



NIST Response to the World Trade Center Disaster

**Federal Building and Fire Safety Investigation
of
the World Trade Center Disaster**

**Dissemination and Technical Assistance Program
Update**

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**BPAT
Recommendations**

**Govt.
Industry
Professional
Academic
Inputs/Actions**

**Public Inputs/
Efforts**

**WTC
Investigation**

**WTC
Response Plan**

**Research &
Development**

**Dissemination
and Technical
Assistance Program**

**Guidance and Tools for
Improved Practices**

**Technical Basis for Improved
Building and Fire Codes
and Standards**

**Owners, Contractors, Designers,
Emergency Responders and
Regulatory Authorities**

**Standards and Code Development
Organizations**



Industry Led Dissemination and Technical Assistance Program



Concept:

Engage leaders of the construction and building community in assuring timely implementation of needed changes to practices, standards, and codes.

Functions:

Provide inputs and participate in developing best practices, guidance and tools for vulnerability assessment and reduction, guidance on standards and codes needs.

Timely adoption, dissemination, and use of investigation recommendations and R&D outputs.

Partners:

Codes and Standards developers, e.g., ICC, NFPA, ASME, ASTM...

Professional, engineering organizations, e.g., IAFC, ASCE, SFPE, AIA, AGC...

Industrial/trade bodies, e.g. CII, FIATECH, CERF, NIBS,...

Recommendations: Call to Action

- **NIST strongly urges:**
 - **The building and fire safety communities to give *immediate and serious consideration* to these recommendations in order to achieve appropriate improvements in the way buildings are designed, constructed, maintained, and used and in evacuation and emergency response procedures.**
 - **Building owners and public officials to:**
 1. **evaluate the safety implications of these recommendations to their *existing inventory of buildings*; and**
 2. **take the steps necessary to mitigate any *unwarranted risks* without waiting for changes to occur in codes, standards, and practices.**
 - **State and local agencies, well trained and managed, to *rigorously enforce* building codes and standards since such enforcement is critical to ensure the expected level of safety.**

Recommendations: NIST Actions

- After issuance of the final report, the National Construction Safety Team Act requires NIST to:
 - Conduct, or enable or encourage the conduct of, appropriate research recommended by the NCST Team; and
 - Promote the appropriate adoption of the recommendations by the Federal Government and other agencies and organizations.
- NIST is assigning *top priority* to work vigorously with the building and fire safety communities to assure that there is a complete understanding of the recommendations and to provide needed technical assistance.

Recommendations: NIST Actions (2)

- As part of NIST's overall WTC response plan, the Institute has begun to reach out to the building and fire safety communities to pave the way for timely, expedited consideration of recommendations stemming from this investigation.
 - Outreach to:
 - model code organizations (ICC, NFPA)
 - standards development organizations (e.g., ASCE, NFPA, ASTM, ASME, UL)
 - state and local building officials (NCSBCS, AMCBO, NYC DOB)
 - the professional community, including presentations at major conferences (e.g., NFPA, ASCE, AIA, IAFF, CTBUH, Chicago Committee on High-Rise Buildings, Structural Engineers Foundation of Chicago, NCSBCS/AMCBO, CII, CERF Corporate Advisory Board)
 - Detailed briefing for designers of the WTC and lower Manhattan redevelopment (including Silverstein, Port Authority, NYC DOB officials, and Goldman Sachs).
 - WTC Technical Conference: Putting Recommendations into Practice, September 13-15, 2005.
 - NIST will establish a web-based system to track the status of the recommendations.

Strategy for Recommendations

Separate plan for each of the 30 recommendations:

- Team leader (responsible for proactive pursuit and schedule) and support staff
- Concise objective
- Needs to meet objective (NIST and others)
- Strategy (research, consensus, public policy)
- Workshops to facilitate consensus (NIBS)
- Schedules and required format for submitting proposals to target codes and standards
- Technical and position papers to build support

Proposals for Changes to Codes

- NIST has contracted the National Institute of Building Sciences (NIBS) to coordinate preparation of code change proposals for selected recommendations.
- NIBS is organizing a panel of recognized experts to:
 - Prioritize the recommendations (e.g., those that can be translated directly into code change proposals, those that will require changes to standards, and those that will require additional research).
 - Develop proposals for changes to building codes.
- Panel will prepare proposals for ICC and NFPA 5000 and coordinate submission with code update cycles.

Recommendations: NIST Actions (3)

- NIST also has expanded its research in areas of high priority need. Examples include:
 - Prevention of Progressive Collapse
 - Fire Resistance Design and Retrofit of Structures
 - Fire Resistive Coatings for Structural Steel
 - Fire Resistance of Uncoated Structural Steel with Improved Thermal Properties
 - Fire Resistance of Building Partitions
 - Occupant Behavior and Egress
 - Emergency Use of Elevators
 - Equipment Standards for First Responders
 - Standard Building Information Models for Vulnerability Assessment
 - Technologies for Building Operations in CBR Attacks
 - Cost-effective Risk Management Tools