SUMMARY:
OCTOBER 24-25, 2005, MEETING of the
NIBS/MMC COMMITTEE TO TRANSLATE THE NIST WORLD TRADE CENTER INVESTIGATION RECOMMENDATIONS
FOR THE MODEL BUILDING CODES
National Institute of Building Sciences, Washington, D.C.

Committee Members Present

Gerald Jones, PE, Co-Chair
Scott W. Adams
George Capko, Jr., PE
William M. Connolly, AIA
Paul K. Heilstedt, PE, Hon. AIA
John D. Hooper, SE
Marsha Mazz
Arturo Mendez
Lawrence G. Perry, AIA
Timothy A. Reinhold, PhD, PE
James T. Ryan, CBO
Jim W. Sealy, FAIA
Robert Smilowitz, PhD, PE

NIST Liaison Members Present

Stephen A. Cauffman
S. Shyam Sunder, ScD

NIBS/MMC Staff Present

David A. Harris, FAIA
Claret M. Heider
Bernard F. Murphy, PE
Carita Tanner

Committee Members Unable to Attend

Herman W. Brice, Co-Chair
Carl Galioto, FAIA
Ronald O. Hamburger, PE, SE
Stephanie A. King, PhD, PE
Dennis Mileti, Phd
Martin H. Reiss, PE

NIST Liaison Member Unable to Attend

Richard W. Bukowski, PE

Guests Present

Najib N. Abboud, PhD, Weidlinger
Jason D. Averill, NIST
John Biechman, NFPA
David S. Collins, FAIA, The Preview Group
John L. Gross, PhD, PE, NIST
James Randall Lawson, NIST
H. S. Lew, PhD, PE, NIST
Therese P. McAllister, PhD, PE, NIST
Jake Pauls, CPE, Consulting Services in Building Use and Safety
Fahim Sadek, PhD, NIST

1. Opening Remarks, Introductions, and Agenda Review

Co-chair Gerald Jones welcomed the group and explained that Co-chair Herman Brice was unable to attend given his position as Fire-Rescue Administrator of the Palm Beach County Fire-Rescue Department and the arrival of Hurricane Wilma. Following a round of self-introductions, Jones identified the committee members who were unable to attend. Using a PowerPoint presentation (which can be downloaded from http://wtc.nist.gov/NIBS_MMC_oct24-25-05/WTC_Oct_2005_mtg.pdf), he provided an overview of the project. Jones also noted that while it is not possible to predict the outcome of the model codes development processes, the committee can influence them by participating fully and serving as a coordinating group for the

diverse efforts already under way. He also noted that if enforcement work is needed, the committee can recommend appropriate efforts.

Dr. Sunder used a PowerPoint presentation (download at http://wtc.nist.gov/NIBS_MMC_oct24-25-05/NIBSMMC_mtg_0ct24-25-05.htm) to provide an overview of the recommendations resulting from the NIST investigation. He explained that the NIST staff also is working to span the gap between the products the investigation and the model codes and standards and will provide the committee with input. He added that the NIST final report will be released this week and copies will be mailed to committee members. *[Note that this report can now be downloaded from http://wtc.nist.gov/NISTNCSTAR1CollapseofTowers.pdf.]*

The committee accepted the agenda as written but Jones noted that the schedule would be flexible to ensue that all topics were adequately treated.

2. Committee Input on Activities Already Under Way

Paul Heilstedt, Chair of the ICC Code Technology Committee (CTC), indicated that his committee was focusing on two WTC-investigation areas of study – use of elevators for occupant evacuation, which is in abeyance pending action by the American Society of Mechanical Engineers (ASME), and balanced fire-resistive design. He noted that the CTC would be working in conjunction with the ICC Ad Hoc Committee on Terrorism Resistant Buildings (AHC-TRB) and that the committee will meet jointly on December 1-2 to identify specific topics and develop positions for the March 2006 proposal submission deadline.

When asked whether the NIBS/MMC could assist the CTC in any way, Mr. Heilstedt noted that help was needed concerning the hardening of elevator shaftways. ASME is addressing the equipment issues but the shaftways themselves need attention in terms of both hardening and placement if they are viewed as a means of egress especially for the mobility impaired. It was agreed, however, that reaching consensus before the March deadline might be difficult.

ACH-TRB Chair Connolly explained that a handout identified those recommendations on which his committee planned to focus (see Attachment A for handout). He further explained that ICC establishes ad hoc committees when the expectation is that the regular change process will not be able to deal with a specific issue. The ACH-TRB looked at all 30 NIST recommendations and identified who should take the lead. He did not yet know how much the committee could accomplish by the March deadline but thinks they can do something – at least get a couple of place holders in which would provide time for more development of a complete change proposal. After the meeting in December, the picture should be clearer as should the division of labor between the two ICC committees. It was noted that both committees plan to meet via telephone during the next couple of weeks.

The issue of how to distinguish between normal buildings and high-risk buildings was raised. Mr. Connolly indicated that costs and benefits will probably be the determining factors. He added that many buildings are at some risk and will be dealt with if relatively inexpensive things can be done, but that if mitigation measures are too expensive, they will probably not find their way into the codes.

Mr. Biechman of the National Fire Protection Association (NFPA) explained that his organization's High-rise Building Safety Advisory Committee (HBSAC) sponsored changes for the 2006 edition of NFPA 5000. He noted that NFPA has a full three-year cycle, that the HBSAC will not meet again until late March 2006, and that some NFPA 5000 technical committees will begin meeting early in 2006. James R. Quiter of Arup Fire is chair of the HBSAC and it was suggested that staff explore the possibility of his becoming a member of this committee.

During discussion it was noted that ASME and the American Society of Civil Engineers (ASCE) are key players in the process and it is essential to understand what they are planning. ASCE, which would be involved with Recommendations 1 through 3, will not issue a new edition of its ASCE 7 load standard until 2010; however, ASCE is already balloting a wind tunnel testing standard and conducts some training sessions on progressive collapse. ASCE also has a committee focusing on blast resistance which touches on progressive collapse from the blast standpoint. It was noted that the wind tunnel standard focuses on the testing protocol and not on interpretation of the data. Sunder said that the Board of ASCE's Structural Engineering Institute (SEI) is meeting in November and has asked him to speak.

Dr. Sunder stated that NIST feels that integrity of the building core, redundancy, and continuity of load path need attention but the degree of such safety improvements would be greater for buildings at risk of terrorist attacks due to car, truck, and satchel bombs. The issue of how to define the buildings at risk was mentioned as something that needs to be addressed at the outset. Structural engineers deal with sway in the context of tall buildings and it is up to them to define what would constitute too much sway. However, determining what is "tall" may vary depending upon whether the focus is on structural, means of egress, or fire protection issues and may also vary from city to city. Owners are the ones most likely to identify a building as "iconic" but frequently change their minds when the cost of building a "monument" becomes too great. Important factors include the building size and location and who the building's neighbors and tenants are. Mr. Mendez indicated that intelligence personnel view buildings of over 500 feet as being at some risk. He also noted that there are risk checklists covering such things as type of tenant, type of business conducted, and what is under or near a structure.

Ms. Mazz said it is important to ask "vulnerable to what," to identify attractive targets, and to consider the NIST recommendations in the context of non-terrorism-related hazards that occur frequently but create similar problems. Sunder agreed, stating that the NIST recommendations are not for buildings at risk of terrorism but rather for tall buildings that pose special risks to life safety because of their height. Mr. Capko mentioned that the hazard in buildings is related to their contents and that building contents today are different from what they were in the past given that uninterrupted power is a requirement and diesel generators frequently are installed and diesel fuel is piped throughout buildings. This unusual fire load often is not addressed adequately. Mendez added that another significant hazard faces all buildings next to transit lines, which probably makes them attractive targets. He noted that there are no guidelines for making changes in response to the presence of these really big fuel sources.

Issues for the committee to consider include:

- Defining which buildings, which occupancies, and which structural systems need attention;

- Identifying various threshold requirements in terms of height, area, drift, firesafety, and redundancy;

- Avoiding inconsistencies; and

- Demonstrating the durability and bonding characteristics of fireproofing.

3. Review of Individual Recommendations

The committee then reviewed the recommendations to determine which are ready for action, which require additional research or other developments before translation into codes, and which have no direct model code implications.

Recommendation 1, Progressive Collapse

- ASCE/SEI is considering progressive collapse in terms of needed research.
- Given that structural systems react differently, this is believed to be a longer term issue.
- It will be at least five years before ASCE 7 reflects any new progressive collapse prevention requirements.

Recommendation 2, Wind Tunnel Testing

- The ASCE wind load testing standard will be finished later this fall.
- It focuses almost entirely on testing but may provide some guidance on calibration.
- Staff will ask James Rossberg of SEI for copies.

Recommendation 3, Performance Criteria for Limiting Sway Under Lateral Loads

- Drift has long been a consideration in seismic design and ASCE 7-05 prescribes a minimum load that will affect taller buildings in Midwest.
- SEI has no data to suggest that what is being used for wind is inadequate; however, during the next ASCE 7 update cycle, a joint seismic/wind task committee will be convened. Larry Griffis will be chair of the Wind Task Committee.
- Occupant comfort requirements often lead to sway requirements that are quite stringent but are not intended to address stability and safety due to wind effects.

In considering Recommendations 1 through 3, it was noted that all three are the purview of ASCE, that the details and schedules for relevant ASCE activities can be obtained from Jim Rossberg, that the codes would ultimately treat these subjects by referencing ASCE standards, and that additional data and research will be needed to address all three.

The wind tunnel standard covers the mechanics of testing rather than the statistical calculations needed to apply to design, which falls within the purview of the ASCE 7 committee. One topic that may benefit from consideration by the NIBS/MMC committee is determination of when to require wind tunnel testing rather than adherence to prescriptive requirements. Frequently the decision is left to the engineer, and conventional wisdom is that prescriptive requirements are too conservative and so the testing alternative is selected. The testing standard is silent entirely on the issue and, with respect to P-delta effects, says only that they should be taken into consideration when testing.

Regarding Recommendation 1, Mr. Connolly reported that the TRB Committee does not believe we should tolerate inordinate damage from effects on only one member. Mr. Hooper noted that ASCE 7 thinks progressive collapse is difficult to deal with for all types of buildings and that it will take some time and additional research before the standard will reflect such progressive collapse concerns. Dr. Sunder noted that focusing on tall buildings is one way to limit the scope and that NIST is prepared to invest in progressive collapse work that can reach fruition sooner rather than later.

Mr. Hooper said ASCE will be willing to work with NIST and Mr. Connolly said his committee would like to be involved as well. Dr. Abboud mentioned that ASCE will be able to move faster on progressive collapse in the context of the blast standard, which is not a political issue. Maybe the issue with respect to internal members can be attacked through interaction with fire safety issues regarding core or in terms of an alternate load path for very tall buildings

Several committee members involved in ASCE efforts (Mr. Smilowitz is on the ASCE blast committee, Mr. Reinhold is on the ASCE 7 Wind Task Committee, Mr. Hooper is on the ASCE 7 Seismic Task Committee) will serve to facilitate communication between the current NIBS/MMC project and those efforts. Members of the NIST staff also are engaged in work related to Recommendations 1 through 3.

Recommendation 4, Construction Classification/Fire Ratings for Very Tall Buildings

- Triggers may be different for buildings with different systems.
- Factors like the amount of time needed for full evacuation will be important.
- Although the IBC now includes a text change related to this recommendation, it is not yet reflected in the height and area tables.
- Are the data on fire loads sufficient to warrant change?
- Research is needed to improve the accuracy of current testing systems.
- Elevators currently are designed to shut down so how we think about them needs to change.
- Reliability is related to the reliability of the power supply but is more of an operational issue than a systems issue.
- Most high rises have holding tanks and gravity fed systems for water for the fire system but often lower floors are fed from street; double feeds might help.
- The TRB Committee proposes to do something by March.
- The CTC views this as a longer term opportunity and will work on synthesizing the data.

- Access time for responders and evaluation time will control, which has not been the case in the past; however, fire-protected elevators and elevator egress will permit trade-offs.
- Response time and evacuation time will differ depending on the building height and other factors, and a matrix of some sort would be helpful in relating these matters.
- Some factors like fighting fires 60 or 80 floors up have not been given much thought, and simply getting people into the stairways does not make them safe.
- Stairways will probably still remain the primary evacuation method – at least to get people from a fire floor to one without fire.
- The basic stairway calculation is based on evacuating one floor and does not take into account interference from those exiting other floors, which would occur with full evacuation.
- In those cases where it is necessary to plan for full evacuation, adequate elevators and stairways can be provided, but the threats to elevator systems must be considered (large scale power outage, earthquake, or other extraordinary events that can cut off elevator function).
- The likelihood of an out-of-control fire part way up a high rise is small when buildings are sprinklered; however, this is an emotional issue (e.g., since 9-11, power failures tend to spur full building evacuation whereas prior to 9-11, that would not have occurred).
- Currently, emergency power for all elevators is not required.
- Only two elevators in the WTC towers continued to function; there appears to be some question about whether the power supply was interrupted by the supplier or by damage to lines because of impact/structural damage.
- Some history in the WTC towers of elevators' slowing and then shutting down when winds were high enough to start the cables swaying. Sway detectors would slow the elevators and then shut down.
- It is important to understand how the ASME standard will treat the power issues.
- The IBC currently requires back-up power for all elevators in high-rise buildings; therefore, the requirements may just need strengthening.

Recommendation 5, Improved Fire Resistance Testing of Components, Assemblies, and Systems

- The ASTM E119, UL 263, ISO, and NFPA testing standards are similar.
- Work is being done on them but it may lack coordination.
- The testing of spray-applied fireproofing is more a standards issue than a model code issue.
- We do not really know how well the testing protocols relate to actual buildings.
- The scaling of test results for larger elements is problematic, and it should be determined whether Underwriters Laboratories gives any guidance on scaling and whether UL is conducting any further research on the restrained vs. unrestrained issue. Further, UL has issued interpretations over the years but they do not appear to be available in compiled form.
- The bonding characteristics of the sprayed-on protection are also very important.

Recommendation 6, Spray-on Fire Resistance Material

- Maintenance of any fire-resistive rating is a major issue for all materials – spray-on or gypwrap.
- It will be necessary to consider vibration and shock effects, performance at very high temperatures, effectiveness on light members, materials criteria, and inspection requirements.
- Applicators who talked with NIST said quality control in application is lacking; however, this is something that can be addressed in the IBC relatively quickly.

Recommendation 7, Structural Frame Approach to Fire Resistance

- Already a requirement in the IBC and NFPA 5000, but the provisions may not be adopted or enforced by local jurisdictions.
- The CTC plans to try to clarify the issue.

Recommendations 8, Burnout/Structural Soundness; 9, Alternate Performance-Based Standards/Code Provisions; 10, Development/Evaluation of New Fire-Resistive Coatings; 11, Evaluation of Performance/Suitability of Advanced Material Systems

- Recommendations 8, 9, 10, and 11 are all related to new methods of fire-resistive design. The performance objective is to have burnout without collapse, but adequate evaluation methods are not yet available.
- Recommendation 8 assumes that the sprinkler system can be compromised.
- Burnout on any given floor can be assumed to take only 2 hours or less; however, given the fuel storage in upper levels, a 3-hour frame might be needed.
- The Meridian Plaza had no sprinklers on lower 9 floors and there was local but not total collapse; it was a steel structure and webs separated from flanges but performance would be considered acceptable.
- Might be helpful to consider the fire scenarios used in the EuroCode, which provide information when data are lacking but decisions are left to the designers.
- If performance-based requirements are considered to be an alternative to prescriptive requirements, trade-offs will be needed.
- The International Performance Code (IPC) already covers the issue but a stronger connection to the IBC might be needed. Further, although the shell is there, evaluation methods are still needed.
- NFPA 101 has eight specific fire scenarios but that might not be enough.
- The new AISC specification includes an appendix that outlines a basis for applying rational science in determining whether a building will survive a fire, but tools are still lacking.
- The relevant ASCE, AISC, NFPA, and ICC performance code committees should probably partner with NIST to develop the needed tools within four or five years.
- Building officials tend to prefer prescriptive codes so a broad educational effort will be needed to increase their comfort with performance requirements.

Recommendation 9, Alternate Performance-Based Standards/Code Provisions

- The steel to which the fire-proofing in the WTC Towers was applied was primed and tests showed that the proper adhesion could not be attained with primed steel.
- Current tests do not distinguish between adhesion and cohesion, and the testing methodologies will need to change.
- The bonding problem might be something the model codes can deal with by emphasizing that the fireproofing material and surface need to be correct to achieve required level of bonding or to add some phrase that raises a flag about priming.
- Priming is now required so there will be considerable resistance to a code change without strong data supporting the change.
- Ultimately, a better fire proofing product will solve the problem.

Recommendation 11, Evaluation of Performance/Suitability of Advanced Material Systems

- In its testing of steel, NIST found that creep is a problem after 1 to 1.5 hours at high temperature; therefore, deformation becomes an issue. Further research is needed.
- Current testing standards might not adequately measure the beneficial qualities of improved/advanced products and might lead to a requirement for fireproofing as well.
- ASTM testing standards will need to be updated to assess the qualities of improved/advanced products since manufacturers will have little incentive to develop new products until they know what criteria must be met.
- Improved materials will need to be carefully considered to ensure that they still satisfy earlier requirements.
- ASTM E119 includes a strength criteria but it isn't possible to test a large column in the U.S. so practice focuses on temperature criteria.

Recommendation 12, Performance and Redundancy of Active Fire Protection Systems

- The TRB Committee plans to consider this recommendation and the CTC also has it on its agenda. Both committees will need to review available data.
- Redundancy affects many life-safety features, and each one needs to be addressed separately.
- Considerable effort has already been devoted to discussions of the protocol for comparing active and passive systems and how they affect life loss, and redundancy might solve a lot of problems.
- Alarm systems are different in terms of guaranteeing performance, and the height threshold for various elements will be important.

Recommendations 13, Improved Fire Alarm/Communication Systems in Buildings; 14, Fire Command/Control Systems - Built-in; and 15, Development/Preservation of Real-Time Information from Monitoring Systems

- Redundancy of alarms is available for the impaired but not for verbal messages and directions. Ms. Mazz will convey to the committee information on this and related issues from a November conference to be held at Gallaudet University.
- The TRB Committee views these as issues primarily for NFPA but with a minor role for the committee on Recommendation 12.
- Staff will contact Ms. McNabb of NFPA to determine what that organization is doing and Mr. Bukowski of NIST should be able to provide additional information. Mr. Mendez will provide information on what New York City is doing. Mr. Adams will provide information on the actions being taken with respect to the NFPA Uniform Fire Code.
- Some thought is being given to putting black boxes in buildings to provide information on actual events.

Recommendation 16, Evacuation Drills and Procedures

- Dr. Sunder reported that two-thirds of those in the WTC towers on 9-11 said they had participated in a drill during the past year and that many of them had been shown the stairways but had not been in them and the transfer halls were confusing to some.
- Public education/training is needed to explain what it means to evacuate and to shelter in place, to increase familiarity with egress routes, to explain what kinds of shoes are needed, etc.
- Although roof rescue is not a standard procedure despite what one might see on TV and in the movies, some tenants have never been told not to evacuate upwards.
- Elevators can be used until recalled or stopped
- With respect to the mobility impaired occupants of the WTC who self-identified, there was some training and two helpers assigned.
- In a tall building there is probably a class of people who will not know that they are mobility impaired and require some accommodation until it becomes necessary to evacuate so a safe haven might be needed for these people.
- BOMA is working on the issues surrounding full evacuation and there appear to be lots of new state and local procedures and requirements.
- Mandatory drills may not be the ideal solution if they are only annual; however, consistent training is crucial.
- It is possible that there is a conflict between what the codes prescribe with respect to elevators and what the practice is in any specific jurisdiction.
- For years BOMA members have been teaching tenants not to use the elevators so it will be difficult to retrain people – especially if the elevators are to be used in some situations but not in others and if some buildings allow elevator use and others do not. NIST is conducting some additional evaluation studies that may affect BOMA's work. Both Mr. Sealy and Mr. Perry need to remain aware of what NIST is doing.
- The ASME A17 elevator standard committee currently is doing a detailed hazard analysis to make sure that they take all factors into consideration; they are proceeding slowly to ensure that everything is fully documented. It was noted that they have also done a good

job of soliciting input from the user community. Staff will make contact with ASME to see if any material could now be made available to the committee and to identify who might best serve as a liaison to this committee.

- Gaining buy-in from the firefighting community may be difficult and there may need to be a special elevator for the firefighters. After the updated ASME standard is available, an outreach effort to the firefighter community would be warranted. It is likely that the fire community will go along so long as there are protocols in place dictating who does what.
- The change in elevator use will be a paradigm shift for the building community and will be very complicated from an occupant perspective. The human factors perspective must be considered.
- While this will be a big issue with respect to new construction, it will be a massive issue with respect to existing construction.

Recommendation 17, Full Building Evacuation Capacity

- The most significant issue is considered to be the trigger for full building evacuation.
- Better egress models are needed as are innovative solutions for dealing with the impaired if elevators are not provided.
- Both the TRB committee and CTC are considering the problem.
- There are four or five major egress models, and NIST is working to develop at least a first-generation model that can be used for research; nevertheless, the need for better models does not preclude action on practical solutions.
- The CTC might be able to develop a few changes over the next six months or so.
- The new edition of NFPA 5000 requires that stairs be 56 inches wide but that most agree they should be even wider (somewhere between 56 and 68 inches) given the demographics of U.S. society.

Recommendation 18, Stairways - Remoteness, Hardness, Layouts, Signage

- NIST believes that fire rated separation is not adequate and that remoteness is required. More specifics are needed, however, because remoteness is not a term understandable by building officials or designers. NIST has offered to develop a strawman code change for the committee.
- If the threat is known, remoteness might be unnecessary if the core is really strong.
- If a problem can be solved relatively inexpensively, change will occur; however, if solutions involve adding a lot of masonry or concrete to very tall buildings, there will be strong resistance to change.
- Hose stream is important to consider but in the context of available products and standardized tests. This probably will not solve problems regarding other accidental loads.
- The essence of the conflict is usable/rentable space and travel distance versus remoteness. Also to be considered is the fact that all may not have access to stairways as they become progressively further away from the core.
- NIST will work with the committee and, given the structural aspects of this issue, Mr. Hooper will serve as the liaison with ASCE 7.

Recommendation 19, Development of a Plan for Communication of Emergency Information to Occupants

- Requires agreement between owners and responders on what information is provided to occupants.
- Not now a code issue.

Recommendation 20, Evaluation of Next Generation Technologies

- Action for now is to monitor NFPA and ASTM efforts.

Recommendation 21, Installation of Fire-Protected/Structurally Hardened Elevators to Improve Response

- Mr. Sealy and Mr. Perry should coordinate with the ASME committee.

Recommendations 22, Emergency Communication Systems in Buildings, and 23, Development of Methods/Procedures for Handling Critical Information

- While first responder issues are very serious, they are not building code issues; however, building owners may have a role and BOMA members may be able to provide "lessons learned."
- Both recommendations are of interest to DHS, which is reaching out for best practices. Mr. Mendez will provide liaison with DHS.

Recommendation 24, Codes/Protocols for Operation of Command/Control Systems

- Location of the command and control center is a building code matter. It is often in the building lobby. The code states that it shall be in a location approved by the fire department.
- Where emergency supplies are located in a building also may merit attention by the building codes.

Recommendation 25, Adoption of Improved Reqs by Nongovernmental/Quasi-Governmental Entities

- Not a code issue.

Recommendation 26, Retrofit Code

- More an issue for the hazard abatement code than for the International Existing Buildings Code (IEBC).
- However, the IEBC could cover things for which a permit is required. Might be handled like seismic retrofit which provides some reductions for voluntary retrofit.
- Current requirements to be reviewed to determine where opportunities for retrofit exist.

- The recommendation is not intended to be retroactive, and enforcement is probably the key.

Recommendation 27, Document Retention

- For major buildings, documents should be retained for as long as building is operational.
- The NIBS International Alliance for Interoperability (IAI) plans to create four-dimensional models for storing information. With such dynamic models, each building might have its own website.
- Possible that, in the future, building departments could be responsible for maintaining the websites as permits are requested.
- Designers will be amenable so long as standards are consistent and apply to everyone.
- Saving calculations could pose a liability problem.
- Issues surrounding the archival quality of the data are important.
- The model code can define what needs to be saved from the code authority point of view and who is responsible for keeping it.
- The potential exists for the codes to define a standard retention mechanism.

Recommendation 28, Clarification of Role of Design Professional in Responsible Charge

- Mr. Sealy offered to work on the matter with Mr. Bukowski of NIST.
- Involved are standard contract documents and licensing laws.

Recommendations 29, Continuing Education for Fire-Protection Engineers, Architects, and Structural Engineers, and 30, Development of Training Materials

Next Steps

In an effort to identifying opportunities for cross-pollination with other activities, Committee members were asked to let Mrs. Heider know which activities they are involved in.

Next Meeting

The committee will next convene at the NIBS offices at 9 a.m. on December 8 and adjourn no later than 3 p.m. on December 9. Committee members are asked to let staff know as soon as possible whether they will need hotel accommodations.

ATTACHMENT A

The International Code Council has established an ad-hoc committee on Terrorism Resistant Buildings (TRB) to examine those changes in the International Codes that should be considered by the membership as the result of the new hazards posed by intentional terrorist damage to buildings.

The TRB Committee has been analyzing the NIST World Trade Center Report and Recommendations for the purpose of formulating a plan of action. The TRB Committee is also looking at other terrorism related risks that are not addressed in the WTC report because they were not a factor in that incident.

The Committee concurs completely with the NIST suggestion that the Codes community should be responsible for 28 of the 30 recommendations. Many of the recommendations require the involvement of one or more other communities but someone will have to take the lead on each one.

We believe that the ICC should take the lead and develop code change proposals responding to 8 of the recommendations, work to incorporate 3 changes, for which NFPA should be the lead, into the International Fire Code, work with all the communities on one change; and work on one recommendation only if the obvious lead organization does not. One recommendation is already a part of the International Building Code.

These 14 recommendations breakdown as follows. The numbers are as they appear in the NIST Report.

1. Progressive Collapse
   The ICC would take the lead on this issue only if ACSE does not.

4. Construction Classification/ Fire Ratings for Very Tall Buildings
   ICC TRB is working to develop a code change proposal

6. Spray or Fire Resistance Material
   This is generally a standards issue but ICC TRB is working to develop a code change governing special inspection requirements

7. Structural Frame Approach to Fire Resistance
   Presently incorporated in the International Building Code

8. Burnout/ Structural Soundness
   ICC TRB is working to develop a code change proposal

12. Performance and Redundancy of Active Fire Protection Systems
   ICC is working on this issue through its Code Technology Committee

14. Fire Command/ Control Systems - Built-in
   This is primarily an issue where NFPA should lead but ICC TRB will maintain some involvement so that appropriate references in the IBC or IFC can be considered

16. Evacuation Drills and Procedures
   This is also a NFPA issue but ICC TRB will maintain some involvement so that appropriate references in the IFC can be considered

17. Full Building Evacuation Capacity
   ICC TRB is working to develop code change proposals

18. Stairways - Remoteness, hardness, layouts, signage
ICC TRB is working to develop code change proposals

20. Evaluation of Next Generation Technologies
This should be a joint effort of all the affected communities

22. Emergency Communication Systems in Buildings
This also is a NFPA issue but ICC TRB will maintain some involvement so that appropriate references in the IBC and IFC can be considered. The ICC TRB is working to develop code change proposals related to location and hardening of communication centers and infrastructure.

26. Retrofit Code
The International Existing Buildings Code is not the appropriate place to address this issue. The ICC is working on a Hazard Abatement in Existing Buildings Code. That code and the IFC are the place to address retrofit requirements. The ICC TRB will be working on such code change proposals.

27. Document Retention
The ICC TRB is working on code change proposals to address retention by both building departments and building owners.

I want to be careful to point out that the ICC TRB committee is planning its first code development meeting in early December. No one should conclude that actual proposals will be developed without needed research and the involvement of interested and affected parties.

The work of an ICC ad hoc committee results in code change proposals that feed into the usual ICC code change process. The Committee will be a change proponent. All the rest of the code change process will be as for any code change proposal. The deadline for the next ICC code change cycle is March 22, 2006 and leads to a supplement. The cycle for the 2009 editions of the I-Codes is January, 2008

William M. Connolly
ICC, Terrorism Resistant Buildings Committee