

NIST Strategy for remaining WTC Recommendations

NIST staff has reviewed the proposals related to the WTC recommendations that were disapproved in the 2009 code cycle in the context of the comments and floor debate arising in that process. Where we feel that NIST can contribute technical input and research to address technical issues that were identified, we will do so. Where feedback from the process indicated that different solutions to the issues may be possible, we encourage those proposals to be developed. NIST will review and support similar or different proposals that are consistent with our WTC recommendations.

1. Surviving Burnout Without Collapse

While most seem to agree that the concept underlying fire resistance has always been to protect the structural system to prevent local or global collapse from a complete burnout of the fuel load, the explicit regulation of buildings for this needs a practical methodology to be accepted by regulators. NIST is conducting research including the development of design fire scenarios that can serve as the (fire) design load analogous to other (structural) design loads but this work will not be ready to underpin a code proposal in the current cycle. NIST hopes to be in a position to provide the technical basis for a proposal by August 2010 for the 2012 code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

2. Progressive Collapse

The approach to this issue needs to come through consensus of the structural engineering community and there are several committees (e.g., ASCE/SEI, NCSEA and CTBUH) working the problem. The proposal from TRB was intended to keep pressure on these organizations to find an early solution, but this has not happened. NIST is conducting research to develop quantitative metrics for the safety and robustness of structural systems but this work will not be ready to underpin a code proposal in the current cycle. NIST hopes to be in a position to provide the technical basis for a proposal by August 2010 for the 2012 code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

3. Risk Assessment

Risk assessment is poorly understood outside of certain circles, even though there are ISO standards that guide process. To advance this issue NIST feels the need to develop, in partnership with experts and practitioners, clear guidance and examples that show how risk assessment should be applied and conducted. NIST hopes to be in a position to provide the technical basis for a proposal by August 2010 for the 2012 code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

4. Wind Tunnel Testing Standard

The code provision will be adopted once ASCE completes their work on their Standard 49. Thus, a proposal to adopt this standard should be considered for the current cycle in the hope that ASCE will finish.

5. Communication and Monitoring of Occupant Egress

The proposal to use cameras in stairways still contains deficiencies that need to be addressed. These include the need for more detailed installation and operational guidance as well as ways to prevent identification of occupants. NIST further suggests that other approaches be considered such as methods of tracking individuals or manual reporting of stairway flows by floor wardens as alternatives. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

6. Fire Safety and Evacuation Plans

Requirements for evacuation plans are already in the fire code and may not be needed in the building code (even where the IFC is not adopted with the IBC, those jurisdictions usually adopt NFPA 1 which contains similar requirements). Building officials do not want the additional responsibility. NIST suggests dropping this effort.

7. Building Plans and Information

NIST feels this needs more definition of what information is needed and why. Chicago FD has a requirement for building information and FDNY has asked NIST to assist in identifying specific information to request and how to interpret it in the context of emergency operations. NIST plans to look into requirements in several, large cities and to develop guidance that might be the basis for a new proposal. This may be available for the current code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

8. Transfer Corridors

It may not be possible to totally avoid transfer corridors, especially in tapered buildings. Perhaps the requirements for markings and signage are the best that we can do. NIST remains open to consideration of improved proposals to limit use of transfer corridors.

9. Performance-based Design Option

This is already an option in the IBC, so further details at this time may not be necessary. Broader acceptance of performance design will come with further research and experience. NIST suggests dropping any further efforts with this issue at this time. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

10. Resistance of Stair Enclosures to Overpressure

NIST has been conducting tests on common construction to overpressure. Further evaluation of the results is needed to determine if and where an overpressure criterion is justified (e.g., 1 ½ psi) in addition to the impact resistance requirements added in the last cycle. This may be available for the current code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.

11. WTC 7 Recommendation

NIST is conducting studies to assess the best approach(s) to address the new recommendation to evaluate the fire performance of the structural systems. The strategy for engaging the structural engineering community, involvement of critical stakeholders, development of evaluation approaches and criteria for existing building stock, and establishment of design criteria for new construction will take some time and this work is unlikely to be at a point to support a proposal for the current code cycle. NIST would be willing to review and support alternative approaches developed by CTC, TRB, or others.