

Rosalind Fazel

From: jfoster@sedd.us
Sent: Tuesday, December 22, 2009 1:57 PM
To: Rosalind Fazel
Subject: AC421 Comments
Attachments: Comments to 12-1-09 posted AC421 questions.pdf

Comments on Criteria AC421.

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Comments:
?See Attachment.?

Attachments:

- Comments to 12-1-09 posted AC421 questions.pdf

1. Can vertically acting doors be egress doors under certain conditions?

IBC 2009 1008.1.2 lists a number of exceptions to pivoted or side-hinged swinging type doors for use as egress doors along with specified performance requirements for such doors. If vertically acting doors can meet the same performance requirements or meet the intent of the performance requirements that are currently specified in the existing International Building Code[®], then yes, vertical acting doors should be allowed for use as egress doors in place of pivoted or side-hinged swinging doors.

2. If yes, should vertically acting, egress fire-doors be subject to the requirements of IBC Section 1008.1.4.3?

The reason for creating acceptance criteria for the development of evaluation reports is because the code does not currently address the use of new and innovative products. With this in mind, a proposed new product needs to be evaluated to a section of the code that most closely and appropriately addresses the performance requirements of the proposed product. If a vertical acting egress fire door can meet the performance requirements or the intent of the performance requirements as listed in IBC Section 1008.1.4.3, then it makes sense for vertically acting, egress fire doors to be subject to the requirements of this code section.

3. Section 1008.1.4.3 of the IBC requires that the doors be power-operated and capable of being operated manually in the event of power failure. Does manually require "human effort to lift the door," or could it mean "human effort to push a button to cause the door to lift by battery power"?

The requirement for the doors to be capable of being operated manually in this section of the code implies that if all power fails, AC and DC, then the doors should be capable of being opened by human effort.

If vertically acting egress doors can meet the intent of this section of the code by eliminating entrapment due to loss of both AC and DC power without having a requirement to manually lift the door, then the egress fire doors will meet the intent of this code section and this is a non issue.

4. Could it be argued that if the possibility of power failure were very remote, then “human effort” operation would not be required?

Yes. And if you eliminate entrapment and the need to manually lift the door by human effort, then this is a non issue.

5. Are 50 opening and closing cycles enough to show this?

Yes. A minimum of 50 opening and closing cycles is already the accepted requirement for horizontal sliding egress fire doors to operator on a back-up DC power supply. 2009 IBC Section 1008.1.4.3 references compliance with NFPA 80 and 2010 NFPA 80 Section 9.4.2.2.3 states a minimum of 50 opening and closing cycles of the door by the standby or emergency power source. The requirement should be the same for vertically acting egress fire doors that also require a back-up power source.

6. If, in emergency mode, the battery power used to operate the door reaches a critical point of discharge, where it should no longer be used for egress, should the door automatically rise to egress height and then disengage from the power source so that the possibility of egress is maintained?

The key word here is “if” - the back-up power source reaches a critical point of discharge. Keeping in mind that if the AC power source would fail, and then if the back-up DC power source would fail, then yes, the door should automatically rise to egress height (minimum 80”) to allow for continued access to egress. Then, once the opening is no longer viable to sustain life due to high temperatures at the opening, then the door should close to provide fire protection and life safety.

7. Would this be acceptable if, under this state, the door could close if a fusible link were broken because of excessive heat, at which time the opening would be unsafe to use for egress anyway?

Yes – once the opening is no longer viable to sustain life due to high temperatures at the opening, then the door should close to provide fire protection and life safety.

8. Does causing a fire-door to stay in a partially open position while in emergency mode violate the requirement for a door to close to retard the passage of smoke?

Items to consider here:

- The door would only stay in the partially open position if both the AC and DC power sources fail.
- The door would only open to the egress height, meaning that in most instances the door would be partially closed limiting the amount of smoke that would pass through the top of the opening.

9. Does NFPA 80, 11.4.2.2.1, which requires automatic-closing, rolling doors to remain closed until reset, exclude rolling doors from egress use?

No. This specific section/chapter of NFPA 80 was developed to specifically address requirements for non-egress rolling fire doors. This requirement cannot apply to rolling fire doors that will be used in a means of egress.

10. Does the last paragraph of IBC Section 1008.1.2, due to its placement in the code (being after the exceptions), require all egress doors to swing if serving more than 50 occupants?

No. I would interpret this section of the code to mean that if the door swings, then it should swing in the direction of egress. Many horizontal sliding egress fire doors are used in high occupancy load applications and they do not swing.

11. Should the last paragraph of IBC Section 1008.1.2 be interpreted to mean that all doors serving larger occupant loads must “swing”?

No.

Or simply that, if the doors swing, that they must do so “in the direction of egress travel”?

Yes.

12. Does Item 4 under IBC Section 1008.1.4.3, requiring functionality even when the door is subjected to a 250-pound force, deal with the same issue as Item 11 above, for sliding doors?

No. Egress doors that do not swing in the direction of egress must be openable with not more than a 15 pound force when subjected to a perpendicular force of up to 250 pounds.

13. Do provisions for panic or fire-exit hardware need to be included in the criteria?

To the extent that the panic or fire-exit hardware meets the requirements of 2009 IBC Section 1008.1.4.3-Item 2. "The doors shall be openable by a simple method from both sides without special knowledge or effort."

14. What might constitute panic hardware for this type of door?

A mushroom type push button station, a touchless field with simplistic instruction to break the activation field or an exit bar type device.

15. Should these doors be excluded from use where panic hardware is required?

No. These doors should be allowable as an equal substitute for pivoted or side-hinged swinging type egress doors.

16. Is the intent of panic hardware to provide for continuous motion of a crowd (not slow down a crowd) bent on egress?

Yes. The intent of panic/exit hardware is to provide for continuous motion of a crowd towards an exit opening.

17. Must vertically acting egress fire-doors comply with BHMA A156.10 and/or UL 325?

Vertically acting egress fire-doors will need to include a listed operating system as required per the door manufacturer's listing agency follow-up procedure. Like the current building code, BHMA A156.10 does not specifically address requirements for vertically acting egress fire doors. In addition, horizontal sliding egress fire doors do not reference the need to comply with BHMA A156.10. Vertically acting egress fire-doors should take the same approach and not state the requirement to comply with BHMA A156.10.

Rosalind Fazel

From: wkoffel@koffel.com
Sent: Monday, January 04, 2010 2:13 PM
To: Rosalind Fazel
Subject: AC421 Comments
Attachments: Comments on AC421.pdf

Comments on Criteria AC421.

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Comments:

The following provide my initial comments and I anticipate being present at the meeting to expand on the comments or respond to questions, as necessary.

Attachments:

- Comments on AC421.pdf

Comments on AC421

1. Can vertically acting doors be egress doors under certain conditions?

Yes, vertical sliding doors may be considered acceptable in the means of egress; however, the performance criteria and conditions upon which they may be used need to be defined. This was the subject of Code Change Proposal E54-09/10. Although the Committee Action on the Proposal is Disapproval, most of the discussion seemed to focus on the details and how the application of Section 1008.1.4.3 should not be expanded to vertical sliding doors without some additional research and consideration. Furthermore, there are vertical sliding doors that incorporate a swinging door that are generally considered acceptable in the means of egress.

2. If yes, should vertically-acting, egress fire-doors be subject to the requirements of IBC Section 1008.1.4.3?

Section 1008.1.4.3 should not be expanded to include vertical sliding doors without additional research and consideration (see Committee Action on Code Change Proposal E54-09/10. There are a number of issues that need to be addressed, including but not limited to:

- Are the force requirements contained in 1008.1.4.3 to operate the door appropriate for a vertical sliding door as well? Do people have different capabilities with respect to the ability to lift something versus slide something?
- If the operator of a vertical sliding door fails, what happens? Will the door remain in the open position or will it close and if it closes, at what speed?
- Are there any special considerations regarding automatic-closing vertical sliding doors. Starting with the 1993 Edition of the BOCA National Building Code, there was a requirement that such doors should not be automatic closing by smoke detection, unless the smoke detectors are on an alarm verification circuit (716.5.2).
- What is the required height to which the door should open?

3. Section 1008.1.4.3 of the IBC requires that the doors be power-operated and capable of being operated manually in the event of power failure. Does manually require "human effort to lift the door," or could it mean "human effort to push a button to cause the door to lift by battery power"?

It is the intent of Section 1008.1.4.3 that manually-operated means human effort to open the door.

4. Could it be argued that if the possibility of power failure were very remote, then "human effort" operation would not be required?

If that is the case, should that not apply to all power-operated doors? What about locking systems that have a reliable secondary power supply?

5. Are 50 opening and closing cycles enough to show this?

The "50 cycles" appears to be used to determine the capacity of the stand-by power supply. Regardless of the number of cycles, the door should be operable manually.

6. If, in emergency mode, the battery power used to operate the door reaches a critical point of discharge, where it should no longer be used for egress, should the door automatically rise to egress height and then disengage from the power source so that the possibility of egress is maintained?

This would be fine for an egress door that does not have a fire-protection rating or a door that is otherwise required to be self-closing or automatic-closing to prevent the migration of smoke.

7. Would this be acceptable if, under this condition, the door could close if a fusible link were broken because of excessive heat, at which time the opening would be unsafe to use for egress anyway?

This now sounds as if the door is also provided as a fire door or a door designed to resist the passage of smoke. In either case, the fusible link is probably not an acceptable alternative, since it will not activate upon detection of smoke. Furthermore, if the Committee does choose to allow this option, consideration needs to be given to the location (height and exposed as compared to above a ceiling) and temperature rating of the fusible link.

8. Does causing a fire-door to stay in a partially-open position while in emergency mode violate the requirement for a door to close to retard the passage of smoke?

Not only does it violate the requirement to retard the passage of smoke (not required for all fire doors), but it does violate the premise that a fire door will be closed during the fire emergency.

9. Does NFPA 80, 11.4.2.2.1, which requires automatic-closing, rolling doors to remain closed until reset, exclude rolling doors from egress use?

Other sections address the reopening of the door and those sections could be applied to doors in the means of egress.

10. Does the last paragraph of IBC Section 1008.1.2, due to its placement in the code (being after the exceptions), require all egress doors to swing if serving more than 50 occupants?

No. The intent of the paragraph is to regulate the direction of swing of swinging doors when serving an occupant load greater than 50. Having said that, a code change proposal could be submitted to address the issue.

11. Should the last paragraph of IBC Section 1008.1.2 be interpreted to mean that all doors serving larger occupant loads must "swing"? Or simply that, if the doors swing, that they must do so "in the direction of egress travel"?

See response to Question 10.

12. Does Item 4 under IBC Section 1008.1.4.3, requiring functionality even when the door is subjected to a 250-pound force, deal with the same issue as Item 11 above, for sliding doors?

Yes, it somewhat addresses the issue, although it is not really tied into a specific occupant load.

13. Do provisions for panic or fire-exit hardware need to be included in the criteria?

Since these doors are not generally equipped with a lock or latch, the requirements for panic hardware do not apply. However, the forces required to operate the door need to be carefully addressed.

14. What might constitute panic hardware for this type of door?

See response to Question 13. Some discussion should possibly be made regarding the operating device.

15. Should these doors be excluded from use where panic hardware is required?

As noted in the response to Question 13, in most cases, they probably already are exempt from panic hardware requirements.

16. Is the intent of panic hardware to provide for continuous motion of a crowd (not slow down a crowd) bent on egress?

Not really. The intent of panic hardware is to provide an easy and reliable means to release the lock or latch on the door.

17. Must vertically-acting egress fire-doors comply with BHMA A156.10 and/or UL 325?

Yes, the door operator should be tested to UL 325. At this point in time, I don't know if BHMA A156.10 applies to doors other than swinging doors, so I have no comment at this time.

Additional Comments:

- a. Paragraph 3.1.2 – Why does the criteria only apply for a force applied to the operator and not elsewhere on the door?
- b. Paragraph 3.2.6 – While it is understood why the door should potentially remain closed if temperatures near the door are excessive, far more criteria should be included, such as where the temperature is measured (below the ceiling, not more than x ft above the floor, etc.).
- c. Paragraph 3.3.1 – The reference should be to a fire-protection rating not a fire-resistance rating, although these doors may also have a fire-resistance rating.
- d. Vertical sliding doors are different from horizontal sliding doors that may open to the minimum required height and the width of the opening may be limited. Vertical sliding doors need to open to the minimum required height, but typically, the entire width of the opening will now be open, resulting in potentially larger openings when used for egress during a fire.