

Clear Opening Width and Height



From the well-known blog **idighardware.com**, Lori Greene brings some much-needed clarity to codes.

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AT THE BEGINNING OF MY CAREER IN THE HARDWARE INDUSTRY, there was a lot of confusion about how to measure the clear opening width of doors. The codes and standards weren't specific, so on doors with panic hardware, some fire marshals were taking the projection of the hardware into account when measuring the clear width.

Since then, the codes and standards have been clarified and now include instructions for how to measure the width of a door opening. Acceptable projections into the required clear opening width are also defined.

These requirements are found in the *International Building Code (IBC)*, the *International Fire Code (IFC)*, ICC A117.1, *Accessible and Usable Buildings and Facilities*, the 2010 *ADA Standards for Accessible Design*, and NFPA 101, *The Life Safety Code*. Note that the minimum clear opening width does not apply only to doors on an accessible route, but also to doors in a means of egress.

CLEAR OPENING WIDTH REQUIREMENTS:

- Doors must typically provide a minimum of 32 inches of clear opening width.
- Clear opening width is measured between the face of the door and the stop on the strike jamb with the door open 90 degrees. In many cases, swing-clear hinges may be used to increase the clear opening width by relocating the 90-degree position of the door.
- For pairs of doors, at least one leaf of the pair must provide 32 inches of clear opening width when measured from the face of the open door to the edge of the inactive leaf in the closed position. When replacing an existing pair of 30-inch doors, an unequal leaf pair is usually required.
- Sliding and folding doors in most locations must also provide at least 32 inches of clear opening width. Accessibility standards require sliding doors, including pocket doors, to have surface-mounted hardware. This hardware may prevent the doors from sliding fully open, affecting the clear opening width.
- Openings with or without doors that are more than 24 inches deep must provide a clear opening width of at least 36 inches.
- No projections are allowed into the required clear opening width between the floor and a point 34 inches above the floor. This does not necessarily mean that nothing can project off the door; it means that nothing can project into the

32-inch required clear width dimension. (Note that manual doors on an accessible route are not allowed to have any projections in the bottom 10 inches of the door height.)

- Projections into the required clear opening width of up to 4 inches are allowed between 34 inches and 80 inches above the floor. Since operating hardware is required to be mounted between 34 inches and 48 inches above the floor, hardware is not taken into account unless it projects more than 4 inches into the required 32-inch clear opening. Note that NFPA 101 limits these 4-inch projections to the hinge side of the opening, between 34 inches and 48 inches above the floor, solely for the purpose of accommodating panic hardware or fire exit hardware.
- Projections into the clear opening width above 80 inches are not typically limited.
- Some occupancy types require a greater clear opening width. For example, hospital doors used for the movement of beds are required to provide at least 41½ inches of clear opening width.
- The IBC and IFC limit the *maximum* width of an egress door to 48 inches. This dimension is not the maximum clear opening width, but the maximum door size. This maximum dimension has been removed from recent editions of NFPA 101.
- There are exceptions within the codes for some applications. Refer to the code excerpt for the exceptions included in the IBC (see sidebar, this page).

The codes and standards also include a requirement for the minimum clear opening height. The minimum headroom requirement is typically 80 inches nominal above the floor, with an allowance for the projection of the stop on the frame head. Most publications have an exception for a door closer arm or an overhead stop arm, which is allowed to project down into the required headroom as long as a dimension of 78 inches of headroom is maintained. Other projections, such as electromagnetic locks, are not currently addressed in the codes and standards.

There are some exceptions to the requirements for the 32-inch clear opening width and 80-inch clear opening height, but typically these are the dimensions to keep in mind when specifying or supplying doors and hardware on an accessible route or in a means of egress. Consult the applicable codes for exceptions. 

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International Building Code (IBC)

1008.1.1 SIZE OF DOORS. *The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of 32 inches (813 mm). Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in a Group I-2 occupancy used for the movement of beds shall provide a clear width not less than 41½ inches (1054 mm). The height of door openings shall not be less than 80 inches (2032 mm).*

Exceptions:

1. *The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in Group R-2 and R-3 occupancies.*
2. *Door openings to resident sleeping units in Group I-3 occupancies shall have a clear width of not less than 28 inches (711 mm).*
3. *Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width.*
4. *Width of door leaves in revolving doors that comply with Section 1008.1.4.1 shall not be limited.*
5. *Door openings within a dwelling unit or sleeping unit shall not be less than 78 inches (1981 mm) in height.*
6. *Exterior door openings in dwelling units and sleeping units, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.*
7. *In other than Group R-1 occupancies, the minimum widths shall not apply to interior egress doors within a dwelling unit or sleeping unit that is not required to be an Accessible unit, Type A unit or Type B unit.*
8. *Door openings required to be accessible within Type B units shall have a minimum clear width of 31.75 inches (806 mm).*