

Seeing things clearly

19 January 2017

Continuing his series from Australia, Mark Anderson looks at emergency lighting

The 2016 [amendments to the Australian National Construction Code](#) have clarified [the Council of Australian Governments](#) intent for emergency lighting and signs.

A building needs to be provided with a system that ensures sufficient visibility to enable exits, paths of travel and any obstacles to be identified, and this system should also activate instantaneously on the failure of artificial lighting.

Verification

The verification method outlined in the code states that illumination of 0.2 lux is required at floor level in the path of travel and 1 lux in a fire-isolated stairway at tread level; the former is equivalent to full moonlight and the latter to a candle at 1 m distance in darkness.

Verification can take the form of calculations, which in my opinion should be peer-reviewed and consist of on-site testing with lightmeters.

The normal calculation technique is the lumen method, which determines the average illuminance on the flat surface and makes some broad assumptions regarding lumen output deterioration coefficients, the use factor and maintenance factor. This verification can also be carried out by 3D modelling.

Nevertheless, this level of luminance may not be good enough for those who are visually impaired. Vision Australia [estimated in 2013](#) that there are 357,000 people in the country who are blind or who have limited vision. It is therefore important to consider whether the building way-finding system ensures that the level of illumination provided enables adequate means of egress for such people.

Emergency exit signs

Only [38% of people register the presence of an emergency exit sign](#) during an emergency. It is not known how useful the 'running man' signage is in such circumstances to those who have limited vision, but a visually impaired person who does not know the building may become confused, and this can lead to unsafe situations.

Improved exit signage especially in stairways, stating the level and location is already required, but the need for enhanced signage for those with limited vision should be investigated. The need for enhanced signage has been acknowledged by the [Australian Building Codes Board](#), and although it strives towards better regulation, it has not fully addressed issues relating to visual impairment. It would seem prudent to adopt more stringent regulation so that disabled persons unfamiliar with the building layout are able to

evacuate using a tactile map, or another way-finding method such as audible signage.

If considering such approaches, it would be beneficial to adopt [ISO16069](#) for safety signs and way-finding guidance systems, which would ensure that the design function provides for visual reinforcement, location, visibility and colour, and avoids confusion at junctions.

Approaches adopting graphical information such as the running man sign, directional arrows, guidance lines on walls, floor markings, door-handle markings and stair-nosing strips [have been proven to help](#) those who have reduced vision.

Figure 1: Standard 'running man' signage for exit

The international standard for exits is the running man symbol (see Figure 1). If an internationally recognised symbol for the disabled were also adopted, this would reinforce existing symbols and be more inclusive. The addition of accessible signs may also help, enabling accessible egress routes to be identified.

Audible signage

Audible signage provides a visually impaired person with relevant verbal information to allow rapid movement, and has been shown to provide safer and easier egress from a building. Directional sound evacuation systems have also been developed to help visually impaired users find exits in the event of emergency, as well as helping unimpaired users should smoke obscure the illuminated sign.

It may also be possible to have smartphones and other mobile devices access the building management system so they can be used as a way-finding system, which would enhance safety during an evacuation.

While the regulations require adequate illuminated egress and way-finding for the majority, they fail to address satisfactorily issues faced by those with visual impairment. With the use of new technology, these issues could be solved easily.

Mark Anderson is a senior building certifier at [KPMGSGA](#)

Further information

This feature is taken from the RICS *Building control journal* (November/December 2016).