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PUBLIC COMMENT

F124-06/07
F125-06/07
F130-06/07
F158-06/07

Committee Action (F124-06/07): Disapproved

Committee Action (F125-06/07): Disapproved

Committee Action (F130-06/07): Disapproved

Committee Action (F158-06/07): Disapproved

Committee Reason (F124-06/07): Neither the proposal's reason statement nor the testimony offered presented any new information on this topic over that presented in previous code change cycles. There was no definitive information presented that smoke and heat vents do not contribute to fire control. The issues of interaction between smoke and heat vents and sprinklers have not been examined in detail and solutions proposed, such as was done with the issue of ESFR sprinklers vs smoke and heat vents. As they become known and solutions developed, the issues should be brought to the IFC process rather than waiting while the NFPA 204 committee takes action. In cases where the sprinkler system does not suppress the fire but, rather, controls it, smoke continues to be generated. The discussions have focused on everything but the safety of the occupants, including firefighters. Smoke and heat vents provide the fire department with an important tool to remove the smoke for occupant safety and enhanced fire attack access, especially in very large area buildings where access from the exterior is limited at best. Firefighter safety is also improved by providing a faster, safer method of fire ventilation than cutting one or more holes in the roof. The current text presents a balanced approach between firefighter safety and building safety. The proposal could also inhibit international adoption of the code in countries where very large area buildings are often not sprinklered and they rely on smoke and heat vents for a basic level of protection.

Committee Reason (F125): For consistency with the action on F124-06/07.

Committee Reason (F130): For consistency with the action on F124- and F125-06/07. The proposal could inhibit international adoption of the code in countries where very large area buildings are often not sprinklered and they rely on smoke and heat vents for a basic level of protection.

Committee Reason (F158): For consistency with the action on F124- and F125-06/07.

PUBLIC COMMENT: F124-06/07, F125-06/07, F130-06/07 AND F158-06/07

The stated reasons for disapproval of the code change are not consistent with the published rationale for this proposal, nor the testimony heard by the committee. The published rationale provided in support of the code change proposal included passages from the NFPA Fire Protection Handbook, NFPA 13 and NFPA 204/204M over a 20 year period cited in previous proposals to delete the requirements for roof vents, as well as new information included in NIOSH 2005-132. Hence, a disapproval recommendation based upon the fact that no new information was presented to the committee is in error.

While there is still considerable debate over whether open vents will have a negligible or significant impact upon the operation of standard sprinklers, there are numerous other reason why these provisions should be deleted.

A review of the roof vent provisions presently included in the IBC/IFC indicates that draft curtains are not required in storage buildings which contain high-piled storage and that the area of curtained areas is permitted to be up to 50,000 square feet in industrial and storage buildings which do not contain high-piled storage. (The requirements for draft curtains were removed because of the detrimental effect of draft curtains on the operation of standard sprinklers.) Roof vents and draft curtains are a team. The effectiveness of roof vents is compromised when draft curtains are not provided in combination with roof vents. In other words, many of the benefits of the use of roof vents claimed by proponents of vents do not occur unless roof vents are used in combination with draft curtains.

Tests and research on the interaction of standard sprinklers, roof vents and draft curtains sponsored by the National Fire Protection Research Foundation (NFPRF) and conducted by Underwriters Laboratories in 1997/1998 conclusively demonstrated that roof vents will not automatically open in buildings which are protected by standard sprinklers where the sprinkler system is adequate (or slightly inadequate) for the hazard being protected.

This finding of the NFPRF research was confirmed in a major fire which occurred at a bulk retail facility in Tempe, Arizona on March 19, 1998. In this fire, only three of 29 automatic roof vents operated despite the fact that the sprinkler system was failing to control the fire and the fact that the temperature rating of the fusible links of the roof vents was 165°F, while the temperature rating of the sprinklers was 286°F. The NFPA fire investigation report on this fire indicates that when the fire department arrived at the building, the 100,000 square foot building (with a ceiling height which varied from 24 to 29 feet) was filled with smoke from floor to ceiling. The reason that automatic roof vents do not operate in sprinklered buildings is that sprinkler water spray efficiently cools the ceiling and limits the temperature at the ceiling to less than the operating temperature of the vents and also that water droplets from the sprinkler spray form on the vent activating mechanism.

The NFPRF research also confirmed a previous finding by Factory Mutual Research Corporation (FMRC) in 1994 that draft curtains significantly impact the operation of sprinklers. By limiting the spread of heat under the ceiling, draft curtains may cause a significantly larger number of sprinklers to operate and also cause a distortion of the sprinklers which actually do operate. In addition, the NFPRF research also determined that draft curtains may prevent sprinklers which would normally operate from operating, thus interfering with the "pre-wetting" mechanism necessary for standard sprinklers to control a fire in storage occupancies.

The fire in the Tempe bulk retail building also confirmed the NFPRF research finding that draft curtains interfered with "pre-wetting". The NFPA investigation report indicates that fire was able to spread across an aisle which was 10 feet in width. A draft curtain (6 feet, 6 inches in depth) was located in the aisle (as recommended by NFPA 204). The draft curtain prevented sprinklers on the side of the draft curtain opposite the fire from operating, thus preventing "pre-wetting" from occurring and allowing the fire to spread across the aisle.

The committee's rationale for disapproving the code change proposal includes the statement that "*the discussions have focused on everything but the safety of the occupants, including firefighters.*" This statement is also not consistent with the testimony. The testimony offered in support of this code change specifically focused on the issue of firefighter safety. The proponent read excerpts from NIOSH 2005-132, "*Preventing Injuries and Deaths of Firefighters Due to Truss System Failures*". The testimony included the following four excerpts from NIOSH 2005-132:

> "Fire fighters should be discouraged from risking their lives solely for property protection activities."
>
> ". . . however, under uncontrolled fire conditions, the time to truss failure is unpredictable."

"Lives will continue to be lost unless fire departments make appropriate fundamental changes in fire-fighting tactics involving trusses."

"Use defensive strategies whenever trusses have been exposed to fire or structural integrity cannot be verified."

The NIOSH recommendations clearly indicate that the use of interior manual firefighting is to be discouraged in large buildings where the sprinkler system has failed to control the fire. (One story industrial and storage buildings are typically constructed using non-rated roof construction supported on non-rated steel bar joists and steel trusses.) The issue of firefighter safety is also addressed by the NFPA statistic that no firefighter fatalities occurred in any building protected by a sprinkler system in 2005.

Regarding the issue of the safety to occupants, neither sprinklered or unsprinklered single-story industrial or storage buildings present a major fire safety hazard to building occupants. The occupant fire safety risk of both sprinklered and unsprinklered single-story industrial or storage buildings is extremely low. (NFPA statistics for 2005 indicate that a total of 50 civilian fire deaths occurred in all of the commercial (non-residential) buildings in the United States. Commercial buildings include buildings which contain assembly, educational, health care, mercantile occupancies, as well as industrial and storage buildings.)

While the committee's stated rationale for disapproving this code change proposal indicates that the change as presented does not have merit, the ICC Code Technology Committee (CTC) conducted a public hearing on whether or not to form a study group on the issue of roof vents in sprinklered buildings on October 20, 2006, approximately 3-1/2 weeks after the code hearings in Orlando. After hearing representatives for the roof vent manufacturers (opponents of the code change proposal) make an extended presentation on roof vents, the CTC voted to form a study group based upon the same rationale as was presented to the code change committee.

There has been more than sufficient documentation submitted to demonstrate that the provisions for roof vents and draft curtains contained in the IBC and IFC are archaic. In fact, the manufacturers of roof vents admitted as much when the American Architectural Metals Association (AAMA) announced a new research project on the interaction of sprinklers and roof vents in September 1999 in response to the publication of the results of the NFPRF research in September 1998. AAMA's plans to conduct new research were dropped after the code change committee voted to disapprove code changes to delete the requirements for roof vents in the 2000 and 2001 editions of the IBC and IFC. In the summer of 2006, the AAMA once again announced a new research project on the interaction of sprinklers and vents. This time the AAMA is reacting to discussions of the topic by the CTC.

Given the above, it is requested that the membership overturn the committee's recommendation and approve code change F124-06/07, F125-06/07, F130-06/07 and F158-06/07 as submitted (AS).