

Code Technology Committee

Area of Study – Child Window Safety

2007/2008 Cycle

Code changes related to the CTC area of study noted above

The following are code changes related to the CTC Child Window Safety Area of Study that will be considered at the 2007/2008 Code Development Hearings in Palm Springs, California.

RB 173: Page 1

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RB173–07/08

R613.2, R613.3, R613.4, R613.4.1, R613.4.2 (New), Chapter 43 (New); IBC 1405.12.2, 1405.12.3 (New), 1405.12.4 (New), 1405.12.4.1 (New), 1405.12.4.2 (New), Chapter 35 (New)

Proponent: Paul Heilstedt, Chair for the Code Technology Committee

THESE PROPOSALS ARE ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC FIRE SAFETY CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

1. Revise as follows:

R613.2 Window sills. In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches (610 mm) shall be fixed or have openings through which a 4-inch-diameter (102 mm) sphere cannot pass.

Exceptions:

1. Windows whose openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices ~~guards~~ that comply with R613.3 ASTM F 2006 or F 2090.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section R613.4.

R613.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

R613.4 Window opening limiting devices. When required elsewhere in this code, window opening limiting devices shall comply with the provisions of this section.

R613.4.1 General requirements. Window opening limiting devices shall be self acting and shall be positioned so as to prohibit the free passage of a 4.0-in. (102-mm) diameter rigid sphere through the window opening when the window opening limiting device is installed in accordance with the manufacturer's instructions.

(Renumber subsequent sections)

2. Add new text as follows:

R613.4.2 Operation for Emergency Escape. Window opening limiting devices shall be designed with release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special knowledge. Window opening limiting devices shall comply with all of the following:

1. Release of the window opening-limiting device shall require no more than 15 lbf (66 N) of force.
2. The window opening limiting device release mechanism shall operate properly in all types of weather.
3. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency.
4. The window opening limiting device shall not reduce the minimum net clear opening area of the window unit below what is required by Section R310.1.1 of the code.

3. Add standard to Chapter 43 as follows:

SMA 6001-2002 Specifications for Metal Protection Screens

PART II – IBC FIRE SAFETY

1. Revise as follows:

1405.12.2 Window sills. In Occupancy Groups R-2 and R-3, one- and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches (1829 mm) above the finished grade or other surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches (610 mm) shall be fixed or have openings such that a 4-inch (102 mm) diameter sphere cannot pass through.

Exceptions:

1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices guards that comply with 1405.12.3 ASTM F 2006 or F 2090.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section 1405.12.4.

2. Add new text as follows:

1405.12.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

1405.12.4 Window opening limiting devices. When required elsewhere in this code, window opening limiting devices shall comply with the provisions of this section.

1405.12.4.1 General requirements. Window opening limiting devices shall be self acting and shall be positioned so as to prohibit the free passage of a 4.0-in. (102-mm) diameter rigid sphere through the window opening when the window opening limiting device is installed in accordance with the manufacturer's instructions.

1405.12.4.2 Operation for emergency escape. Window opening limiting devices shall be designed with release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special

knowledge. Window opening limiting devices shall comply with all of the following:

1. Release of the window opening-limiting device shall require no more than 15 lbf (66 N) of force.
2. The window opening limiting device release mechanism shall operate properly in all types of weather.
3. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency.
4. The window opening limiting device shall not reduce the minimum net clear opening area of the window unit below what is required by Section R310.1.1 of the code.

3. Add standard to Chapter 35 as follows:

SMA 6001-2002 Specifications for Metal Protection Screens

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html> Since its inception in April/2005, the CTC has held twelve meetings - all open to the public.

This proposed change is a result of the CTC's investigation of the area of study entitled "Child Window Safety". The scope of the activity is noted as:

To study the incidence and mechanisms of falls from open windows by children and to investigate the necessity and suitability of potential safeguards and/or revisions to the current codes.

The CTC established a study group to review available materials on the issue of child falls through windows. It became readily apparent that public education is a key consideration in reducing the number of falls by children through windows. As far as the code is concerned, the group focused on two possible means of addressing this issue. The two being:

- Window screens
- Window fall prevention devices

This proposal provides both options, in the form of exceptions to the minimum sill height requirements in the code.

Window screens: ANSI/SMA 6001 is a standard entitled "Specifications for Metal Protection Screens. ".As noted in Section 2.1 of the standard, "This specification provides, definitions, methods of test, and performance requirements for metal protection screens designed and manufactured primarily for installation in window openings for the purpose of providing security for the building occupants by restraining of deterring forced entry and by protecting the window from vandalism". While not specifically noting the screens use as a barrier to restrain a child, the study group concluded that they key considerations is that of providing some type ob barrier. Screens designed in accordance with this standard are classified under the following classes:

- Light: Load resistance between 30 – 75 pounds
- Medium: Load resistance between 75 - 150 pounds.
- Heavy: Load resistance between 150 – 300 pounds.

Window fall prevention devices: ASTM F 2090 is a standard entitled "Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms". As noted in Section 1.1 of the standard, "This specification establishes requirements for devices intended to address the risk of injury and death associated with accidental falls from windows by children five years old and younger. The key operational constraint of devices which comply with this standard is compliance with Section 4.1, which states: "Window fall prevention devices shall be constructed so as to prohibit the free passage of a 4.0 in diameter rigid sphere at any point, during or after testing as specified in Section 8, when the window fall prevention device is installed in accordance with the manufactures instructions.

Proposed Section R 613.4 and 1405.12.4.2, including Items 1 – 3, is a codified version of Sections 4.1, 4.3.2, 4.3.4 of ASTM F 2090. Item 4 is primarily a reminder that full compliance with Section R 310.1.1 is required for all emergency escape and rescue openings of the window serves such purpose.

Cost Impact: The code change will increase the cost of construction if the devices are used.

Analysis: A review of the standard proposed for inclusion in the code, ANSI/SMA 6001-2002, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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**RB174–07/08
613.2; IBC 1405.12.2**

Proponent: Michael D. Fischer, The Kellen Company, representing the Window and Door Manufacturers Association

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PART I – IRC

Delete and substitute as follows:

~~**R613.2 Window sills.** In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches (610 mm) shall be fixed or have openings through which a 4-inch diameter (102 mm) sphere cannot pass.~~

Exceptions:

- ~~1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.~~
- ~~2. Openings that are provided with window guards that comply with ASTM F 2006 or F 2090.~~

~~**R613.2 Window fall prevention devices.** Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.~~

PART II – IBC FIRE SAFETY

Delete and substitute as follows:

~~**1405.12.2 Window sills.** In Occupancy Groups R-2 and R-3, one- and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches (1829 mm) above the finished grade or other surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches (610 mm) shall be fixed or have openings such that a 4-inch (102 mm) diameter sphere cannot pass.~~

~~**Exception:** Openings that are provided with window guards that comply with ASTM F 2006 or F 2090.~~

~~**1405.12.2 Window fall prevention devices.** Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.~~

~~**Exception:** Window fall prevention devices and window guards provided in windows where the lowest operable portion of the window is greater than 75 feet above adjacent grade or surface shall be permitted to comply with ASTM F 2006.~~

Reason: The 2006 IRC and IBC contain a newly adopted requirement for minimum sill heights in windows located more than 72" above grade as a means to prevent child falls through open windows. During the consideration of this proposal over several code cycles, WDMA expressed dismay with the lack of technical substantiation that demonstrated any positive impact of this requirement on the number of child window falls. In fact, WDMA's opposition was due in large part to concerns about the unintended consequences such a requirement could have on fire safety. Despite objections from numerous parties, the ICC assembly approved the minimum sill height. During the committee hearings, the IRC B/E committee passed a resolution asking for the creation of a study group of ICC that would study the issue of child falls in an attempt to take a serious look at the problem and recommend solutions to improve child safety. The ICC Board took no action on that resolution until after the completion of the 2004-5 code development process. Since that time, the ICC Code Technology Committee was tasked with the responsibility to study the problem of child window falls, gather statistical data, consider associate factors and develop recommended actions. The CTC appointed a study group in January of 2007, and created a scope and objective document, outlining the work plan of the study group. WDMA believes that the work of the CTC window safety study group should have been commissioned and completed before adopting a code requirement that has the potential for negative impact on life safety.

The existing language is flawed. The text fails to specify that it is the lowest portion of an operable window as the point at which the measurement above grade is taken. Under that scoping error, a 6 foot tall casement window installed on a slab-on-grade foundation, with a sill height of 6 inches and located 16 inches above grade would have some of the operable portion located more than 72" above grade, and be subject to the minimum sill height. For this and other reasons, including the lack of technical justification for the sill height requirement, many state jurisdictions have chosen not to include the sill height minimum during adoption of the 2006 IBC and IRC. The more thorough review of the technical issues that is part of many state adoption processes resulted in careful consideration and removal of the requirement.

This proposal leaves the requirement that window fall prevention devices and window guards, if furnished, meet consensus standards developed by ASTM and currently referenced in the IRC and IBC.

The addition of the exception provides clear direction on the appropriate scope of the referenced standards to ensure that all guards or devices installed on windows at 75 or below be releasable to allow escape or rescue.

Cost Impact: The code change proposal will not increase the cost of construction.