

Member – American Society of Civil Engineers / FEMA WTC Building Performance Assessment Team
Member - National Fire Protection Association Highrise Building Safety Advisory Committee

Recommendation 1 – Progressive Collapse

NIST has provided absolutely no data showing there has been even a single death as a result of progressive collapse anywhere in this country. How do you "improve" public safety from a record of no deaths?

The consequences of the WTC attack did not constitute a case of progressive collapse. This was confirmed by experts at the 2002 NIST Progressive Collapse Workshop in Chicago. The WTC design met and bettered all currently proposed progressive collapse standards and code provisions.

Additionally, progressive collapse standards are ineffective against large scale attacks like those at Oklahoma City, the Pentagon, and the WTC. Shankar Nair, a prominent structural engineer in Chicago, recently published findings of a study showing that the outcome in Oklahoma City would have been the same even if the building had been designed to proposed progressive collapse standards.

Recommendation 2 – Wind Tunnel Testing

Wind tunnel results had absolutely no bearing on the outcome of the WTC attack.

The safety record of buildings designed by wind tunnel testing is 100%...absolutely no deaths due to wind tunnel testing problems.

Recommendation 3 – Building Sway

Building sway standards had absolutely no bearing on the outcome of the WTC attack.

Standards already exist for building sway in wind and earthquake and have proven to result in good building performance.

Recommendation 4 – Fire Issues

Actual fire safety records prove that buildings already achieve the performance objective of reaching "burn out" of the contents with structural collapse.

Records by the National Fire Protection Association show that in the 14-year period of 1985-1998 there were only 7 deaths due to fires in highrise office buildings.

If creating "compartments" in open space offices is required for safety, is NIST recommending that all buildings be retrofitted with these fire walls? The NIST findings talked about 5,000 square feet compartments, why have they increased this to 12,000 square feet?

Where is the actual fire data showing that existing fire codes do not provide safety?

Recommendation 5 – Fire Resistance Testing

Yes, current fire resistance testing methods have been used for a century…with excellent safety results. More sophisticated testing methods result in less fireproofing than current testing methods.

Recommendation 6 – Sprayed Fire Resistive Material

The key question is what standard would be applied? Is it that the fireproofing must resist the impact of an airplane attack? That is not possible; therefore, fireproofing standards had absolutely no bearing on the outcome of the WTC attack.

Recommendation 7 – "Structural Frame" Approach

NIST has provided no scientific data showing that the structural frame approach has any better safety record than the current code approach. The use of the structural frame approach would have had absolutely no bearing on the outcome of the WTC attack.

Recommendation 8 – Burn Out

This is a good objective.

Recommendation 9 – Performance Based Design

This is a good recommendation.

Recommendation 10 – New Fire Coatings

This is a good recommendation.

Recommendation 11 – Advanced Materials

This is a good recommendation.

Recommendation 12 – Sprinklers for Taller Buildings

Sprinkler design already considers fires in highrise buildings. Their fire safety record is excellent. NIST has provided no data to demonstrate a need for change in the current standards.

Since all the sprinkler main and branch lines were destroyed by the impact of the airplane, these proposals would have had absolutely no bearing on the outcome of the WTC attack.

Recommendation 13 – First Responder Communications

This is a good recommendation.

Recommendation 14 – Command Station Data

This is a good recommendation.

Recommendation 15 – Off-site / "Black box" Data Gathering

This is a good recommendation.

Recommendation 16 – Public Education

This is a good recommendation.

Recommendation 17 – Fast Full Building Evacuation

Exits are already provided for full building evacuation…the only question is how long it takes. Under the most common hazard scenarios it is safer not to evacuate the whole building, but rather, to evacuate those people closest to the hazard. If stairwells are filled by people who were not in the hazard area, they will impede the progress of those that are in danger.

NIST did not provide any historical safety data showing the stairwells are not wide enough. To design a tall building for "fast" total evacuation would require the entire lower floors to be nothing but stairs!

The width of the stairwells had absolutely no bearing on the outcome of the WTC attack.

Recommendation 18 - Egress Components

Intuitive and obvious signage is a good recommendation.

It is not possible to maximize remoteness without negatively impacting travel distance. This would reduce safety in fires. Maximum remoteness could also make a building more vulnerable to certain kinds of terrorist attacks.

The locations of stairwells in the WTC were determined in accordance with fire safety and building code standards, not some undefined terrorism standard.

The historical safety record for the integrity and survivability is excellent. Logic dictates that stairwell walls would not need to be "hardened" unless the design hazard is big enough to destroy all the stairwells in a building. Any hazard this large would destroy the entire building. Therefore, it would be irrelevant what the walls were made of. If the NIST recommended "hardening" of the walls is implemented, it could actually make the building more vulnerable to certain kinds of terrorist attacks.

The structural integrity provisions of stairwells in the WTC were designed in accordance with fire safety and building code standards, not some undefined terrorism standard.

Recommendation 19 – Emergency Information

This is a good recommendation.

Recommendation 20 – New Evacuation Technologies

This is a good recommendation.

Recommendation 21 – Fire Protected and Structurally Hardened Elevators

NIST is incorrect to say that first responders do not currently use elevators. They are used all the time in emergency situations. National building already require elevators to return to the lobby during a fire alarm for use by emergency responders.

Elevators are already in fire-protected enclosures.

If you decide to "structurally harden" elevators, the key question is how "hard"? What is the design hazard in an attack on the elevators?

Recommendation 22 – Communication Systems

This is a good recommendation.

Recommendation 23 – Situational Intelligence

This is a good recommendation.

Recommendation 24 – Command and Control Systems

From a building design standpoint, there is absolutely no way to ensure effective and uninterrupted operation of a building command center. A bomb could be put in the command center itself. However, command centers can be designed for code-basis hazards.

Other protocols are outside of building design.

Recommendation 25 – Code Jurisdiction

The NIST statement that some entities "are not subject to building and fire safety code requirements of any governmental jurisdiction" is not correct. The Port Authority of New York and New Jersey is subject to their own requirements and they are a governmental jurisdiction.

Also, it is a fact is that no federal or state project is required to meet a city building code. This inventory constitutes thousands of buildings.

However, in every case that I know of, the governmental entity simply uses or betters the requirements of the local codes. All agencies have internal reviews of designs performed by architects and engineers and most already use independent third-party technical peer reviews for significant structures.

There are no non-governmental entities exempt from codes (except possibly Disney in Florida and they developed their own code).

Recommendation 26 – Code Enforcement

This is a good recommendation.

Recommendation 27 – Building Documents

Most jurisdictions already keep building plans. It is a good recommendation that building owners keep a set of their building's plans. Calculations are not a part of the design and there is no need to keep them.

It is a good recommendation that emergency responders have access to building plans both before and during emergencies.

Recommendation 28 – Code Mandated Role of Fire Protection and Structural Engineers

NIST conducted no research into relative safety records for building designs that used or didn't use fire protection and/or structural engineers. Any recommendation without this science is inappropriate. The code should not be used to "make work" for any design discipline without a scientific public safety basis.

In the case of fire protection engineers, their involvement traditionally does not increase fireproofing requirements, but rather, reduces them.

Recommendation 29 – Continuing Education

This is a good recommendation.

Recommendation 30 – Additional Education Issues

This is a good recommendation.