Emergency Escape and Rescue Openings

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2006 and 2009 IRC

This informational handout addresses emergency escape and rescue opening requirements of the 2006 and 2009 *International Residential Code* (IRC), Section R310.

Scope

These provisions of the IRC apply to one- and two-family dwellings and townhouses not more than three stories above grade in height.

Definition

EMERGENCY ESCAPE AND RESCUE OPENING. An operable exterior window, door or similar device that provides for a means of escape and access for rescue in the event of an emergency.

Summary

One of the most important safety provisions in the IRC, an emergency escape and rescue opening provides an alternative exit path in the event a fire or other emergency blocks the normal means of egress from the dwelling. These openings allow occupants to escape directly to the safety of the outdoors and allow rescue personnel fully equipped with breathing apparatus to enter the room from the outside. Occupants are most vulnerable to the hazards of fire when they are not fully alert or when they are occupying a basement, a space that traditionally has few windows or doors and often serves as a play or recreation area. The IRC addresses these life-safety issues by requiring an emergency escape and rescue opening in the basement and in every sleeping room. The 2009 IRC adds habitable attics to these required locations.

Location

The IRC requires at least one emergency escape and rescue opening in each:

- Sleeping room (Figure 1)
- Basement (Figure 2)
- Habitable attic (2009 IRC)

Exception: Basements not greater than 200 square feet and housing only mechanical equipment do not require an emergency escape and rescue opening.

Note: Installation of an emergency escape and rescue opening in a basement bedroom or bedrooms satisfies the basement requirement. An additional opening is not required in any other area of the basement that is not a bedroom.

Emergency escape and rescue openings must provide direct access to a yard, street or alley so that the occupants may quickly move a safe distance away from the building and the hazard. The code does not permit the escape opening to lead to an enclosed court or an intervening room or space.

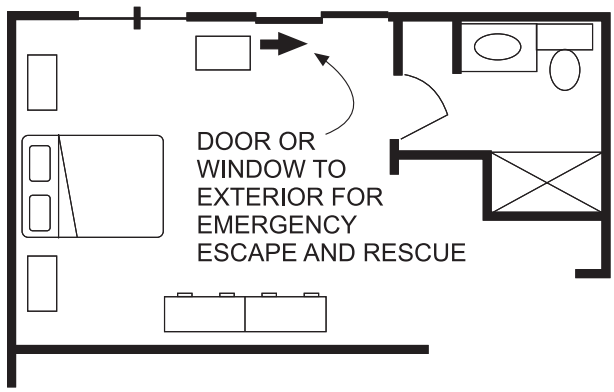

Figure 1 Bedrooms on any level

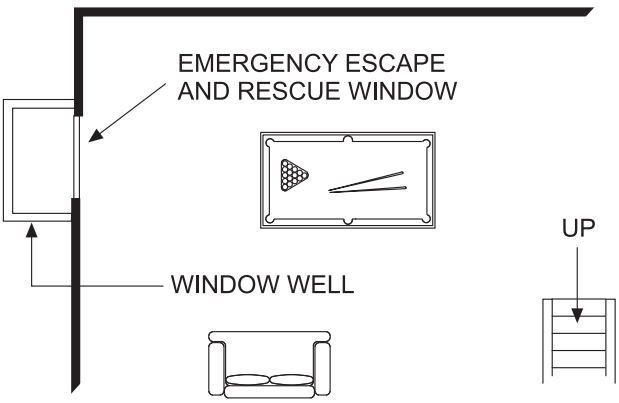

Figure 2 Basement

Dimensions for Emergency Escape and Rescue Openings

The IRC prescribes minimum opening dimensions and a maximum sill height for emergency escape and rescue openings to effectively serve their intended purpose. The minimum opening size accommodates a fully equipped fire fighter or other rescuer as well as providing an adequate escape route for the occupant. The limitation on sill height allows a child or adult access to the escape opening. Width and height may be any number of combinations to achieve the minimum required opening area provided the minimum net dimensions are maintained (Table 1). The emergency escape and rescue opening may be a swinging or sliding door, a window or any other device that provides the required dimensions.

Minimum net clear opening dimensions (Figures 3 and 4)
Minimum opening area - 5.7 square feet
Minimum opening width - 20 inches
Minimum opening height - 24 inches

The following combinations of width and height will provide a net clear opening of 5.7 square feet (820.8 square inches):

width (in.)		height (in.)	width (in.)		height (in.)
20	X	41	27.5	X	29.8
20.5	X	40	28	X	29.3
21	X	39.1	28.6	X	28.8
21.5	X	38.2	29	X	28.3
22	X	37.3	29.5	X	27.8
22.5	X	36.5	30	X	27.4
23	X	35.7	30.5	X	26.9
23.5	X	34.9	31	X	26.5
24	X	34.2	31.5	X	26.1
24.5	X	33.5	32	X	25.7
25	X	32.8	32.5	X	25.3
25.5	X	32.2	33	X	24.9
26	X	31.6	33.5	X	24.5
26.5	X	31	34	X	24.1
27	X	30.4	34.5	X	24

Maximum sill height above floor (Figures 3 to 5)
Maximum sill height - 44 inches

Table 1

Exception for grade floor openings (Figure 5)
GRADE FLOOR OPENING. A window or other opening located such that the sill height of the opening is not more than 44 inches above or below the finished ground level adjacent to the opening.

Minimum net clear opening dimensions for grade floor openings
Minimum opening area - 5.0 square feet
Note: Minimum opening width and height are the same as above—20 inches and 24 inches, respectively.

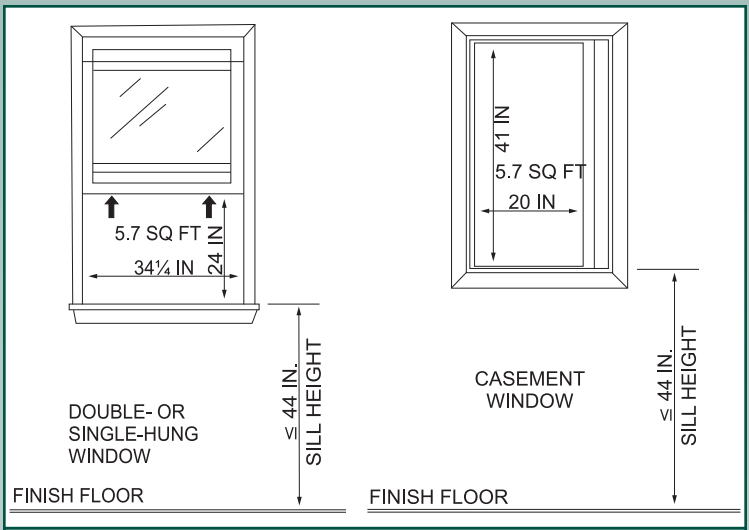

Figure 3 Single- or double-hung or casement window

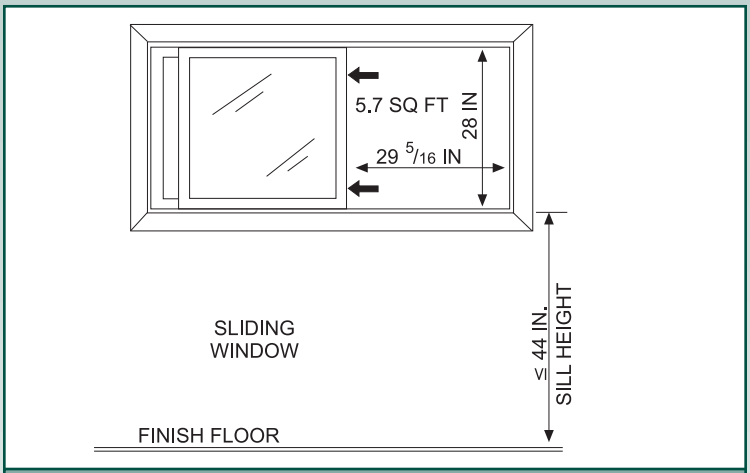

Figure 4 Sliding window

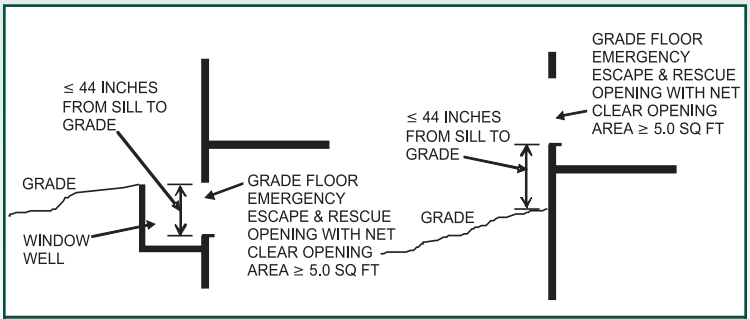

Figure 5 Grade floor opening – minimum net clear opening area

Window Wells for Emergency Escape and Rescue Openings

The IRC requires a window well when the sill of the emergency escape and rescue opening is below the adjacent ground elevation. Window wells with a depth greater than 44 inches require a permanent ladder or steps to provide access to grade. The IRC prescribes minimum clearances when an emergency escape and rescue window is installed below a deck or porch.

Window well dimensions (Figures 6 to 8):

Minimum horizontal dimension 36 inches
Minimum horizontal area 9 square feet

Note: the size of the window well must also be sufficient for the full opening of the emergency escape and rescue window.

Ladder or steps (Figures 6 to 8)

- Required for window wells deeper than 44 inches
- May encroach a maximum of 6 inches into the required window well area
- Must be usable with the window in the full open position
- Must be permanently secured in place

Ladder rung dimensions:

Minimum projection from wall 3 inches
Minimum width 12 inches
Maximum vertical spacing 18 inches on center

Note: The stair and railing requirements for dwellings do not apply to window well steps. The IRC does not prescribe minimum width or depth of treads or a maximum riser height for these steps. They must simply provide a means for climbing from the window well to grade.

Guards not required

The IRC does not require guards or barriers to protect against falls into window wells.

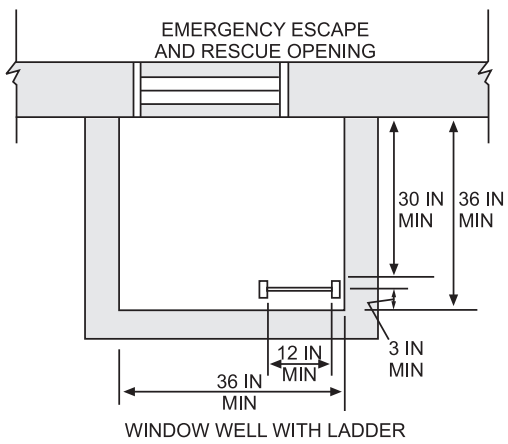

Figure 6 Window well dimensions

Clearance under decks and porches (Figures 7 and 8)

An emergency escape and rescue window may be installed under a deck or porch when:

- The deck structure does not interfere with operation of the window and
- A clear path with a minimum height of 36 inches is provided to a yard or court

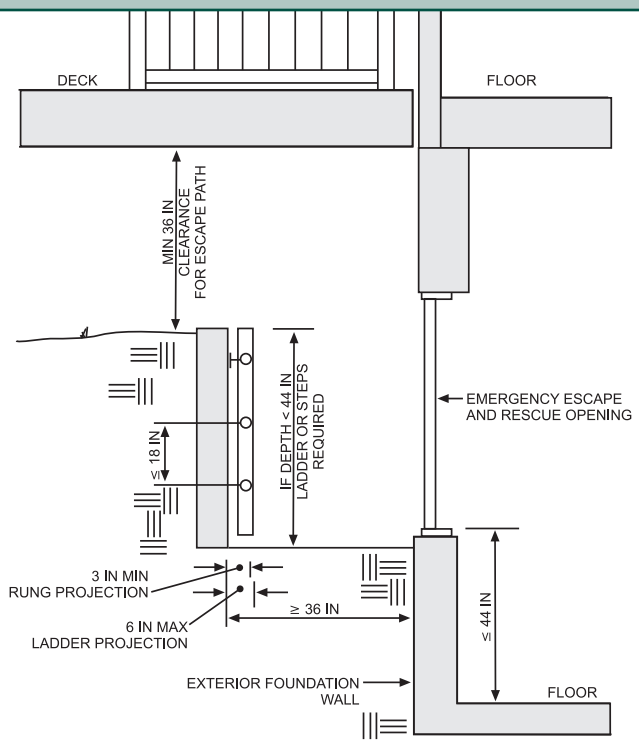

Figure 7 Window well and ladder below deck

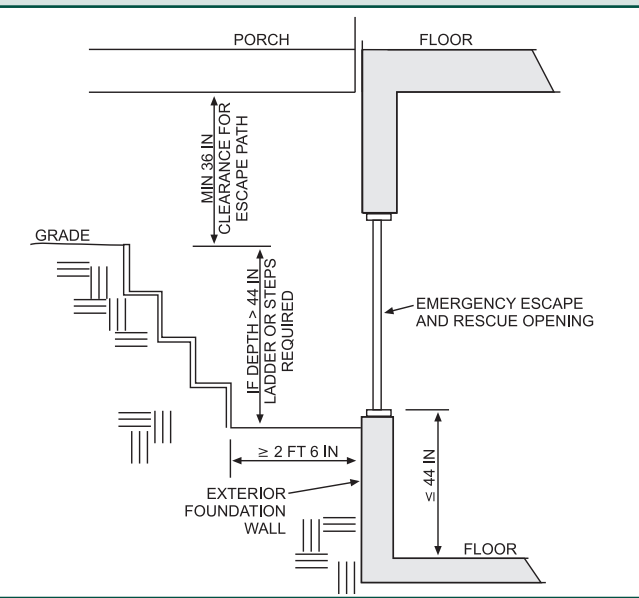

Figure 8 Window well and steps below porch

Operation of Emergency Escape and Rescue Openings

In an emergency, occupants need to move quickly and easily to an outside space. Therefore, the code requires that the prescribed opening dimensions be obtained by the normal operation of the emergency escape and rescue opening, usually a window or door, without the need for a key, tool or any special knowledge. This provision does not allow, for example, the removal of a window sash to obtain the required opening dimensions. Security devices such as grilles or bars may be placed over the escape openings provided they are releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that which is required for normal operation of the escape and rescue opening. The same limitations apply to covers placed over the window wells of escape openings. These provisions preclude the use of mechanical fasteners such as screws or bolts for securing windows, doors, security devices or covers related to emergency escape and rescue openings.

Operational constraints at emergency escape and rescue openings

Doors and windows (Figure 9)

- Open by normal operation from the inside
- No keys
- No tools
- No special knowledge

Security bars and grilles (Figure 10)

- Same operational constraints as doors and windows
- No more force to open or remove as that required for doors or windows
- Maintain prescribed escape opening dimensions

Covers on window wells (Figure 11)

- Same operational constraints as doors and windows
- No more force to open or remove as that required for doors or windows
- Maintain prescribed escape opening dimensions

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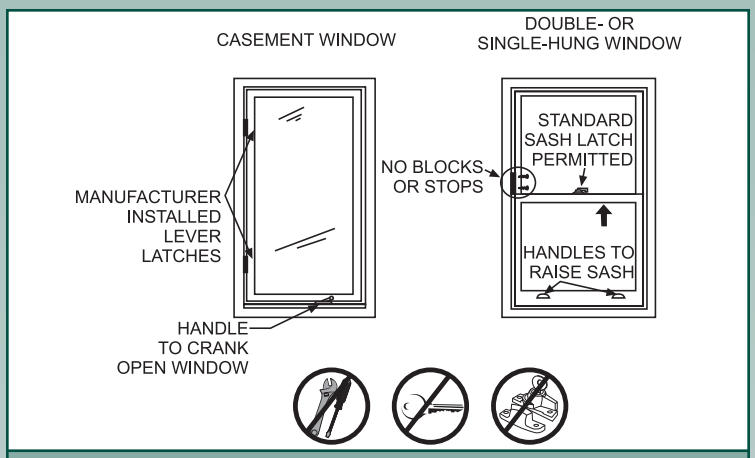

Figure 9 Normal operation of emergency escape and rescue windows

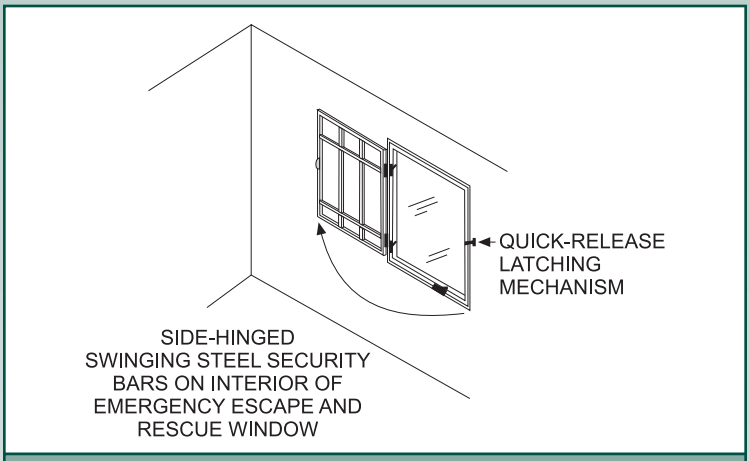

Figure 10 Security bars

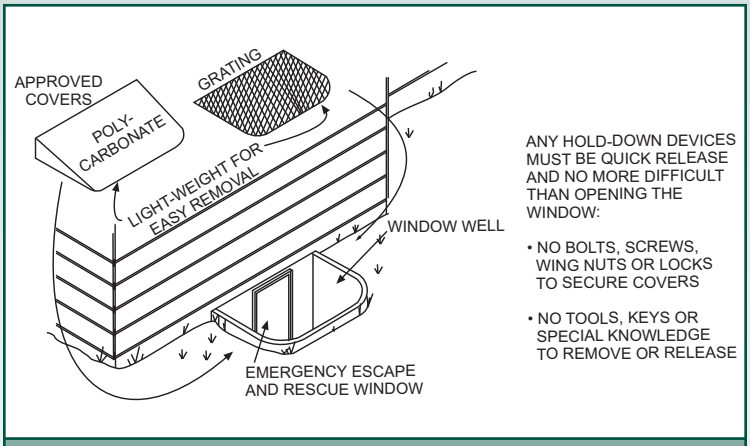

Figure 11 Covers on window wells

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Warren, PA 16365

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