Estimating the Size for Egress Windows
Jack M White

In addition to providing light and ventilation, windows can be used as emergency exits in the case of, well, emergencies. Windows explicitly designated for this purpose are known as “egress” windows and must meet certain criteria. The following will briefly explain the egress window criteria and provide a means of estimating the required size.

Generally, building codes state that “basements and sleeping rooms below the fourth story above grade plane shall have one emergency escape and rescue opening” that opens into a “public way or to a yard”. In the case of windows, they must be operable from the inside without the use of tools. Security bars installed over windows must have a release mechanism that is able to be released without the use of a key or “special knowledge”.

Escape exits must have a “net clear opening” of 5.7 square feet. The minimum width for windows designated as escape exits is 20 inches and the minimum height is 24 inches. In the case of a horizontal slider window, the effective minimum width is 40 inches. The bottom of these windows must be less than or equal to 44 inches from the floor. Please note that, in special cases, the “net clear opening” of an emergency escape window may be reduced to five square feet. Always consult the relevant building codes and/or authorities before making a determination.

At this point, the question has probably been asked “what is the net clear opening?” The net clear opening is the open space that results from “normal operation of the window”. In the case of a double hung window, this opening would come about by fully opening the bottom sash. In the case of a casement window, this opening would come about when the sash is fully cranked out. In the case of a horizontal slider, this opening would come about by fully sliding over one of the operable sash.

When determining whether a window meets the egress requirements, the following estimation calculation can be used.

$$NCO = [((Width * Height)/144)/2] * .85$$

In the above notation, NCO is the net clear opening, $Width$ is the window width in inches, and $Height$ is the window height in inches. It should be apparent the $Width * Height$ calculation computes the square inches of the window and dividing this product by 144 converts this to square feet. The square feet of the window product is divided by two to estimate the area of one operable sash and this is multiplied by .85 to account for the fact that the whole area of the operable sash cannot be used for escape purposes. As indicated above, if the net clear opening exceeds 5.7 square feet, the window can be used for escape purposes (the window meets the egress requirements).

The following is an example calculation.

$$NCO = [((36*48)/144)/2]*.85$$
$$= [(1728/144)/2]*.85$$
$$= (12/2)*.85$$
$$= 6*.85$$
$$= 5.1$$

Given the egress requirement of 5.7 square feet, this window could not be used as an escape exit. Please keep in mind that this calculation is applicable for double hung windows and horizontal slider windows. The net clear opening for a casement window is a bit different.

The net clear opening for a casement window is calculated using the area of a triangle using the window width as the base and the window height as the height. As a refresher, the formula for the area of a triangle is the following.

$$Area = .5 * Base * Height$$

Given a window size of 36 inches by 48 inches, the triangular area would be $.5*36*48 = 864$. This is in square inches. Converting to square feet would provide the following: $864/144 = 6$. Taking in to consideration that this entire area could not be used for escape, the following is obtained: $6*.85 = 5.1$. Given the egress requirement of 5.7 square feet, this window could not carry the egress designation.

And with that, the written explanation for estimating whether a window meets egress requirements is complete. The following is a graphical depiction of what was discussed above.