

SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency escape and rescue required.

Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Where emergency escape and rescue openings are provided they **shall have a sill height of not more than 44 inches (1118 mm) above the floor**. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section 310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.



Commentary from the International Code Council:

**Because so many fire deaths occur as the result of occupants of residential buildings being asleep during a fire, the IRC requires that basements with habitable spaces and all sleeping rooms have windows or doors that may be used for emergency escape or rescue. The requirement for emergency escape and egress openings in sleeping rooms exists because a fire will usually have spread before the occupants are aware of the problem, and the normal exit channels may be blocked. The requirement for basements exists because they are so often used as sleeping rooms. Openings required for emergency escape or rescue must be located on the exterior of the building so that rescue can be performed from the exterior. Alternatively, occupants may escape from that opening to the exterior of the building without having to travel through the building itself. Therefore, where openings are required, they should open directly into a public street, public alley, yard or court. After the occupants pass through the emergency escape and rescue opening, their continued egress is essential. Where a basement contains sleeping rooms and a habitable space, an emergency escape and rescue opening is required in each sleeping room but is not required in adjoining areas of the basement.*

The dimensions prescribed in the code, and as illustrated in Commentary Figure R310.1 for exterior wall openings used for emergency egress and rescue, are based in part on extensive testing by the San Diego Building and Fire Departments to determine the proper relationships of the height and width of window openings to adequately serve for both rescue and escape. The **minimum of 20 inches (508 mm) for the width is based on two criteria: the width necessary to place a ladder within the window opening and the width necessary to admit a fire fighter with full rescue equipment. The **minimum 24-inch (610 mm) height** is based on the minimum size necessary to admit a fire fighter with full rescue equipment. By requiring a minimum **net clear opening size of the least 5.7 square feet (0.53 m²)**, the code provides for an opening of adequate dimensions. Where the opening occurs at grade level, the opening need be only **5 square feet (0.46 m²)** due to the increased ease of access from the exterior.*

In order to be accessible from the interior of the sleeping room or basement, **the emergency escape and rescue opening cannot be located more than 44 inches (1118 mm) above the floor. The measurement is to be taken from the floor to the bottom of the clear opening.*

**The required opening dimensions must be achieved by the normal operation of the emergency escape and rescue opening from the inside. Where a window is used as the emergency escape and rescue opening, then it must be the usual double-hung, horizontal sliding, or casement window operated by the turn of a crank. It is impractical to assume that all occupants can operate a window that requires a special sequence of operations to achieve the required opening size. While most occupants are familiar with the normal operation by which to open the window, children and guests are frequently unfamiliar with special procedures necessary to remove the sashes. The time spent comprehending the special operation unnecessarily delays egress from the bedroom and could lead to panic and further confusion. Thus, windows that achieve the required opening dimensions only by having a special sequence of operations performed upon them, such as the removal of sashes or mullions, are not permitted.*

R310.1.1 Minimum opening area.

All emergency escape and rescue openings shall have a minimum net clear opening of **5.7 square feet** (0.530 m²).

Exception: Grade floor openings shall have a minimum net clear opening of **5 square feet** (0.465 m²).

The minimum net clear opening area of **5 square feet (0.465 m²) is necessary so that fire fighters in full gear can enter through the opening.*

R310.1.2 Minimum opening height.

The minimum net clear opening height shall be **24 inches** (610 mm).

The minimum opening height for emergency space and rescue opening is **24 inches (610 mm), based on the minimum dimension of a fire fighter with full rescue equipment.*

R310.1.3 Minimum opening width.

The **minimum net clear opening width shall be 20 inches** (508 mm).

This section establishes a **minimum width of 20 inches (508 mm) for emergency space and rescue openings, based on the minimum dimension of a fire fighter with full rescue equipment.*

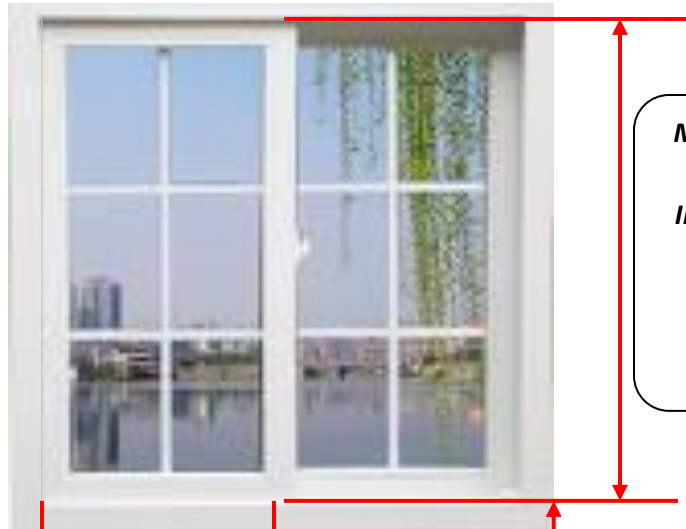
R310.1.4 Operational constraints.

Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools.

*Openings for emergency escape and rescue must be operational from the inside. **Keys or special tools must not be needed to operate these openings.** If keys or tools were necessary, they might not be readily available in an emergency or panic situation, and an individual might not be able to use them, so the opening would be unusable. Section R310.1 also requires the opening size to be obtained by the normal operation of the window. See the commentary for Section R310.1.

Minimum

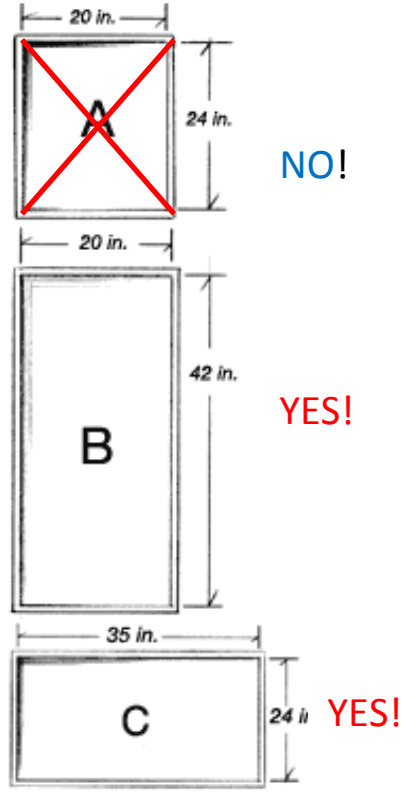
5.7 Sq. ft. above 2nd floor and 5.0 sq. ft. on grade level



MINIMUM OF 24 INCHES OF CLEAR HEIGHT WHEN OPENED

MINIMUM OF 20 INCHES CLEAR WHEN OPENED

MAXIMUM OF 44 INCHES ABOVE FINISHED FLOOR TO TOP OF WINDOW SILL



Do the math for the clear opening size:

At first glance, you might assume that a 20-in. by 24-in. window (A) would be acceptable for egress. Those dimensions would yield a net clear opening of only 3.3 sq. ft.

To achieve the required net clear opening of 5.7 sq. ft., a 20-in. wide window (B) would have to be 42 in. high.

Likewise, a 24-in. high window (C) would have to be 35 in. wide.