OPENING THE DOOR ON A NEW AGE OF COMMUNITY LIVING

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INTRODUCTION

Like in other developed countries, the Australian population is rapidly ageing. The Australian Institute of Health and Welfare reported that in 2016, 15% of Australia's population (approximately 3.7 million Australians) were aged 65 or older. The Australian Bureau of Statistics predicts that this trend will continue, estimating that by 2040, 20% of Australia's population will be aged 65 or older[1] and the number of people aged 85 or older will have tripled.[2]

As the population gets older, the aged care home and retirement community sector should see marked growth. A Deloitte report showed that the aged care sector expanded significantly in 2014-2015, generating $13.5 billion in revenue.[3] With increased numbers of Australians choosing to spend their retirement in aged care communities, designers and developers are under pressure to deliver facilities that offer maximum resident comfort, ease, safety and independence. To successfully meet these requirements, all aspects of the design of such communities must be carefully considered, especially basic yet essential elements such as windows and doors.

In this whitepaper, we take a detailed look at the role of doors and circulation spaces in maximising safety and quality of life in aged care communities, providing designers with the essential guidance they need to effectively and efficiently specify these elements in full compliance with Australian Standards.

UNDERSTANDING AS 1428.1 – DESIGN FOR ACCESS AND MOBILITY

Designers must ensure that doors, doorways, and circulation spaces in community living environments comply with Australian Standards, specifically AS 1428.1-2009 – Design for access and mobility.

AS 1428.1 provides guidelines for threshold ramps, door openings, luminance contrast and other visual indicators and door controls, which must be followed when specifying for aged care facilities. Some of the key guidelines include:

- Threshold ramps at doorways must be within 20mm of the relevant door leaf and have a maximum slope of 1:8 rise, with a tapered or splayed edge at no more than 45°. These ramps can have a maximum rise of 35mm and length of 280mm. These requirements ensure ramps provide easy access for people in a wheelchair.

- Door openings are required to have a minimum clear opening of 850mm. From a design perspective, this provides sufficient room for a swinging door while allowing enough space to accommodate a person with a wheelchair or other similar assistive devices.

- Luminance contrast of 30% is the minimum required between the door leaf and door jamb; the door leaf and adjacent wall; the architrave and wall; the door leaf and architrave; or the door jamb and adjacent wall. A minimum 50mm width area of luminance contrast is required for new doorways. Luminance contrast is a key consideration for vision-impaired end users and the minimum contrast is required to ensure there is clear visual delineation between all of elements of a door system.

- Visual indicators on glazing are specified in AS 1428.1 where no rail or transom is present, and the door or sidelight is frameless, fully glazed or otherwise capable of being mistaken for an opening. In such cases, visual indicators on glazing must provide a luminance contrast of 30%; be at least 75mm wide and span the full width of the panel; and have a lower edge between 900mm and 1000mm above the floor.

- Door controls must be non-slip and allow single-handed operation. Door controls must also have a clearance of 35-45mm between the handle and the door face. Push-button door controls must have a minimum 25mmm diameter and allow for door activation before the button is flush with the surrounding surface. A maximum force of 20N to open, swing, slide or hold a door open is also required by AS 1428.1 where a door closer is fit.

The guidelines set out in AS 1428.1 ensure that door systems can accommodate a wide range of end users and physical abilities.

External doors must also comply with AS 2047-2014 – Windows and external glazed doors in buildings, which also requires compliance with the relevant glass Standard, specifically AS 1288-2006 Glass in buildings – Selection and installation. These Standards cover the technical performance of glazing in terms of:

- maximum deflection under wind load;
- ability to be opened and closed without undue effort;
- air leakage, which affects energy and acoustic performance;
- watertightness; and
- resistance to high wind conditions.

Compliance with AS 2047 is typically presented by way of a sticker adhered to the frame or, if no sticker is present, the manufacture should be able to supply a Certification Certificate on request.

FURTHER CONSIDERATIONS

Ergonomics
Important factors when specifying door systems are door handles and grip. This is especially the case in aged care facilities as grip strength declines with age.[4] Any door controls that require gripping, turning or excessive force to operate will not be suitable for community living environments. Arthritis sufferers, which represents approximately 3.9 million Australians according to Arthritis & Osteoporosis NSW,[5] may have a difficult time operating certain door controls, such as chain winders.

The door operating force of 20N required by *AS 1428*.1 is for when door closer is fitted. Door operating force needs to be adjusted with the door closer until 20N is achieved. In addition, designers and specifiers should ensure that door controls are clear and easy to operate. There are also several ways to reduce the operational force requirements such as, for example, carefully specifying door sizes; smaller doors are often lightweight, making them easier to operate than larger, heavier door systems.

Opening type
In New South Wales, the *NSW Land and Housing Corporation - Design Standards 2014*[6] mandated that all operable windows have keyed locks and a 100mm restricted opening. They must also comply with the fall prevention test in *AS 5203-2016 Protection of openable windows/fall prevention - Test sequence and compliance method*. Restricted openings enhance occupant safety by reducing the risk of falls out of the window, but such openings can limit fresh air and engagement with the outside world. To ensure a high level of comfort and quality of life, designers may consider larger windows to expand outdoor views and larger openings to address air flow.

Designers must also consider various window types. For those with limited strength and mobility, horizontal sliding doors are easier to operate than doors that are vertically oriented. The Victorian Department of health recommends horizontal sliding doors for use in residential aged care services.[7]

Automation
Advances in technology have allowed for the emergence of automated sliding doors and windows. Such doors and windows are opened or closed in response to integrated motion sensors, making them an ideal solution for facilities where the mobility and strength of end-users is a concern. Automated door systems eliminate any concerns regarding ergonomics or operational force.

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CONCLUSION

Capral
In operation since 1936, Capral is Australia's foremost manufacturer and distributor of aluminium profiles. The Capral range of products is renowned for high quality, durability and outstanding functionality, offering a wide range of products, from door and window framing to complete building systems and industrial solutions.

Capral's broad product offering is supported by world-class extrusion plants and an extensive distribution network. With an ongoing commitment to innovation and quality, the company boasts a strong in-house research and development department.

Capral Aluminium Community Living
Responding to Australia's ageing population, Capral has expanded its range of glazing solutions to meet the specific needs of a new age of community living. These new solutions have been designed to cater to the needs of older users of all levels of physical ability, including those living with disabilities or other health issues.

Offering superior performance, energy efficiency, acoustics, security and sustainability, Capral's Community Living range includes solutions for doorways, doors and circulation spaces within retirement homes and communities. Leveraging the company's extensive knowledge and expertise, this new range delivers maximum resident comfort, ease, safety and independence.

Framing
With a clean, modern and uniform external appearance, the 400 Narrowline and 419 Flushline Aluminium Framing Systems suit most building and architectural applications while delivering maximum design flexibility. The 400 Narrowline framing system is the standard for centre glazed framing, with an aesthetically balanced look, bevelled or square finish options, a wide range of mullion and transom options and high levels of structural performance.

The 419 Flushline is a flush glazed framing system that comes in a range of frame depths including 100mm, 150mm and 250mm in both single glazed and double glazed options ensuring it can be scaled to the requirements of any project. The 419 Flushline system can incorporate glazed mullion profiles as well as several operable door and window options. Double glazed and thick glass options are also available for compliance with all energy rating requirements.

Doors
The 900 High Performance Sliding Door and 225 Series Door achieve the ultimate combination of architectural style and performance. The latest generation in commercial doors, the 900 High Performance Sliding Door offers superior performance and design flexibility with panel sizes up to 3000mm in height and 2500mm in width,including multi-stack configurations. Built with high quality hardware including heavy duty rollers and locking options, this door system has been used in many commercial and residential projects including some in cyclonic regions.

The 225 Series Door is versatile with it's pocket glazed commercial door panel available in hinge, pivot and sliding configurations. Suitable for a wide range of applications, the door can be fitted with single or double-glazed units, with options for standard and wide stiles. The 225 Series Door is compatible with an extensive range of locks and furniture, and can be incorporated easily into the full range of Capral framing systems.

Windows
The 950 Sliding Window and 50 Awning/Casement Window Systems are engineered to deliver structural excellence a with high performance roller and locking hardware. Complimenting the 900 High Performance Sliding Door, the 950 Sliding Window has been tested to meet requirements of up to cyclonic regions and offers design flexibility in terms of sash size and configuration. Providing a clean, modern aesthetic with outstanding functionality, the 950 Sliding Window can meet a range of performance demands and is available in single glazing or double glazing for improved thermal comfort.

The 50 Awning/Casement Window is a high performance commercial window that can be installed either as operable awning or casement sash. Suitable for a range of different architectural applications, the 50 Series Window can be incorporated into a variety of Capral framing systems in single or double glazed options.

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