

Status of NIBS/MMC WTC Recommendation Implementation Project

Recommendation	Summary of February 2006 meeting deliberations	Status as of April 1, 2006, and anticipated action at May NIBS/MMC Committee meeting
<p>Recommendation 1. NIST recommends that: (1) progressive collapse be prevented in buildings through the development and nationwide adoption of consensus standards and code provisions, along with the tools and guidelines needed for their use in practice; and (2) a standard methodology be developed—supported by analytical design tools and practical design.</p>	<p>The NIBS/MMC committee discussed a draft ICC Ad Hoc Committee on Terrorism Resistant Buildings (AHC-TRB) <i>IBC</i> change proposal concerning disproportionate collapse reflecting United Kingdom model. This and other AHC-TRB proposals being developed for the March 24, 2006, deadline were to be submitted for further consideration by the ICC Code Technology Committee (CTC) and discussion at a March 8-9 hearing/joint meeting.</p> <p>ASCE/SEI indicated that it is considering developing a document on progressive collapse but, if the decision is made to proceed, the resulting document likely will be a guideline rather than a standard.</p> <p>The NIBS/MMC committee concluded that further discussion by all interested parties is needed to, as a minimum, formulate an action plan for addressing progressive collapse in a timely manner. Thus, it decided to devote one day (May 1) of its next two-day meeting to the topic and to invite interested parties from the various engineering, standards and codes, and materials groups.</p>	<p>Committee co-chair Jones attended the March 9 ICC hearing and stated that the NIBS/MMC committee's position: The issue of progressive collapse does, as a topic, belong in the codes but in what shape or form we do not yet know. In an effort to encourage further development, the NIBS/MMC committee is planning a one-day session on May 1 to address the issues associated with progressive collapse. Representatives of stakeholder organizations have been invited to participate with the committee and the convening of this session has been announced to the ICC CTC and AHC-TRB members. Envisioned is a positive discussion to answer two broad questions: What can be done over the short term and what should be done (and by whom)? What can be done over the longer term and what should be done (and by whom)?</p> <p>In addition, the ICC AHC-TRB submitted an <i>IBC</i> change proposal concerning disproportionate collapse -- see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_01_1604_11_and_1605_Issue_A_Disproportionate_Collapse.pdf.</p> <p>The NIBS/MMC committee will consider the final wording of this proposal before the September ICC hearings and decide whether to formally support it.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>

<p>Recommendation 2. NIST recommends that nationally accepted performance standards be developed for: (1) conducting wind tunnel testing of prototype structures based on sound technical methods that result in repeatable and reproducible results among testing laboratories; and (2) estimating wind loads and their effects on tall buildings for use in design, based on wind tunnel testing data and directional wind speed data.</p>	<p>At its December meeting, the NIBS/MMC committee decided to develop a proposal to reference the almost completed ASCE standard on wind tunnel testing since it did not then appear that the ICC groups were going to address the issue. At its February meeting, the NIBS/MMC committee was pleased to see a draft CTC proposal adding reference to the soon-to-be published standard. Modifications were recommended and the committee voted unanimously to endorse the CTC proposal as modified.</p>	<p>The ICC CTC submitted an <i>IBC</i> change proposal to reference the new ASCE standard – see http://www.iccsafe.org/cs/cc/ctc/WTC_Interim_Report_No_1_Final.pdf.</p> <p>The NIBS/MMC committee will determine how best to voice its support for this proposal before the September ICC hearings.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 3. NIST recommends that an appropriate criterion be developed and implemented to enhance the performance of tall buildings by limiting how much they sway under lateral load design conditions (e.g., winds and earthquakes).</p>	<p>Although not directly an <i>IBC</i> issue, the NIBS/MMC committee discussed how it might best be addressed. It appears that many believe this to be a serviceability issue, not a structural stability issue, and have little interest in adopting a drift limit for wind. It was mentioned, however, that ASCE/SEI has had at least some discussion of the issue and that drift limits for wind would vary depending upon occupancy.</p>	<p>At or before its May 2, the NIBS/MMC committee hopes to receive an update on ASCE/SEI plans.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 4. NIST recommends evaluating, and where needed improving, the technical basis for determining appropriate construction classification and fire rating requirements (especially for tall buildings)—and making related code changes now as much as possible—by explicitly considering factors including: (1) timely access by emergency responders and full evacuation of occupants, or the time required for burnout without partial collapse; (2) the extent to which redundancy in active fire protection (sprinkler and standpipe, fire alarm, and smoke management) systems should be credited for occupant life safety;²⁴ (3) the need for redundancy in fire protection systems that are critical to structural integrity;²⁵ (4) the ability of the structure and local floor systems to withstand a maximum credible fire scenario²⁶ without collapse, recognizing that sprinklers could be compromised, not operational, or non-existent; (5) compartmentation requirements (e.g., 12,000 ft² (27)) to protect the structure, including fire rated doors and automatic enclosures, and limiting air supply (e.g., thermally resistant window assemblies) to retard fire spread in buildings with large, open floor plans; (6) the effect of spaces containing unusually large fuel concentrations for the expected occupancy of the building; and (7) the extent to which fire control systems, including suppression by automatic or manual means, should be credited as part of the prevention of fire spread.</p>	<p>The NIB/MMC committee reviewed an ICC AHC-TRB draft <i>IBC</i> change proposal addressing that part of NIST Rec. 4 regarding construction classification based on building height and that part of NIST Rec. 8 regarding uncontrolled building fires, burnout, and building collapse.</p> <p>Points raised during discussion:</p> <p>The TRB proposal basically says that we need to think about the fact that buildings of a certain height warrant special attention and begins the scoping of the performance code by calling for needed information. In other words, the proposal indicates that when consequences are very high, additional analysis is required.</p> <p>Since the needed analysis is not commonly done by structural engineers, it will need to be determined whether there are enough qualified firms to do the required analysis for the number of buildings covered.</p> <p>Fire engineering guidelines are available that include accepted fuel loads, which differ by occupancy class.</p> <p>Concern was expressed about the performance nature of this proposal and whether code officials will accept analytical results.</p> <p>NFPA permits no sprinkler tradeoffs over 420 feet which, while prescriptive in nature, is a beginning.</p> <p>ASTM appears to be moving in the right direction with respect to testing.</p>	<p>The ICC AHC-TRB submitted an <i>IBC</i> change proposal -- see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_02_403_15_Issue_B_Burnout-Building_Collapse.pdf .</p> <p>The NIBS/MMC committee will consider the final wording of this proposal before the September ICC hearings and decide whether to formally support it.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 5. NIST recommends that the technical basis for the century-old standard for fire resistance testing of components, assemblies, and systems be improved through a national effort. Necessary guidance also should be developed for extrapolating the results of tested assemblies to prototypical building systems. A key step in fulfilling this recommendation is to establish a capability for studying and testing the components, assemblies, and systems under realistic fire and load conditions.</p>	<p>The NIBS/MMC committee reaffirmed its intention to support efforts to change ASTM E119 and related Underwriters Laboratories (UL) and National Fire Protection Association (NFPA) standards. Further, a representative of ASTM (Thomas O'Toole) attended the meeting and reported on ASTM efforts.</p>	<p>At or before its May 2, the NIBS/MMC committee hopes to receive an update on the standards development efforts of ASTM, NFPA, et al.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 6. NIST recommends the development of criteria, test methods, and standards: (1) for the in-service performance of sprayed fire-resistive materials (SFRM, also commonly referred to as fireproofing or insulation) used to protect structural components; and (2) to ensure that these materials, as-installed, conform to conditions in tests used to establish the fire resistance rating of components, assemblies, and systems.</p>	<p>The NIBS/MMC Committee reviewed ICC CTC and AHC-TRB draft <i>IBC</i> change proposals concerning criteria, test methods, and standards for spray-applied fire resistive material and mandatory special inspection for fire proofing.</p> <p>The ASTM representative noted that the NIST recommendations affect 11 ASTM committees and will be considered starting in May/June.</p> <p>The NIBS/MMC committee decided that it is important to move the CTC proposal forward but suggested editorial changes. Regarding the TRB proposal, the committee asked for justification for the break points and for information on the economic consequences. With respect to whether there would be a difference in installed costs, it was noted that only the material costs will change. Data on costs to be sought as well as information concerning whether switching to medium density will solve the problem of the material falling off.</p>	<p>The ICC CTC submitted an <i>IBC</i> change proposal to improve the performance of sprayed fire-resistant materials – see http://www.iccsafe.org/cs/cc/ctc/WTC_Interim_Report_No_1_Final.pdf.</p> <p>The ICC AHC-TRB submitted three <i>IBC</i> change proposals addressing various aspects of this recommendation – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_03_403_15_Issue_C_Density_Table.pdf And http://www.iccsafe.org/cs/cc/trb/0309_Proposal_04_714_8_Issue_C_SFRMs.pdf And http://www.iccsafe.org/cs/cc/trb/0309_Proposal_05_1704_10_Issue_C_Special_Inspections_SFRMs.pdf</p> <p>The NIBS/MMC committee will consider the final wording of these proposals before the September ICC hearings and decide whether to formally support them. Also, cost and performance data will be gathered if possible prior to that time.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 7. NIST recommends the adoption and use of the “structural frame” approach to fire resistance ratings.</p>	<p>The NIBS/MMC committee reviewed an ICC CTC draft <i>IBC</i> code change proposal addressing fire rating structural frames.</p> <p>During discussion it was noted that <i>NFPA 5000</i> has adopted the structural frame approach. It also was indicated that the testing connections will be crucial since use of the same thickness of fire-resistive coating on connections does not guarantee that the connection has the correct rating.</p>	<p>The ICC CTC submitted an <i>IBC</i> change proposal to address the structural frame approach to fire resistance ratings – see http://www.iccsafe.org/cs/cc/ctc/WTC_Interim_Report_No_1_Final.pdf.</p> <p>The NIBS/MMC committee will consider the final wording of this proposal before the September ICC hearings and decide whether to formally support it.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 8. NIST recommends that the fire resistance of structures be enhanced by requiring a performance objective that uncontrolled building fires result in burnout without partial or global (total) collapse.</p>	<p>See notes on Recommendation 4.</p>	<p>See notes on Recommendation 4.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>	
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<p>Recommendation 9. NIST recommends the development of: (1) performance-based standards and code provisions, as an alternative to current prescriptive design methods, to enable the design and retrofit of structures to resist real building fire conditions, including their ability to achieve the performance objective of burnout without structural or local floor collapse; and (2) the tools, guidelines, and test methods necessary to evaluate the fire performance of the structure as a whole system.</p>	<p>The NIBS/MMC committee supports the performance-based design concept and had further discussion of how best to bring together various interests to identify gaps with respect to evaluation tools and to develop a detailed action plan (with estimated costs) for filling those gaps.</p> <p>A task force was formed to further explore the issue (Long Phan of NIST, Farid Alfawakhiri to represent AISI, Jeff Collins of Co-chair Brice's staff, Randy Tucker of the RJA Group, and a representative of the concrete industry).</p>	<p>Report on efforts of task force if available.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 10. NIST recommends the development and evaluation of new fire-resistive coating materials, systems, and technologies with significantly enhanced performance and durability to provide protection following major events.</p>	<p>Not directly a code matter but the NIBS/MMC committee will develop a plan for looking at new materials and facilitating their testing and use.</p> <p>The NIBS/MMC committee briefly discussed how to initiate development of a plan (Brice, Collins, Connolly, Jones, and Wills). Also, Mr. O'Toole said he would check on the status of the efforts of an ASTM joint task group under subcommittees A01.13 and E28.10 to define fire-resistant steels and develop a standard material test method for fire resistance of such steels.</p>	<p>Update on ASTM work and committee effort.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
<p>Recommendation 11. NIST recommends that the performance and suitability of advanced structural steel, reinforced and pre-stressed concrete, and other high-performance material systems be evaluated for use under conditions expected in building fires.</p>		

<p>Recommendation 12. NIST recommends that the performance and possibly the redundancy of active fire protection systems (sprinklers, standpipes/hoses, fire alarms, and smoke management systems) in buildings be enhanced to accommodate the greater risks associated with increasing building height and population, increased use of open spaces, high-risk building activities, fire department response limits, transient fuel loads, and higher threat profile.</p>	<p>Although a relatively long range issue, the NIBS/MMC committee reviewed an ICC AHC-TRB draft <i>IBC</i> change proposal concerning performance and redundancy of active fire protection systems. The ICC CTC indicated that the CTC would re-examine the issue, noting that the requirements for on-site supply are intended to address seismic events.</p> <p>During discussion it was noted that the TRB proposal language should be consistent with NFPA 14, that the language needs to clarify what needs to be done at the top and the bottom, that valves probably are needed only every 10 floors or perhaps only one per hydraulic loop; that the two supplies need to be independent; and that some of this text also should appear in the plumbing code.</p>	<p>The ICC AHC-TRB submitted an <i>IBC</i> change proposal related to redundancy – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_06_403_2_1_and_911_1_Issue_D_Performance_and_redundancy_of_active_fire_prot_systems.pdf</p> <p>The ICC AHC-TRB also submitted an <i>IBC</i> change proposal related to special fire loads (fuel oil storage and piping) that, while not directly related to this recommendation is associated with it – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_13_Issue_G_Fuel_Oil_Storage_and_Piping.pdf</p> <p>The NIBS/MMC committee will consider the final wording of these proposals before the September ICC hearings and decide whether to formally support them.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 13. NIST recommends that fire alarm and communications systems in buildings be developed to provide continuous, reliable, and accurate information on the status of life safety conditions at a level of detail sufficient to manage the evacuation process in building fire emergencies; all communication and control paths in buildings need to be designed and installed to have the same resistance to failure and increased survivability above that specified in present standards.</p>	<p>The CTC Chair indicated that NIST Rec. 13 as well as Recommendations 14, 15, 22, and 23 are related to the balanced fire protection area of study and will be evaluated within that context.</p> <p>It was noted that the Department of Homeland Security has been interested in situational awareness and that a standard interface for extracting information is now available.</p> <p>During discussion, it was noted that NFPA is also working on these issues. NFPA has been invited to brief the NIBS/MMC committee on its work at the committee's May 2 meeting.</p>	<p>The ICC AHC-TRB submitted an <i>IBC</i> code change proposal related to this recommendation as well as Recommendations 13, 14, 15, 24 – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_12_403_12_1_et_al_Issue_F_Emergency_Command_Centers.pdf</p> <p>The NIBS/MMC committee will consider the final wording of this proposal before the September ICC hearings and decide whether to formally support it.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
<p>Recommendation 14. NIST recommends that control panels at fire/emergency command stations in buildings be adapted to accept and interpret a larger quantity of more reliable information from the active fire protection systems that provide tactical decision aids to fire ground commanders, including water flow rates from pressure and flow measurement devices, and that standards for their performance be developed.</p>		
<p>Recommendation 15. NIST recommends that systems be developed/implemented for: (1) real-time off-site secure transmission of valuable information from fire alarm and other monitored building systems for use by emergency responders, at any location, to enhance situational awareness and response decisions and maintain safe and efficient operations;35 and (2) preservation of that information either off-site or in a black box that will survive a fire or other building failure for purposes of subsequent investigations and analysis. Standards for the performance of such systems should be developed, and their use should be required.</p>		

<p>Recommendation 16. NIST recommends that public agencies, non-profit organizations concerned with building and fire safety, and building owners and managers develop and carry out public education and training campaigns, jointly and on a nationwide scale, to improve building occupants' preparedness for evacuation in case of building emergencies.</p>	<p>The ICC CTC chair indicated that this subject will be on his committee's agenda because, while the <i>IFC</i> covers these topics, not all adopt the fire code and there may be a need to provide a cross reference or duplicate some text in the <i>IBC</i>. The ICC TRB chair indicated that his committee also plans to consider these topics in the future. NIBS/MMC committee members indicated they would explore what is being done. Also, the committee plans to develop a white paper on public education issues and then to use it to stimulate cooperation among all relevant interests (e.g., NFPA, ICC, BOMA, ADA, Council on Tall Buildings).</p> <p>NFPA is developing guidance material on evacuation for the disabled and other public education material.</p>	<p>NIBS/MMC committee member Mileti has prepared a white paper for the committee on the a state-of-the-art summary of research knowledge regarding public information campaigns for large general populations. This paper also identifies three other areas in need of similar exploration to provide the basis for a concerted effort. A copy of the Word file with the paper is included with the e-mail transmitting this summary.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 17. NIST recommends that tall buildings be designed to accommodate timely full building evacuation of occupants when required in building-specific or large-scale emergencies such as widespread power outages, major earthquakes, tornadoes, hurricanes without sufficient advanced warning, fires, explosions, and terrorist attack. Building size, population, function, and iconic status should be taken into account in designing the egress system. Stairwell capacity and stair discharge door width³⁸ should be adequate to accommodate counterflow due to emergency access by responders.</p>	<p>The NIBS/MMC committee reviewed drawings showing how the building core area might be designed to provide a dedicated firefighters' stairway/elevator. The committee asked that the concept be further refined and code change text developed by a small task group (Galioto, Tucker, Collins). This proposal might be an alternative to a third stairway.</p> <p>The committee also reviewed the ICC AHC-TRB draft <i>IBC</i> change proposal concerning that portion of NIST Rec. 17 addressing stairway width and the use of elevators for building evacuation and that portion of NIST Rec. 18 addressing remoteness and fire resistance of exits.</p> <p>It was noted that the ASME A17 group's two task groups are progressing slowly but making good progress with their analyses. Information appears in the March/April 2006 issue of the NFPA journal. It also was noted that NFPA's high-rise group may recommend a 66-inch stair width.</p> <p>Issues raised concerned the 2 psi criteria, the need for considerably more detail if building owners and managers are going to accept the need for an extra stairway, the amount of time needed for full evacuation, evacuating the mobility impaired without elevators, the stimulus for requiring photoluminescent markings, and consistency with A117.1.</p>	<p>Time did not permit the NIBS/MMC committee to fully debate the <i>IBC</i> code change drafted by its task group. The task group members and committee co-chair Jones therefore submitted the proposal as individuals. A copy of the Word file with the proposal and a separate graphics file is included with the e-mail transmitting this summary.</p> <p>The ICC AHC-TRB submitted an <i>IBC</i> change proposal addressing an additional exit – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_07_403_15_1019_1_Issue_E_Addl_Exit_Stair-Min_Number_of_Exits.pdf</p> <p>The NIBS/MMC committee will review these proposals before the September ICC hearings and determine whether modifications are needed and/or whether it can formally support them.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 18. NIST recommends that egress systems be designed: (1) to maximize remoteness of egress components (i.e., stairs, elevators, exits) without negatively impacting the average travel distance; (2) to maintain their functional integrity and survivability under foreseeable building-specific or large-scale emergencies; and (3) with consistent layouts, standard signage, and guidance so that systems become intuitive and obvious to building occupants during evacuations.</p>	<p>See notes on Recommendation 17.</p>	<p>The ICC AHC-TRB submitted four <i>IBC</i> and one <i>IFC</i> change proposals related to this recommendation – see http://www.iccsafe.org/cs/cc/trb/0309_Proposal_08_403_15_1011_6_Chapter_35_Issue_E_Photo_Exit_Markings.pdf and http://www.iccsafe.org/cs/cc/trb/0309_Proposal_09_403_15_Issue_E_Remoteness_of_Stair_Enclosures.pdf and http://www.iccsafe.org/cs/cc/trb/0309_Proposal_10_403_15_Issue_E_Structural_Integrity_of_Stair_Enclosures.pdf and http://www.iccsafe.org/cs/cc/trb/0309_Proposal_11_1020_1_Issue_E_Enclosures_Required.pdf and http://www.iccsafe.org/cs/cc/trb/0309_Proposal_14_Issue_E_IFC_Exit_Path_Markings_for_Obstacles.pdf</p> <p>The NIBS/MMC committee will review these proposals before the September ICC hearings and determine whether modifications are needed and/or whether it can formally support the proposals.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 19. NIST recommends that building owners, managers, and emergency responders develop a joint plan and take steps to ensure that accurate emergency information is communicated in a timely manner to enhance the situational awareness of building occupants and emergency responders affected by an event. This should be accomplished through better coordination of information among different emergency responder groups, efficient sharing of that information among building occupants and emergency responders, more robust design of emergency public address systems, improved emergency responder communication systems, and use of the Emergency Broadcast System (now known as the Integrated Public Alert and Warning System) and Community Emergency Alert Networks.</p>	<p>See notes on Recommendation 16.</p>	<p>See notes on Recommendation 16.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 20. NIST recommends that the full range of current and next generation evacuation technologies should be evaluated for future use, including protected/hardened elevators, exterior escape devices, and stairwell descent devices, which may allow all occupants an equal opportunity for evacuation and facilitate emergency response access.</p>	<p>The NIBS/MMC committee discussed preliminary findings regarding pressure ranges for shafts and stairways.</p> <p>During discussion it was noted that a standard for stair evacuation devices is needed but that the manufacturers of such devices have little incentive to fund the development of a standard. It was reported that one building owner in New York City has agreed to install one of the exterior escape devices.</p>	<p>Smilowitz to provide information on manufacturer testing of drywall for impact.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 21. NIST recommends the installation of fire-protected and structurally hardened elevators to improve emergency response activities in tall buildings by providing timely emergency access to responders and allowing evacuation of mobility-impaired building occupants.</p>	<p>The need for the hardened elevator standard from ASME was again emphasized. Committee member Adams reported on his survey of the fire community to determine whether the fire service generally recalls elevators to the lobby even though the code does not require that elevators NOT be used by occupants. (See separate file accompanying this summary.)</p>	<p>Update on ASME efforts.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 22. NIST recommends the installation, inspection, and testing of emergency communications systems, radio communications, and associated operating protocols to ensure that the systems and protocols: (1) are effective for large-scale emergencies in buildings with challenging radio frequency propagation environments; and (2) can be used to identify, locate, and track emergency responders within indoor building environments and in the field.</p>	<p>See notes on Recommendations 13, 14, 15.</p>	<p>See notes on Recommendations 13, 14, 15.</p> <p>Further discussion needed of development of position paper on the intelligence aspects of information delivery for very large scale events (Adams, Brice, Perry, staff).</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
<p>Recommendation 23. NIST recommends the establishment and implementation of detailed procedures and methods for gathering, processing, and delivering critical information through integration of relevant voice, video, graphical, and written data to enhance the situational awareness of all emergency responders. An information intelligence sector⁴⁵ should be established to coordinate the effort for each incident.</p>		
<p>Recommendation 24. NIST recommends the establishment and implementation of codes and protocols for ensuring effective and uninterrupted operation of the command and control system for large-scale building emergencies.</p>	<p>The NIBS/MMC committee reviewed an ICC AHC-TRB draft <i>IBC</i> change proposal concerning command and control systems.</p> <p>Committee to review proposal.</p>	

<p>Recommendation 25. Nongovernmental and quasi-governmental entities that own or lease buildings and are not subject to building and fire safety code requirements of any governmental jurisdiction are nevertheless concerned about the safety of the building occupants and the responding emergency personnel. NIST recommends that such entities be encouraged to provide a level of safety that equals or exceeds the level of safety that would be provided by strict compliance with the code requirements of an appropriate governmental jurisdiction. To gain broad public confidence in the safety of such buildings, NIST further recommends that as designed and as-built safety be certified by a qualified third party, independent of the building owner(s). The process should not use self-approval for code enforcement in areas including interpretation of code provisions, design approval, product acceptance, certification of the final construction, and post-occupancy inspections over the life of the buildings.</p>	<p>The NIBS/MMC further discussed this jurisdictional and standards-of -practice issue. During discussion it was noted that virtually all model statutes for laws establishing nongovernment or quasigovernment authorities contain a provision that exempts the entity created from abiding by building codes.</p>	<p>The potential for writing to the relevant groups developing model legislation for special authorities will continue to be explored.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 26. NIST recommends that state and local jurisdictions adopt and aggressively enforce available provisions in building codes to ensure that egress and sprinkler requirements are met by existing buildings. Further, occupancy requirements should be modified where needed (such as when there are assembly use spaces within an office building) to meet the requirements in model building codes.</p>	<p>The NIBS/MMC committee concluded that this is a long-range issue but that there needs to be a plan for addressing it incrementally. The ICC TRB chair indicated that his committee plans to look at retrofit fire issues after the March ICC change proposal deadline.</p>	<p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 27. NIST recommends that building codes incorporate a provision that requires building owners to retain documents, including supporting calculations and test data, related to building design, construction, maintenance and modifications over the entire life of the building. Means should be developed for offsite storage and maintenance of the documents. In addition, NIST recommends that relevant building information be made available in suitably designed hard copy or electronic format for use by emergency responders. Such information should be easily accessible by responders during emergencies.</p>	<p>The NIBS/MMC committee concluded that problems exist because of ownership changes, the proprietary nature of some documents, determining what medium to use to save documentation, unreimbursable expense of maintaining information. It also was noted that only threat assessment documents need to be out of the public domain. The AHC-TRB chair noted that one of the draft TRB proposals includes some provisions for giving responders with needed information by requiring that it be available in the command centers.</p>	<p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 28. NIST recommends that the role of the “Design Professional in Responsible Charge” be clarified to ensure that: (1) all appropriate design professionals (including, e.g., the fire protection engineer) are part of the design team providing the standard of care when designing buildings employing innovative or unusual fire safety systems, and (2) all appropriate design professionals (including, e.g., the structural engineer and the fire protection engineer) are part of the design team providing the standard of care when designing the structure to resist fires, in buildings that employ innovative or unusual structural and fire safety systems.</p>	<p>It was noted that the AIA has a policy but many are not familiar with it; consequently it is not uniformly followed. It also was explained that many fire protection engineers report that architects and owners are unwilling to spend the extra money. Cited as another part of the problem are licensing laws that differ from state to state.</p>	<p>Committee to determine whether working with the National Council of Architectural Registration Boards and the National Council of Examiners for Engineering and Surveying would be helpful.</p> <p>NFPA is expected to brief the committee on its efforts related to this and other recommendations at the NIBS/MMC committee meeting on May 2.</p>
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<p>Recommendation 29. NIST recommends that continuing education curricula be developed and programs be implemented for (1) training fire protection engineers and architects in structural engineering principles and design, and (2) training structural engineers, architects, fire protection engineers, and code enforcement officials in modern fire protection principles and technologies, including fire-resistance design of structures, and (3) training building regulatory and fire service personnel to upgrade their understanding and skills to conduct the review, inspection, and approval tasks for which they are responsible.</p>	<p>It was noted that almost all associations have educational components and that it might be helpful to survey them as well as the National Fire Academy and FEMA Emergency Management Institute to determine what they are doing in this regard</p> <p>Committee to discuss. NIST plans to work with National Fire Academy and Emergency Management Institute to develop training resources.</p>	<p>Update on education/training offered by various associations, etc.</p>
<p>Recommendation 30. NIST recommends that academic, professional short-course, and web-based training materials in the use of computational fire dynamics and thermostructural analysis tools be developed and delivered to strengthen the base of available technical capabilities and human resources.</p>		