INTERNATIONAL CODE COUNCIL

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September 11, 2008

WTC Technical Information Repository
National Institute of Standards and Technology
Stop 8610
Gaithersburg, MD 20899-8610

Attention: Mr. Stephen Cauffman

Subject: Responses to Request for Public Comments on NICSTAR 1A, Final Report on the Collapse of World Trade Center Building 7 (August 21, 2008)

Dear Mr. Cauffman:

The International Code Council® (ICC®) submits the attached comments to the National Institute of Standards and Technology (NIST) on the NIST NICSTAR 1A- Final Report on the Collapse of World Trade Center Building 7. The ICC would like to commend NIST and its contractors on the quality and thoroughness of the report. The professionalism exhibited by the report is commendable and demonstrates to the public the high level of technical expertise and management excellence of NIST and its public and private sector partners. This expertise is especially important in the evaluation of the collapse of World Trade Center Building 7, which has been the subject of intense public and media attention.

The ICC is a 40,000+ member association dedicated to building safety and fire protection. The ICC mission is to provide the highest quality codes, standards, products, and services for all concerned with the safety and performance of the built environment. This mission and the activities of the ICC directly relate to providing a safe physical environment through the adoption of, and implementation of, codes and standards developed under the auspices of the ICC, and the availability of a robust infrastructure established by ICC to support those codes and standards. We do want to emphasize that while the International Code Council sponsors and manages the process for the development of its model codes, neither the Code Council as an entity, nor its individual staff, write the codes, nor make proposals, or take positions on proposals to modify them.

The 13 model codes developed under the auspices of the ICC, with the involvement of all interested and affected parties, serve as a baseline for the design, construction, operation and maintenance of the majority of both public and private sector buildings in the U.S. Through the adoption and implementation of ICC's codes by Federal agencies such as GSA, Department of Defense, and State Department, and by every state that has a statewide code as well as many jurisdictions in those few states still lacking a statewide code, buildings are safer than ever for occupants and users.

We note as a general point that the report makes reference only to the International Building Code, one of the 13 model codes. (There is a footnote reference to the International Performance Code for Buildings and Facilities, at pg. 65) It is important to note that the vast majority of the local, state, and federal entities where the ICC codes are enforced have adopted several, if not all of the International Codes published by ICC. This fact is especially relevant since many of the recommendations in the report touch directly on issues addressed by the International Fire Code and the International Performance Code for Buildings and Facilities. A chart of adoptions of the various codes is attached to this letter for informational purposes

The International Fire Code, International Building Code, International Existing Buildings Code, and 10 other ICC codes contribute to making the built environment safer, both for newly constructed and renovated buildings as well as for existing buildings, through fire and safety inspections.

We appreciate that NIST has sponsored an effort to participate in and promote code changes consistent with the earlier WTC reports in the ICC code development process. NIST issued its final report on WTC 1 and 2 in September 2005. Since then, the ICC has completed two cycles of code development. The timing of the report was such that approximately 20 code changes were submitted for the 2006/2007 cycle, with code changes due March 24, 2006. This cycle concluded with the 2007 Final Action Hearings and the publication of the 2007 Supplement. This was followed by the current code development process, the 2007/2008 cycle, with approximately 45 code changes submitted by the August 20, 2007, deadline. Final disposition on these code changes will not occur until the 2008 Final Action Hearings, slated for September 17-23, 2008. Approved changes from both cycles will then be published in the 2009 editions of the I-Codes, and adopted beginning in 2009 by adopting authorities. The changes relating to the WTC event would be incorporated into either the IBC or the IFC, depending on the purview of the change.

During these two cycles of code development, the following issues related to the 30 recommendations reported by NIST have been considered (listed in no specific order):

- Progressive/structural collapse
- Wind tunnel testing
- Structural frame
- Spray on fireproofing – material parameters and inspection parameters
- Fire exit drills/evacuation plans
- Exit path markings
- Exit continuity/transfer corridors
- Additional exit stairs for fire fighting
- Exit remoteness
- Exit enclosure integrity

- Occupant use of elevators for egress
- Fire command center communication systems
- Emergency responder communication systems
- Fire service use of elevators
- Redundancy of sprinkler systems
- Burnout
- Risk assessment for large and/or iconic buildings
- Stairway communication

It is anticipated that ICC will continue to see code change proposals in cycles to come, and we encourage NIST's participation in this process. The high level of expertise, solid research and sound technical reasoning of NIST experts are valued by code development professionals, and lead to better code provisions when those experts participate in the process. The next code change deadline for proposed changes is March 24, 2009.

The International Code Council believes that the process being used by NIST to facilitate translating the results of the NIST investigation into suitable and enforceable provisions of the ICC International Codes has worked well. The process has allowed experts with extensive experience and training to advocate code changes in a process that also involves construction interests, building owners and others with direct responsibility for the safety of building occupants, and the obligation to manage buildings that meet tenant needs effectively and competitively.

The attached comments focus on specific areas in the NIST report that are associated with building regulations, codes, standards and related issues on which ICC feels uniquely qualified to comment. All comments are in the form requested by NIST, listing the comment, the report number, page, sentence and/or paragraph and then the reason and suggested revision. In some instances the comments are editorial in nature or suggest clarifying language. Other comments are more general and we trust they will be considered in the collaborative and supportive spirit in which they are intended.

One common thread in a number of ICC's comments is the manner in which the reports refer to building regulations, codes, model codes, building codes, standards, and similar terms and then also refer to specific documents such as the NYC Building Code (NYCBC), the International Building Code, etc. While NICSTAR 1A does a better job of specifying which code is being commented on than the earlier reports relating to the WTC buildings, there are still instances where it is not clear what code is being described, and whether the comment relates to current circumstances in 2008, or circumstances at the time of construction of the building in 1987, or with respect to the New York City Building Code (NYCBC) of 1968.

Another common thread in the document is the referencing of NFPA 5000 as well as the International Building Code, as if the two documents are equivalent and equal alternatives. While we appreciate NIST's desire to be fair, and to avoid favoring one document over another, the fact is that NFPA 5000 is a proposed code, not currently adopted by any major jurisdiction in the United States. (See the attached chart of code adoptions.) There is no reason to make reference to provisions in a document that is at best prospective, has not been adopted and is therefore not in use as an enforced code in U.S. jurisdictions.

To avoid confusion, we have suggested several specific deletions, but would encourage NIST to reconsider making reference to a code whose relevance is at best hypothetical since it is not currently in use by any major U.S. jurisdiction.

These reports will be read with interest by the U.S. lay audience as well as a number of technical and non-technical entities in other countries and for this reason ICC feels it is important to be clear, consistent and precise when discussing building regulations and associated terms, whether in general or with respect to specific documents. For this purpose we have suggested two basic acronym and definition additions.

We look forward to providing any and all information NIST may request or require and stand ready to assist through our relationships with state and local officials and the US building community.

Sincerely,

David L. Karmol
Vice President, Federal and External Relations

Comments of the International Code Council on NIST NCSTAR 1A, Final Report on the Collapse of World Trade Center Building 7
September 12, 2008

All comments below are to NCSTAR 1A, and all page references are to the pagination of that document. The format, as requested by NIST, is the location by page and paragraph or sentence, the reason for the change, and suggested language.

1. Missing Acronym, pg. xxiii, between IBC and NFPA. Reason: Acronym ICC is not defined, although it is used in the document in a footnote on page 65.

Suggested language:
"ICC International Code Council"

2. Missing definition, pg xxiii, before NFPA. No definition is provided in the document for the term "model building code" which is used first at pg 55, Sec. 4.6, second bullet. This term should be defined so the reader understands how model codes are developed and how they come to be adopted by local government jurisdictions, with or without modifications, and then enforced by local building code and fire safety officials.

Suggested language:
"Model building code- a comprehensive regulatory framework document that is developed and maintained by a standards organization independent of the jurisdiction responsible for enacting and enforcing the building code. Typically, model building codes are adopted by states or local jurisdictions as legally enforceable building codes, often with modifications to meet local conditions and circumstances. Model codes are generally maintained through an open process, on a regular development cycle, and re-adopted by the enforcing authority on a periodic basis."

3. Reference to new technology should be added, pg xxxv, Lettered Paragraph J: Building Information Modeling (BIM) software allows building documents to be securely maintained and updated in a BIM over the life of the building.

Suggested language:
At the end of the paragraph, add: "Building documents should be maintained in a Building Information Modeling system (BIM), and such documents should be updated and maintained in a secure BIM during the building life."

4. Incorrect comparison, pg. 51, second to last bullet. Comparison between a proposed code and a code actually in use in 50 states and federal agencies is inappropriate. The bullet speaks of stairwell capacity which was not a factor in the loss of WTC 7, nor was it causative of any injuries or deaths. The report should not be used to compare apparent differences between a proposed code (NFPA 5000) and a contemporary code used throughout the country (IBC).

Suggested language:

Delete: ", but not the 2003 edition of NFPA 5000."

5. Incorrect comparison, pg. 51, last bullet. Comparison between a proposed code and a code actually in use in 50 states and federal agencies is inappropriate. The report should not be used to compare apparent differences between a proposed code (NFPA 5000) and a contemporary code used throughout the country (IBC). In addition, the item suggests that the 2000 edition of the IBC is the current edition. This is incorrect- the current version is the 2006 edition.

Suggested language:
Revise the final sentence to read: "On some floors the separation of the stairwell doors was below the remoteness requirements in the IBC, 2006 edition (current)."

6. Insufficient reference, pg 53, first bullet under Sec. 4.5.2. Due to the confusion about what codes and standards were in use, and/or enforced at the time of construction, this paragraph should clarify what codes and standards NIST believes the building was "generally consistent with."

Suggested language:
At the end of the existing sentence, after the word standards, add: ", in effect at the time of construction."

7. Incorrect statement concerning current practice today, page 53, last bullet. Statement that design did not explicitly evaluate fire effects, which was typical engineering practice at the time and continues to remain so today, is incorrect.

Suggested language:
Modify sentence to read: "...the design did not explicitly evaluate fire effects, which was typical engineering practice at the time. Today, the ICC Performance Code for Buildings and Facilities (ICC-PCBF) addresses this issue. Section 1701.2.7 of the ICC-PCBF explicitly requires, 'Facilities shall be arranged, constructed and maintained so as to limit the impact of a fire on the structural integrity of the facility.' "

8. Incomplete statement regarding progressive collapse, pg. 55, sec. 4.6, bullet 2. Statement is that current model codes do not address progressive collapse. There have been two proposals to the IBC which were recommended for disapproval by the IBC structural committee at the first hearing of the code development cycle. One was proposed by the ICC Ad Hoc Committee on Terrorism Resistant Buildings (S5-06/07) and the other, during the current code development cycle, was proposed by NCSEA Ad Hoc Joint Industry Committee on Structural Integrity (S101-07/08). Refer to the code change monographs for more information and reasons for the recommended disapproval. S101-07/08 has public comments by *MMC Committee for Translating the NIST World Trade Center Investigation Recommendations into Building Codes* so it will be considered at the ICC Final Action Hearing in Minneapolis, MN, September 17-23, 2008. If approved, it would appear in the IBC, 2009 edition.

9. Misleading language, pg.60, Recommendation C. "NIST recommends evaluating, and where needed improving, the technical basis for determining appropriate construction classifications and fire rating requirements, and making related code changes."
We wish to make clear that ICC staff do not create or develop the technical basis for the codes. The International Code Council manages an open, transparent and balanced process that is open to all interested parties to submit proposed changes, as well as any supporting documentation for such changes. ICC then publishes the resultant code, and provides technical support to anyone implementing the code.
We invite and encourage proposals to make enhancements to our codes and standards. Proposed code changes succeed if they are supported by valid technical and experiential reasons, and effectively address issues such as enforceability, safety and cost-effectiveness critical to the building sector and regulatory officials responsible for enforcing the codes.

10. Incorrect reference, pg. 61, Recommendation E. There is a reference to the "2007 Supplement to the International Building Code" For accuracy, the reference should be made to the specific edition of the IBC that the supplement pertains to, and mention should be made of the publisher of the supplement, so the reader can locate or obtain the document, if desired.

Suggested language:
"2007 Supplement to the 2006 IBC (published by the ICC)"

11. Incomplete reference, pg.62, Recommendation G. The first paragraph recommends development of standards and codes provisions, without mentioning the ICC Performance Code for Buildings and Facilities, developed and published by ICC- even though this code is later mentioned in a footnote on page 65.

Suggested language:
Add the end of the paragraph, add a new sentence: "The International Code Council (ICC) publishes the 2006 Performance Code for Buildings and Facilities (PCBF), which presents regulations based on outcome rather than prescription. It encourages new design methods by allowing the designer and contractor to apply broader set of parameters for meeting the intent of the International Codes. Section 1701.2.7 of the ICC-PCBF explicitly requires, 'Facilities shall be arranged, constructed and maintained so as to limit the impact of a fire on the structural integrity of the facility.'"

12. Additional reference recommended, pg.65, Recommendation J. ICC supports the recommendation that building owners retain documents, and suggests a reference to Building Information Modeling software as a vehicle for such records retention in a usable format.
Suggested language: Following the first sentence in the Recommendation, add: "Building Information Modeling (BIM) software should be utilized to allow for efficient and secure storage and retrieval of relevant information relating to buildings, and will facilitate access by first responders and others who need quick access to relevant information about the building."

13. Additional information, pg 65, Recommendation K. ICC endorses the recommendation and suggests that NIST refer to the Integrated Project Delivery project of the American Institute of Architects as part of this recommendation.
Suggested language:
At the end of the Recommendation, add: "The emerging practice of Integrated Project Delivery, a project of the American Institute of Architects (AIA), is ideally suited to this suggestion, and can be utilized in conjunction with Building Information Modeling (BIM) software."