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**BULLETIN 2006-003-BU/SP**

**APRIL 19, 2007**

*(Revised)*

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## **EXPOSURE PROTECTION FOR EXITS & EXIT ROUTES**

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This is intended to address exposure protection for exits and exit routes that may be exposed to fire from exterior openings in adjacent fire compartments in accordance with Article 3.2.3.13. of Division B of the Building By-law.

Where exits and exit routes are exposed to fire, the Building By-law typically requires these openings to be protected with glass block, wired glass or a closure having a fire-protection rating. Due to other City objectives, it has been difficult and onerous for designers to comply with this requirement. The exposure to exit requirements of the Building By-law have become increasingly challenging for smaller projects such as infill housing, row housing, stacked dwellings, and small commercial tenant spaces. Since wired glass and glass block are not always a desirable solution, many Fire Protection Engineers have addressed this issue through various alternative solution approaches using sprinkler water curtains.

Due to reliability concerns as noted in Bulletin 2000-069-BU/SP, "Sprinkler Based Alternative solutions - Performance and Reliability Issues", the requirement for a formal alternative solution will depend on the number of persons served by the exit having the exposure condition.

### Exposure Protection for Exits Serving Not More than 10 Persons

In order to assist designers with the exposure to exit requirements and avoid costly alternative solutions, water curtains meeting the following conditions may be used to address an exposure to exit condition for an exit serving not more than 10 persons:

1. The sprinkler heads must be located within 50 mm vertically and between 150 mm to 300 mm horizontally from the interior side of the glazing.
2. For openings 1.8 m or less in width, one sprinkler head must be provided in the center of the opening. For openings wider than 1.8 m, multiple sprinkler heads must be spaced at a maximum of 1.8 m on center.
3. The sprinkler heads must be a quick response type (pendent or upright) with a minimum flow rate of 68 L/min (18 gpm) per sprinkler. Discharge of the water curtain sprinklers shall be additional to the floor area sprinklers and standpipe system design flow.
4. The sprinkler heads must have an orifice size of 12.7 mm with a k factor of 5.7.
5. The sprinkler heads shall be protected from spray and potential cold solder effects from adjacent sprinklers (floor area or water curtain sprinkler heads) by means of baffles in accordance with NFPA 13.
6. Glazing must be tempered or laminated safety glass. (Windows may be openable)

### Exposure Protection for Exits Serving More Than 10 Persons

Exposure conditions for exits serving more than 10 persons must be addressed with a code conforming solution (wired glass, glass block or a closure having a fire protection rating) or an acceptable alternative solution. Should this alternative solution submission be based solely on automatic sprinkler

protection (water curtain), the submission must provide passive protection features in addition to the water curtain. This issue is discussed further in Bulletin 2000-069-BU/SP.

In the past, designers have addressed the reliability issue by providing one or more of the following passive fire protection features:

1. an alternate exit that is within 45 m of the subject exposure condition,
2. a secondary water supply for the water curtain used to provide the required exposure protection, or
3. an exterior balcony that is within 6 m of grade and in a location accessible to fire fighters.

It should be noted that each exposure to exit condition is unique and the above list of possible redundancy solutions may not be suitable for every submission. Alternative solution approaches must be analyzed and justified by the Fire Protection Engineer for each specific project in order to ensure that an acceptable redundancy solution is proposed.

### Conclusion

An alternative solution submission will no longer be required for water curtains used to address the Building By-law's exposure to exit requirements when the above noted conditions have been met and the exit does not serve more than 10 persons. All other conditions must be addressed with a code conforming solution or an acceptable alternative solution as noted above.

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