# Australasian Health Facility Guidelines

## Part C - Design for Access, Mobility, OHS and Security

## C.0004 - Human Engineering



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**Australasian Health Facility Guidelines**

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# 04 HUMAN ENGINEERING

## 04.01 General

**PEFORMANCE REQUIREMENTS**

Comply with the relevant legislation, regulations, codes and policies for each jurisdiction, including:

- BCA - Building Code of Australia (including amendments)
- OHS - Occupational Health and Safety Acts and Regulations
- DDA - Disability Discrimination Act
- State or Territory jurisdiction level anti-discrimination legislation as applicable.

Note 1: The BCA requires access to and through a healthcare facility to meet AS1428.1 (Stds Aust 2010) unless provision of access is considered to be inappropriate to the particular use. Disability discrimination legislation reinforces this requirement but may reference or advise a preferred compliance with AS1428.2 (Stds Aust 2010).

Note 2: Exclusions are conventional sanitary facilities. There are particular requirements for accessible facilities and for areas where people with relevant disabilities are excluded usually for OHS reasons.

**GENERAL**

The subject of Human Engineering covers aspects of the design that permit effective, appropriate, safe and dignified use by all people including those with disabilities. It includes occupational ergonomics which aims to fit the work practices, FF&E and work environment to the physical and cognitive capabilities of all people.

As the requirements of Occupational Health and Safety (OHS) and anti- discrimination legislation will apply, this section needs to be read in conjunction with the section on Safety and Security in these guidelines in addition to OHS related guidelines.

The Building Code of Australia Part D covers some aspects of access for persons with disabilities. The Disability Discrimination Act unlike the BCA is a complaint based instrument. Section 23 covers discrimination in relation to means of access to, and within, premises (Commonwealth of Australia 1992).

Where the BCA or any other law and the DDA cover the same issue, the more demanding requirement or broader interpretation will apply in addition to the mandatory requirement [AHRC]. Seeking expert advice is advised for interpretation of the DDA in relation to accessibility matters.

AS1428 Design for Access and Mobility covers various aspects of design for people with disabilities. AS1428 is often referred to in these guidelines and should be followed in relevant areas. Human Engineering for able bodied persons also requires careful consideration. Some of the common issues are covered in this section.

There is increased public awareness of barriers that make reasonable utilisation of facilities difficult or impossible for the physically impaired. A healthcare facility will have a high proportion of occupants, patients and visitors who are unable to function without some form of assistance. Some staff may also be impaired. To ensure minimum patient dependence on staff and others, consideration should be given to designing for optimum patient independence and enhanced staff productivity.

Consideration should be given to the wide range of disabilities including:

- mobility impairment;
- visual impairment;
- hearing impairment;
- cognitive impairment e.g. patients with brain injury or dementia; and

- mental illness.

In addition, cultural and literacy issues should be considered as they can impact on access and safety.

Design buildings and services to acknowledge and address the needs of a wide range of users including:

- able bodied people;
- bariatric visitors and patients;
- clients being assisted by one or more people e.g. a reluctant mental health patient;
- clients and visitors with baby prams, carrying or walking with young children;
- staff pushing beds, patient trolleys, other wheeled equipment;
- clients and visitors with a walking frame or other mobility aid such as a stick or using a wheelchair independently;
- clients and visitors with impaired vision;
- clients and visitors with literacy issues;
- staff who may have a permanent or temporary disability; and
- maintenance staff needing access to engineering plant.

## 04.02 Planning

To minimise overall costs and to avoid the need for expensive modification of finished work, initial designs should include specific consideration of the needs of the physically, visually, hearing and mentally impaired. The majority of requirements can be easily accommodated during the planning stage at little or no additional cost. Modifications required at a later time may be prohibitively expensive or impractical.

## 04.03 Australian Standard 1428

AS1428: Design for Access and Mobility parts 1 to 4, covers the issues of access for people with disabilities, and particular attention is given to access ways and circulation (Stds Aust 2010). Continuous traffic paths are required for use by people using wheelchairs. Provide facilities for people with ambulatory disabilities and for people with sensory and cognitive disabilities.

The sections of AS1428 (parts 1 and 4) referenced by the BCA are mandatory. AS1428.2 contains more inclusive provisions and extends to elements beyond the compass of the BCA including furniture and fittings. AS1428.3 is seldom referenced being reserved for facilities designed exclusively for children and adolescents with disabilities.

Consider omitting on-ground tactile indicators in certain situations as these may cause tripping for users with walking frames, sticks, impaired gait, etc and an adverse affect on patients with spinal problems transported by trolley over these raised indicators.

These guidelines require that a minimum number of rooms be sized and designed for use by people with disabilities regardless of the anticipated number of patients with disabilities. These are covered in the relevant sections of the HPU in Part B.

Note: AS1428 parts 1 and 2 address identical building elements but nominate different criteria for them. The latter is more inclusive and may be preferred as a basis for design to suit the widest number of people with disabilities. Compliance with AS1428.2 will also achieve compliance with AS1428.1. The differences apply to:

- width of path of travel;
- distance between landings at ramps;
- range of handrail heights;

- clear width of doorway openings; and
- circulation space at doorways and sanitary facilities.

**DEPENDENT PATIENTS**

AS1428 primarily considers access by people with disabilities who are independent. Give consideration to access by people who are physically dependent and who may be assisted by one, two or more people and/ or who may be transported on a bed or trolley. These considerations will have significant implications for the slope, clear width and turning circles on ramps, clear width of doors and corridors, size of lifts and vehicle access.

## 04.04 Handrails and Grabrails

Provide grabrails and handrails as required by the BCA as a minimum. In addition provide these for the purposes of patient / visitor safety and assistance in mobility. Locations and layout in patient care and public areas should be determined by risk analysis.

The design, sizing and fixing of grabrails and handrails should comply with AS1428 parts 1 and 2 as applicable e.g. withstanding applied forces of 1100 N, clearances, etc.

Care should be taken to ensure the elimination of hand obstruction, and free ends that may snag clothing, equipment or cause head injuries to children.

Grabrails, handrails, vertical adjustable shower supports, towel rails, soap holders, footrests and any other fixture that may be used for support should have sufficient anchorage and strength to resist the sustained concentrated load of a falling and heavy person.

Consider the design of grabrails in areas such as emergency departments and mental health units where patients may self-harm, and where aged patients and comorbidity are issues. Only approved anti-ligature fittings should be fitted.

Refer to Section 710 - Corner guards and crashrails.

## 04.05 Ramps

The minimum requirements for pedestrian ramps for egress and accessibility in class 9a, patient care areas and other classifications are covered by the provisions of the BCA section D, and in AS1428 parts 1 and 2. The intent and objectives of The Disability Discrimination Act should also be considered with regard to routes affected by the location of ramps (Commonwealth of Australia 1992).

Pedestrian ramps may be required for general facility circulation activities such as moving beds, ambulance trolleys and other equipment between different levels. The design should also satisfy OHS and manual handling requirements e.g. wider ramps, longer landings and reduced gradients. Refer to Section 710 - Ramps.

Ramps in other areas such as service vehicle, goods handling and loading areas should comply with good design and safety practices, Australian Standards (where applicable) and be fit for purpose e.g. use by pallet movers, tugs, trolley trains, fork lift, etc. Where these ramps also serve an egress or accessibility function the BCA, AS1428, as referenced by the BCA, and DDA intent and objectives will apply.

Note 1: To avoid possible disability discrimination issues consider locating ramps as closely as possible to stairways and/or lifts serving the same levels and not using ramps to connect levels greater than 3.5 metres apart.

Note 2: Consider designing ramps providing pedestrian access to meet AS1428.2 enhanced / additional requirements.

Vehicle ramps including curbs, crash barriers / rails, signage, etc should comply with the relevant Australian Standards and other relevant traffic or local authority regulations. Vehicle ramps should not be relied upon for pedestrian movement.

## 04.06 Staircases and Balconies

All open staircases, balconies, mezzanines, suspended walkways, etc pose a risk of injury from falling to patients, children and others, including patients intending self harm. Address this issue and also design to prevent objects falling or being thrown which may injure people at lower levels.

Stair design is governed by the BCA. However, ensure ease of use for patients and visitors by appropriate selection of tread and riser dimensions within the formula provided.

Treads should be slip resistant without causing tripping. Any non-slip inset or applied strips or nosings should not cause a trip hazard. Luminance contrast for tread edges should comply with AS1428.1 and stairs should be adequately lit.

Consideration should be given to passive security measures such as the removal of concealment spaces through the use of natural light and providing increased visibility for users.

Note 1: The BCA distinguishes between ‘required’ stairs e.g. for egress and ‘non-required’ stairs, ramps, etc with differing requirements.

Note 2: Consider designing to AS1428.2 to enhance accessibility.

### BALUSTRADES AND HANDRAILS

Provide balustrades and handrails as required by the BCA, and to meet the objectives and intent of the DDA. In addition to BCA requirements, all stairs for use by patients and visitors should be provided with continuous handrails to both sides of the stairs.

In addition the design should incorporate the relevant requirements for risk factors identified through risk assessment analysis under AS/NZS ISO 31000:2009 (Stds Aust 2009).

Note: It may be considered necessary to increase the minimum BCA heights for balustrades and barriers.

## 04.07 Overview

Design and built facilities to minimize negative risk to patients, staff, visitors and maintenance personnel in accordance with AS/NZS ISO 31000: Risk Management (Stds Aust 2009).

Badly designed recurring elements such as workstations and the layout of critical rooms have a great impact on the Occupational Health and Safety (OHS) of staff and the welfare of patients.

Designers should be vigilant to ensure that designing out one risk doesn’t result in the introduction of another e.g. in designing out a security risk do not create creating a manual handling risk.

The field of Ergonomics covers some aspects of the design of objects for common use. Research indicates that there is disagreement on some aspects of ergonomic standards such as the best sitting posture or angle of view for monitors but on most ergonomics issues there is broad agreement.

It is not appropriate for any standard to be regarded as ideal for every person. It is also unreasonable to expect all items to be designed in such a way that they can be adjusted for all users.

Given these limitations, the role of ergonomics standards is to provide a reasonable and common base for design. It is strongly recommended that the actual design allows for modification or provides a choice of amenity.

The recommendations included in these guidelines are those commonly required in healthcare facilities and apply generally to purpose made and built-in furniture items. Purchased items will be subject to the purchasing policies of each jurisdiction.

For items covered and not covered in these guidelines, it is highly recommended that reference is made to the following as appropriate:

- AS Handbook 59: Ergonomics - The human factor, A practical approach to work systems design (Stds Aust 1994a)
- AS1428: Design for Access and Mobility - Part 2: Enhanced and Additional Requirements - Buildings and Facilities (Stds Aust 2010)
- AS3590.2: Screen-based Workstations - Part 2: Workstation Furniture (Stds Aust 1990)
- AS/NZS4443: Office Panel Systems: Workstations (Stds Aust, 1997b).

A workplace occupied by a single user for extended periods of time should be capable of adjustment or modification to suit that user.

Facilities used more casually by a variety of users should be designed to anticipate their various needs. The opinion of specialist ergonomists or OHS professionals may be necessary in particular cases.

Conventional work surface heights for seated users are not suitable for people who use wheelchairs and in this case dual-height surfaces should be provided. In addition to the references nominated above, see AS1428.2 Section 24 Furniture and Fitments (Stds Aust 2010).

Bench heights and widths in laboratory and similar work areas should be designed taking into account the type of work to be performed. Refer to AS/NZS2243: Safety in laboratories, Part 1: Planning and operational aspects (Stds Aust 2005).

## 04.08 Staff Station

### GENERAL

A Staff Station may be used for a variety of purposes:

- a clerical workstation;
- reception;
- staff base;
- reporting station or sub-station; and
- clinical observation with a level floor.

Part of a typical Staff Station may be used as a workbench or workstation. For ergonomic recommendations, refer to the appropriate sections of this guideline.

### DESIGN

Staff stations with high and low counters serve a number of different and often conflicting functions. For example:

- separation of public and staff for staff safety, security of information and desktop items, etc - provided by a front panel and top counter overhang; and
- enabling of communication, passing of items depending upon overall counter depth/reach, a surface for patients to write, including use by persons with disabilities including staff and others.

Some of these multiple functions are often solved by varying parts of the staff station to suit particular functions such as wheelchair usage.

Typically, the height of the front panel, the depth and projection of the top counter, and the worktop depth compete for the different functions.The ergonomic and OHS requirements for keyboard and screen use will dictate worktop depth and top counter projection back over the worktop. The use of flat screens overcomes

excessive overall depth and cross counter reach problems caused in the past by CRT displays units. See Screen Based Equipment.

Note: Attention should be paid to the placement of overhead high-intensity down-lighting especially in reception areas as these may be reflected in the rear surface of eyewear worn by counter staff causing an OHS problem.

#### RISK MANAGEMENT

OHS risk assessment should be undertaken with respect to the staff station design and the placement of equipment within the zone of frequent use e.g. paging computer, reception switchboard, nurse call and other frequently used equipment, items and actions.

Testing using existing units or informal, temporary mock-ups is recommended to avoid the inconvenience and cost of rectification.

The recommendations that follow are within the dimensional ranges recommended in AS3590.2: Screen-based workstations - workstation furniture (Stds Aust 1990). It should be noted that the latter are based on the use of CRT type monitors - now generally replaced by LCD flat-panel display units with a shallower average depth.

## 04.09 High Counter

#### DESIGN

A high counter is used to shield objects, equipment and records from inappropriate viewing. A high counter may also provide a convenient writing surface for visitors and staff, and may be referred to as a parcel shelf or service counter. A high counter used for direct interaction between staff and visitors or patients should be designed to allow for the transfer of objects across the work surface without excessive reaching becoming necessary.

Flat panel displays should be used with an effective work surface width of 750mm. The use of CRT displays is not recommended as these require excessive width.

In conjunction with a work surface designed at 720mm above the floor, the recommended height of the top counter is 1150mm above the floor. This height will allow a seated person sufficient privacy to work whilst being able to see visitors who are standing or sitting. According to AS 3590.2, the recommended maximum height to the top counter above floor level is 1200mm above the floor level (Stds Aust 1990).

Take care when determining the counter design as high counters can make it difficult for staff and clients to communicate, especially where the client is of short stature, a child, in a wheelchair or if the client or staff member is hearing impaired. This can exacerbate the risks of frustration and aggression. High and wide counters can also create risk and difficulties for staff who do not fit into the average percentile design range for height and reach.

Security risk assessments to AS/NZS ISO 31000 should form the basis on which to determine the type of mitigation works / security treatments required e.g. whether to have barriers or the type of barrier (Stds Aust 2009).

## 04.10 Wheelchair Access

Apply the requirements of AS1428.2 clause 24 to the public / patient side of the Staff Station and reception counters by providing dual surfaces 730mm and 850mm high. Finished tops, heights and clearance beneath for adjustable, single and double unit instances in addition to knee and foot clearances and limits of reach are also covered.

## 04.11 Low Counter

In some situations, a lower counter at which staff and patients sit may be considered. These have the advantage of creating a more intimate situation.

They are easily accessed by people of all heights and those who may be in a wheelchair. It has also been stated that people are less likely to become aggressive and physically threatening when they are seated.

## 04.12 Security Barriers

### PERFORMANCE REQUIREMENTS

All counters provided for public / staff interaction should be subject to a security risk assessment to AS/NZS ISO 31000: Risk Management (Stds Aust 2009). Ensure appropriate security / risk mitigation treatments are implemented.

Where it is necessary to provide a security barrier at a counter, the design including associated access doors should allow for the type of interaction required including:

- the transfer of small objects and speech;
- accessibility standards e.g. ergonomic, hearing / vision impairment;
- the needs of special user groups e.g. mental health, cognitive impairment;
- OHS and security requirements;
- passing large or special objects e.g. pharmacy; and
- transfer of mobile transfer equipment/containers e.g. goods, cash.

The barrier may be an open grille, glazed, or some other material / method e.g. monitor / intercom. If an operable security grille or similar device is provided, ensure that the function and operation complies with OHS and duty of care requirements.

The design of the barrier should be fit for purpose e.g. protects counter-staff from thrown objects / liquids or attack with an object or weapon. Glazed screens should comply with AS2208: Safety glazing materials in buildings (Stds Aust 1996) and AS/NZS2343: Bullet resistant panels and elements, as required (Stds Aust 1997a).

Refer: Section 790 - Safety - Screens and Grilles.

## 04.13 Workbench

### GENERAL

Workbenches may be designed for two typical work practices - sitting position or standing position. For example, some nursing staff may prefer the workbench in a Staff Station to be used in the standing position or high sitting position, whilst some staff prefer the lower sitting position. Both options are equally valid and acceptable, however the ergonomic standards for the two will vary.

### SITTING POSITION

A workbench surface used in the sitting position should be 730mm above the floor. See options under AS1428.2 clause 24 (Stds Aust 2010). With a recommended minimum depth of 750mm, this will accommodate the use of a keyboard with a flat panel display, other desktop equipment and provide for future changes in use.

Note: A minimum depth of 600mm is adequate for casual use of notebook computers e.g. write-up bays, lounge areas, etc.

### STANDING POSITION

This position suggests that the primary use of the workbench will be in the standing position. However allowance may be made for the use of this type of workbench while sitting.

If the bench is almost exclusively used in the standing position with a requirement for occasional typing, the bench height of 1000mm above the floor is recommended. If the bench is mostly used in the standing position with occasional typing in the sitting position, a bench top height of 900mm is recommended. The first option is most often requested for staff stations, reporting stations and smaller reception counters. The second option - 900mm - is most often used in utility rooms, laboratories, beverage bays, kitchens and similar areas.

#### FOOT SUPPORT

The use of footrests in the sitting position is recommended as required. Chairs used at workbenches used in the standing position should have foot support rings and be height adjustable.

#### BENCH SUPPORT

A workbench should be able to support the weight of persons sitting or standing on it, in addition to any equipment located there.

## 04.14 Screen Based Equipment

#### GENERAL

Screen based equipment (SBE) and personal computers are used in a variety of ways. It is difficult to dictate a particular position to suit all people. The following guidelines represent the most typical preferences and standards.

Design of SBE workstations should be considered in conjunction with planning for FF&E. Reused computers may differ from new equipment and the design of the workplace should respond to the actual equipment used.

#### COMPUTER SCREENS/MONITORS

The term VDU (visual display unit) used in AS3590.2 relates to CRT (Cathode Ray Tube technology). CRT displays have now generally been replaced by flat panel display units, also referred to as screens or monitors (Stds Aust 1990).

Older CRT VDUs require a deeper worktop with a consequent reduction of work surface depth. In most cases these units have now been replaced by newer technology.

#### SCREEN POSITION

The exact horizontal location of the screen should be adjustable to suit different users. The vertical position of the screen will depend on the height of the user. For recommended location and viewing angles refer to AS3590.2 (Stds Aust 1990).

#### LAPTOP / NOTEBOOK COMPUTERS

Worktops should generally be designed to accommodate a separate keyboard and flat panel display. Although the use of laptops is common, any proposed reduction in design standards should be carefully considered.

It is recommended that laptops used for frequent or prolonged typing should be used with a separate keyboard and mouse, and preferably connection to a normal size screen. Local area network (LAN) access may be wireless or by connection to a data outlet.

Security issues should be considered in the selection of laptops. Their use in areas accessible to the public should be carefully considered with locking cables and devices provided.

## 04.15 Workstation - Typical

These guidelines apply to the typical L-shaped workstation as well as desks with or without a return.

Workstations for screen based equipment are covered by AS3590.2: Screen- based workstations - Workstation furniture. However, AS1428.2 clause 24 should take precedence for user accessibility. Reduce the worktop depths as required by AS3590.2 if flat screen displays are to be used - see below.

A median height of 730mm is recommended for a fixed height work surface. For screen based work while in a seated position, AS3590.2 provides for 680mm - 720mm. For adjustable worktops the height range can vary from 660mm - 840mm, and 610mm to 1010mm depending on the product. One height will not suit all users. It is strongly recommended that flexibility be built into the construction if adjustable-height units are not installed.

To accommodate a keyboard and flat panel display a 750mm deep work top is recommended. If a CRT monitor is required (non standard) increase the work top depth to 900mm.

The depth of the return to the main work surface may be between 450mm and 750mm with 600mm as a general standard to accommodate under bench storage and file / drawer units.

A standard recommended configuration for a workstation includes one work surface of 750mm wide and one work surface of 600mm wide. The use of 750mm for both work surfaces should be considered to allow for flexibility in use and the accommodation of computer peripheral equipment. It is important to allow a computer position that does not require a person to sit with their back to the door, especially where this may be a security risk.

If a computer is positioned in the corner, angle the corner with a minimum dimension of 400mm wide. Refer to AusHFG Standard Components: Office - workstation.

Design workstations with adequate knee space to allow for turning without obstruction. A modesty panel should be included in some locations. Round edges if one end of the workstation forms a meeting table.

Provide workstations with a safe cable management system. The simplest will involve an open tray under the work surface. In proprietary workstations, electrical and data wiring may be internally run with outlets above the work surface. Alternatively these outlets may be on the adjoining wall at a height of 550mm above the floor level with access to the work surface via the cable tray and a cable access cap.

Comply with the relevant regulations and Australian Standards for all services and connections built in or connecting to workstations. Adequate power and data connections should be provided to avoid the use of adaptors, etc. Surge protection should be provided to distribution boards supplying computer and associated equipment.

## 04.16 Shelving

**GENERAL**

Shelving should be fit for purpose and adequately address all issues of depth, reach, spacing, strength and cleaning. See General Performance requirements.

Shelving described in this section may be in the form of joinery shelf units, adjustable wall strip systems, upright medical record and filing systems, metal racking products, pharmacy systems or similar devices and shelves within a cupboard.

The location of shelving should not adversely affect any other functions e.g. clearances over work surfaces, use of wheeled bins (lid opening), door swings, effective cleaning, etc. Shelving includes the provision of adequate support structures within partitions for wall-hung systems.

## DESIGN CRITERIA

### DEPTH (front to back)

The recommended depth for shelves below a workbench is the approximate full width of the bench. The recommended average depth for wall-mounted shelves is 350mm. This will suit wall cupboards in utility rooms or over workstations. If a door is provided over the shelf unit, 350mm should be the total depth.

Shelf height will affect a functional shelf depth. 1250mm is a recommended maximum height for full reach into a shelf for men and women, whereas below 700mm high the reach into a shelf becomes increasingly difficult. 550mm is the maximum reach depth for women and 600mm for men.

The recommended depth of shelves for medical records shelving units is 400mm. This depth allows for metal dividers.

### REACH AND SPACING

The maximum shelf height should not exceed 1700mm for women/combined use, increasing to 1850mm for men. Library stools will improve reach and approved steps are recommended for heights over 1950mm. However, this is for long term storage only. A minimum shelf height of 300mm is recommended although 150mm is usual in shelving units. However, a minimum height of 300mm is recommended for handles, etc on items stored below this height.

The recommended starting point for wall mounted shelves above a work surface designed at 720mm above the floor is 1370mm above the floor. This brings the underside of the shelf to 650mm above the desk.

The recommended starting point of wall mounted shelves above a work surface designed at 900 - 1000mm above the floor is 1520 - 1600mm above the floor. This brings the underside of the shelf to 1500 - 1580mm above the floor.

Shelves above a workbench should be a minimum of 600mm clear above the bench to accommodate computer monitors that should be set at an appropriate ergonomic height for users.

A typical Medical Records storage unit will be a joinery or standard metal adjustable shelving unit approximately 2100mm high with seven shelves starting from 150mm above the floor. Note: Files are generally 305 x 240mm stored horizontally. A library stool, not a step ladder, should be used to improve reach.

The recommended depth for wall shelves used for the storage of linen is 450mm spaced 400mm apart vertically.

Where possible and practical, all shelving should be adjustable. Typically, the first and last shelf in a joinery unit will be fixed.

Note: Only use an adjustable shelf support or fixed shelf connecting system adequate for the intended loading and use. Standard metal support pins used with drilled holes may be inadequate and recessed metal strip support systems may compromise infection control.

### STRENGTH

Shelves should be designed to suit the weight of the objects most likely to be stored upon them. It should be noted that adjustable shelves are not as strong as fixed shelves. Additional strength may be gained by using thicker and/or stronger material or by providing an edge downturn.

### ACCESS CLEARANCES

Adequate clear access space should be provided in front of shelves to ensure effective and safe use such as removal of items, stepping back, bending, squatting, turning or as required by:

- OHS regulations and guidelines;
- use of equipment e.g. steps, fork lift, etc;
- wheelchair access - as applicable to area function - unusual for engineering or central stores; and

- BCA for egress if applicable for medical record stacks, etc.

### ACCESS FOR PEOPLE WITH DISABILITIES

The height range of shelving suitable for use by people with disabilities is nominated in AS1428.2 (Stds Aust 2010). The design of any shelving should recognise this range.

Note: For shelves in sanitary facilities refer AS1428.1 section 10 (Stds Aust 2010) and BCA clause F2.4 (Australian Building Codes Board 2009). All accessible toilets should be provided with a shelf.

## 04.17 References


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### Individual Jurisdictions

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### QLD

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**Further Reading**

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