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# Wayfinding system audit



# CRC for Construction Innovation participants





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# Wayfinding system audit



Level 1  
Galleries  
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*compiled by*

**Ron Apelt, John Crawford and Dennis Hogan**

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It is generally taken for granted that people are aware of their surroundings and can navigate from one place to another. However, for an individual with a disability finding your way in often complex surroundings can be difficult.

The Cooperative Research Centre for *Construction Innovation* leads a collaboration of committed research professionals to develop a number of wayfinding solutions — creating a more accessible, more inclusive built environment.

The team comprises representatives from the Department of Public Works; the Building Commission, Victoria; the Australian Building Codes Board; the Queensland University of Technology and the CSIRO, as well as other interested individuals.

The team's work was recognised with a 2007 Disability Action Week Award, and their latest research has resulted in this significant and practical booklet. The inclusive design principles, techniques, strategies and solutions will help resolve problems associated with wayfinding, not only for people with a disability but also for the whole community.

I commend this book to you.

A handwritten signature in black ink, appearing to read 'Rob Swarten'.

Honourable Rob Swarten MP

Minister for Public Works, Housing and Information and Communication Technology



The *Disability Services Act 2006* aims to ensure that the conditions of everyday life for people with a disability are the same as, or as close as possible, to the conditions enjoyed by the general community.

This *Wayfinding system audit* booklet is an important resource that includes a design audit and checklist to help designers, developers, property owners and managers do their part in improving access to buildings, properties and spaces for all people.

It complements a range of strategies which have been introduced by the Queensland Government which aim to enhance people's ability to participate fully in their communities.

It is my pleasure to support this very practical booklet which offers people with a disability real solutions for wayfinding through their community, and I commend it to you.

A handwritten signature in black ink, appearing to read 'Lindy'.

The Honourable Lindy Nelson-Carr MP

Minister for Communities, Disability Services, Aboriginal and Torres Strait Islander Partnerships, Multicultural Affairs, Seniors and Youth

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## Preface

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The outcomes of the *Wayfinding in the Built Environment* project result from the unique industry partnership of the public and private sector working together with a national research team. This collaboration under the leadership of the Cooperative Research Centre (CRC) for *Construction Innovation* is providing significant value, not only to industry, but also to the community generally.

The *Wayfinding system audit* has an emphasis on new buildings and the immediate spaces surrounding them. It is also applicable to upgrades of existing buildings, and improving wayfinding around large complexes such as university campuses, hospitals, schools and urban spaces like malls and shopping centres.

Any wayfinding system is more than just signs — it encompasses architecture, landscape architecture, interior design, lighting and cognitive landmarks. It is about the design of spaces that should assist the users in spatial problem solving by providing consistent clues throughout spaces. The audit checklist template provided here for your customisation is structured on a simple 'yes/no' methodology. It gathers information about your situational analysis of the immediate surrounds.

This audit document complements the other project publication — *Wayfinding design guidelines*.

*Construction Innovation* looks forward to continuing to provide practical outcomes of benefit to the community and enhancing the future of the Australian construction industry.



**John McCarthy**

Chair  
CRC for *Construction Innovation*



**Dr Keith Hampson**

Chief Executive Officer  
CRC for *Construction Innovation*

## Acknowledgements

*Wayfinding system audit* compiled by Ron Apelt, John Crawford and Dennis Hogan is based on the outcomes of the Cooperative Research Centre (CRC) for *Construction Innovation* project documented in the research report *Wayfinding in the Built Environment*.

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Without the financial and collaborative efforts bringing together such teams, this valuable report could not have been successfully delivered to our industry.

The Wayfinding project participants would like to thank and acknowledge Colleen Foelz (Communication and publications, CRC for *Construction Innovation*) for management of this publication.

## ***Project partners***

### **Government**



### **Research**



### ***Publication sponsor***



## About the Cooperative Research Centre for *Construction Innovation*

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The CRC for *Construction Innovation* is a national research, development and implementation centre focussed on the needs of the property, design, construction and facility management sectors. Established in 2001 and headquartered at Queensland University of Technology under the Australian Government's Cooperative Research Program, *Construction Innovation* is developing key technologies, tools and management systems to improve the effectiveness of the construction industry. *Construction Innovation* is supported by investment from its industry, government and research partners, leveraged by a Commonwealth grant. More than 350 individuals and an alliance of 27 leading partner organisations are involved in and support the activities of this CRC.

There are three research areas:

Program A — Business and Industry Development

Program B — Sustainable Built Assets

Program C — Delivery and Management of Built Assets.

Underpinning these research programs is an Information Communication Technology (ICT) Platform

*Construction Innovation's* future research activities will build upon our strengths in sustainability, digital modelling, safety and improved project delivery. With increased industry engagement and support from its partners, this CRC is recognised for our unique role in providing leadership of industry-wide research and development. We are committed to continuing to provide valuable outcomes for Australian industry through applied research, education and technology transfer for the future.

# 1 Introduction

This *Wayfinding system audit* booklet is a practical and comprehensive approach to wayfinding, using an inclusive design approach. It includes a 'design audit and checklist' to assist designers, developers and property owners and managers identify ways to improve access to, into and through new or existing properties, particularly buildings and large complex facilities and particularly for people who are blind or vision impaired.

The system audit is intended to be flexible in the context of the built environment. Designers can use the inclusive design methodology and the principles, techniques, strategies and solutions to resolve contextual design problems to benefit all users.

Wayfinding design principles have universal application — this document can be used from a number of perspectives including applying wayfinding systems for pedestrians, cyclists, drivers, building occupants and local and international visitors.

The checklist and guidance notes are not a substitute code for the *Building Code of Australia (BCA)*, Australian Standard AS1428 or the pending Draft Disability Standards for Access to Premises (Premises Standard).

The *BCA*, AS1428 and other Australian Standards are the relevant codes and standard requirements for all new building work. References to the *BCA* and AS1428 and other Australian Standards give the decision maker the relevant technical information to assist them to develop successful wayfinding systems.

This *Wayfinding system audit* document is structured in the following parts:

1. Introduction
2. Overview
3. Wayfinding design principles
4. General checklist of wayfinding requirements
5. Wayfinding audit templates
6. External wayfinding site survey and checklist
7. Internal wayfinding site survey and checklist
8. References
9. Glossary
- Appendix A
- Appendix B
- Appendix C
- Recommended reading

## 2 Overview

Wayfinding is about effective communication, and relies on a succession of communication clues delivered through our sensory system of visual, audible, tactile and olfactory elements. There are four primary wayfinding elements: architectural, graphic, audible, and tactile communication. In addition, clues such as culinary aromas from coffee shops, restaurants and aromatic plants and flowers are useful as navigational aids for people who are blind or vision impaired.

In *Building Guidelines for Mental Health Facilities* (1996), Queensland Health notes wayfinding as:

The ease with which one proceeds and is facilitated through an environment from one point of interest to another. Wayfinding systems include such components as basic layout of building and site, interior and exterior landmarks, views to outside, signs, floor and room numbering, spoken directions, maps, directories, logical progression of spaces, colour coding.

The US Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR) (2001) advises:

Wayfinding refers to techniques used by people who are blind or visually impaired as they move from place to place independently and safely. Wayfinding is typically divided into two categories: orientation and mobility. Orientation concerns the ability for one to monitor his or her position in relationship to the environment; and mobility refers to one's ability to travel safely, detecting and avoiding obstacles and other potential hazards. In general terms, wayfinding is the ability to: know where you are, where you are headed, and how best to get there; recognize when you have reached your destination; and find your way out — all accomplished in a safe and independent manner.

Any visual wayfinding system is more than just signs — it encompasses architecture, landscape architecture, lighting, and landmarks and orientation points.

The design of spaces should assist users with spatial problem-solving by providing consistent clues.

Wayfinding systems are measured by how users experience an environment and how the communicative elements facilitate getting from point A to point B. Wayfinding systems should reassure users, create a welcoming and enjoyable environment and, ideally, provide answers to potential queries before users have to ask for assistance. Wayfinding systems can also indicate where users should not go.

A successful wayfinding system should provide information for users to:

- confirm they are at the correct start or finish point of an individual journey
- identify their location within a building or an external space
- reinforce they are travelling in the right direction
- orient themselves within a building or an external space
- understand the location and any potential hazards
- identify their destination on arrival
- escape safely in an emergency.

The four main categories of graphic wayfinding elements are:

- identification
- reinforcement
- orientation
- destination.

The four main criteria in wayfinding design are:

- architectural clues
- graphic communication
- audible communication
- tactile communication (Muhlhausen, 2000).

Wayfinding elements, combined with wayfinding design provide a successful wayfinding system that caters for all users (CIDEA, 2001).

## ***Inclusive design and environmental access***

The Center for Inclusive Design and Environmental Access (CIDEA, 2001), New York, states:

Wayfinding is the organization and communication of our dynamic relationship to space and the environment.

CIDEA (2001) discusses the importance of structuring a wayfinding system around the design of spaces. Wayfinding requires designers to organise and communicate the dynamic relationships of space and the environment to allow people to:

- determine their location within a setting by identifying and marking these spaces
- identify their specific destination by grouping and linking similar spaces
- develop a plan that will take them from their location to their destination by linking and organising spaces through both architectural and graphic means in a safe barrier-free direction of travel.

Applying design principles that are largely inherent to the way people visualise the physical world helps identify cues within the built and natural environments. The language used to describe environmental cues for wayfinding is derived from many design disciplines such as architecture, landscape architecture, town planning, surveying, geography and the now recognised profession of 'access consulting'.

Lynch (1960) is credited with coining the term 'wayfinding' in *The Image of the City*, where he referred to maps, street numbers, directional signs and other elements as 'wayfinding devices'. The terminology has developed into five main architectural wayfinding elements:

- paths and circulation
- landmarks or markers
- nodes
- edges
- zones or districts (Lynch, 1960).

These architectural wayfinding elements and the graphic wayfinding elements, together with the criteria for design and organisation of landscape, urban amenities and buildings are largely responsible for a highly legible and comprehensible urban environment.

Wayfinding systems need to take account of the way people with varying abilities negotiate the built environment. An understanding of the 'Principles of Universal Design' is necessary so that built spaces are accommodating for everyone.

## ***Principles of Universal Design***

The Principles of Universal Design were developed by The Center for Universal Design (1997) in collaboration with a consortium of universal design researchers and practitioners from across the United States. The US Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR) funded the project. Appendix A contains the Principles of Universal Design and guidelines of key elements that should be present in a design that adheres to the principles, as shown on The Center for Universal Design's website.

The Principles of Universal Design show that inclusive design can accommodate people with varying abilities.

The seven principles may be applied to evaluate existing designs, guide the design process and educate designers and consumers about the characteristics of more usable products and environments<sup>1</sup>

Following these principles leads to a non-discriminatory design approach and provides increased usability for everyone without the need for adaptation or specialised design.

---

<sup>1</sup> Center for Universal Design. (1997). Compiled by Connell, B.R., Jones, M., Mace, R., Mueller, J., Mullick, A., Ostroff, E., Sanford, J., Steinfeld, E., Story, M., Vanderheiden, G. The Principles of Universal Design. Version 2.0. Raleigh, NC: North Carolina State University. Retrieved 20 March 2007 from: [http://www.design.ncsu.edu/cud/about\\_ud/udprinciplestext.htm](http://www.design.ncsu.edu/cud/about_ud/udprinciplestext.htm) [http://www.design.ncsu.edu/cud/about\\_ud/docs/use\\_guidelines.pdf](http://www.design.ncsu.edu/cud/about_ud/docs/use_guidelines.pdf)

## Principles of Universal Design

### **Principle 1: Equitable use**

The design is useful and marketable to people with diverse abilities.

### **Principle 2: Flexibility in use**

The design accommodates a wide range of individual preferences and abilities.

### **Principle 3: Simple and intuitive use**

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level.

### **Principle 4: Perceptible information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

### **Principle 5: Tolerance for error**

The design minimises hazards and the adverse consequences of accidental or unintended actions.

### **Principle 6: Low physical effort**

The design can be used efficiently and comfortably and with a minimum of fatigue.

### **Principle 7: Size and space for approach and use**

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture or mobility.

Copyright © 1997 NC State University, The Center for Universal Design

### 3 Wayfinding design principles

Wayfinding design principles provide a structure to organise the environment into a spatial hierarchy capable of supporting wayfinding tasks.

The basic wayfinding design principles are as follows.

- Analyse the building or site for access points, taking into account the physical and aesthetic characteristics of the building or site. How will the site be accessed?
- Divide the large-scale site into distinctive smaller parts, or zones of functional use, while preserving a 'sense of place' and connectivity between spaces.
- Organise the smaller parts under a simple organisational principle, such as 'use'. Devise a zonation plan with a logical and rational structure.
- Provide frequent directional cues throughout the space, particularly at decision points along journeys in both directions.
- The design of decision points must be logical, rational and obvious to a sighted user, ensuring the directional cues relate directly to a building or landscape space. Ensure sequencing and that the priority and grouping of message signs is unambiguous.
- Design and implement a 'naming protocol' by choosing a theme for segregating places and spaces. Use names and symbols that can be easily remembered by users from diverse cultural backgrounds. Any naming protocol must be flexible enough to be adapted to changing functions in a building or throughout a landscape or public space.
- Use a sequential, logical, rational and consistent naming protocol for places such as hospitals or educational institutions where buildings have been master planned and organised into a logical arrangement.
- When considering a naming protocol of an alpha-numeric coding system such as 'Room B3.7', provide consistency within the coding system. For example:
  - Room B3.7 reads Building 'B', Level 3 Room 7
  - Room C4.6 reads Building 'C', Level 4 Room 6

- Block BS1 reads Building 'B' South, Entry 1
- Block MN2 reads Building 'M' North, Entry 2.

- Consider incorporating information in multiple languages or incorporating pictograms when devising a naming protocol.
- Ensure the physical placement, installation and illumination of signage is suitable for all users.

#### **Wayfinding maps**

Although maps are not appropriate for every situation, being able to quickly extract spatial information makes them a powerful navigation aid.

Ideally, this information should be flexible, as if the user has obtained it from direct experience. Therefore, map design principles should present spatial information and represent the environment in a flexible and orientation-independent way.

#### **Map design principles**

1. Organise the environment into clear spaces either by abstraction or inclusion.
2. Show all organisational elements (paths, landmarks, districts) and use the organisational principle of only including important and memorable connections.
3. Show the user's position.
4. Orient the map to the user, applying the forward-up equivalence principle.
5. Ensure graphic communication is unambiguous and lettering is proportional to the layout so the map remains uncluttered.
6. Use a consistent form of communication e.g. colour coding or place names. Avoid alphanumeric coding because it is less memorable than place names.
7. Limit the information and ensure it is readable.
8. Provide sufficient information to lead the user to the next wayfinding map or directional sign.

9. Incorporating electronic touch-screen directories can be very useful, particularly if a map can be printed. This type of directory can be easily updated. However, interactive touch-screen directories are mostly designed for sighted users, unless purpose-designed software is available (Disability Rights Commission UK, 2006 <sup>2</sup>).
10. Ensure that the map design and signage in general provides three major functions:
  - orientation and direction (connectivity between present location and desired location)
  - identification of locations
  - relevant information for further decision making.

<sup>2</sup> This document provides information about touch-screen directories that are able to change text size, have colour contrast, text-to-speech systems and navigational access keys. Retrieved 20 March 2007 from [www.equalityhumanrights.com/pages/eocdrccre.aspx](http://www.equalityhumanrights.com/pages/eocdrccre.aspx)



▲ **Figure 1** Map design and signage

Location: State Library of Queensland and Gallery of Modern Art (GoMA) at Stanley Place, South Brisbane

This map design and signage provides the three major functions of basic map design principles: orientation or direction (connectivity between present location and desired location); identification of locations; and relevant information for further decision making. Note the use of raised tactile lettering and braille, the 'You are here' graphics and the identification of major attractions and public facilities. The physical placement, installation and illumination of signage must be suitable for everyone.

This sign was developed in 2006 as part of the Millennium Arts Project at the Cultural Centre, an initiative of the Queensland Government through Arts Queensland. The Millennium Arts Project at the Cultural Centre included the construction of the new GoMA, redevelopment of the State Library of Queensland and construction of associated infrastructure. Project Manager: Department of Public Works

#### **State Library of Queensland**

Architects: Designed in association with Brisbane-based architectural firms Donovan Hill Peddle Thorp architects. The design was selected from the Millennium Library Project Architects Selection Competition (2001).

#### **Gallery of Modern Art (GoMA)**

Architects: Architectus Sydney (Kerry and Lindsay Clare, 2002) were the Design Directors for the winning entry of the Queensland Gallery of Modern Art International Design Competition.

Access Consultant: Disability Access Consultants Pty Ltd (Trevor Beardsmore)

Environmental Graphic Designer: Dot Dash, Brisbane

Sign Contractor: Albert Smith Group, Brisbane

Managing Contractor: Bovis Lend Lease

Photography by: Amanda McLucas 30 March 2007

Copyright: Department of Public Works.

## 4 General checklist of wayfinding requirements

This checklist and guidance notes are compiled and adapted from a number of expert sources including architects, landscape architects, lawyers, engineers, building surveyors, building regulators, access consultants, local expertise and people with a disability. Where possible, the notes also link to various Australian Standards and relevant parts of the *Building Code of Australia (BCA)*.

Literature and internet searches were based on keywords such as 'wayfinding', 'universal design', 'signage' and 'accessibility'.

The document particularly draws on Lynch (1960); Pollet and Haskell (1979); Lam and Ripman (1992); Passini (1992); Muhlhausen (2000); Royal Blind Society (2003) Levine (2003) and Berger (2005).

The *Wayfinding system audit* acknowledges these individuals and organisations for their contribution in improving wayfinding in the built environment.

Wayfinding systems are more than just signs; they encompass architecture, landscape architecture, interior design, lighting and cognitive landmarks or orientation points. The design of spaces should assist users with spatial problem solving by providing consistent clues.

There are four main communicative wayfinding elements or criteria, commonly referred to as 'clues': architectural, graphic, audible, and tactile communication.

The clues do overlap; however, as a 'thinking and decision tool' each of the main elements can be broken down into a collection of questions.

The *BCA* provides a useful framework to ensure wayfinding devices and systems are implemented into a building or development projects. Historically, the *BCA* has principally dealt with health and safety and health and safety amenity issues. However, it has progressively developed to incorporate issues such as building functionality, including energy efficiency and access for people with disabilities.

The following general checklist and guidance notes identify elements that are often forgotten when planning and designing buildings, public outdoor urban spaces and natural outdoor environments, especially for people who have a disability.

The checklist and guidance notes emphasise new buildings and the immediate spaces surrounding

the buildings. However, the design principles remain constant regardless of the type of space or place. They can also be applied to upgrading projects to improve wayfinding around large complexes such as university campuses, hospitals and schools. The checklist and guidance notes are also easily transferable to urban spaces like malls and shopping centres.



▲ **Figure 2** The Arbour — universal accessway

Location: Southbank Parklands, South Brisbane

The Arbour, covered in vibrant magenta bougainvillea plants, acts as a spine through the centre of the parklands for one kilometre, leading the way to the parklands' many attractions. This environmental design guidance feature (horticultural and landscape architectural design feature) enables visitors to orientate themselves from many locations within the parklands. Although not marked as a universal accessway, it is a clearly dedicated and marked route within the public domain that distinguishes its importance as a public right of way.

Master Planner: Denton Corker Marshall, Architecture and Urban Design, Melbourne

Photography by: Amanda McLucas 30 March 2007

Copyright: Department of Public Works.

► **Figure 3** Arbour and canopy — universal accessway

Location: Southbank Parklands, South Brisbane

Along the Arbour, amid the canopy of the bougainvillea, is a ribbon of yellow steel that provides shade and weather protection, but also acts as a recognised landmark (marker), identifying the adjacent places of the riverside restaurants, cafes and Suncorp Piazza. Shade and shelter are important environmental design guidance features.

Master Planner: Denton Corker Marshall, Architecture and Urban Design, Melbourne  
Photography by: Amanda McLucas 30 March 2007

Copyright: Department of Public Works.



◀ **Figure 4** Landmark (marker) and tactile wayfinding trail

Location: Brisbane Square, George and Adelaide Streets, North Quay

This sign acts as a recognised landmark (marker) within the streetscape, identifying one of the entries to Brisbane Square and the community assets of the Brisbane City Council Library and Brisbane City Council Customer Service Centre. The marker provides important information for visitors to the square. The map design uses raised tactile lettering and braille, 'You are here' graphics and shows the direction of the major building attractions. Note the use of TGSIs at the base of the sign. The TGSIs form part of a designed tactile wayfinding trail, also referred to as a 'tactile guide pathway'.

TGSIs are important to assist in safe wayfinding; however, they should not be over-used or over-prescribed. Designers should make full use of the range of environmental guidance features available to minimise inconvenience to other members of the community.

Brisbane Square Architect: Denton Corker Marshall  
Architecture and Urban Design, Melbourne  
Access Consultants (External): Andrew Sanderson of Blythe-Sanderson Group, Melbourne  
Access Consultants (Internal and Brisbane City Council External Adviser) John Deshon of John Deshon Pty Ltd

Environmental Graphic Designer: Dot Dash, Brisbane  
Signage Contractor: K-Vee Signs, Brisbane  
Design and Construct Contractor: Boulderstone Hornibrook

Photography by: Amanda McLucas 30 March 2007

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► **Figure 5** Tactile wayfinding trail and shoreline

Location: Brisbane Square, North Quay

This arrangement of tactile ground surface indicators (TGSIs), directional and warning (decision-making) tactile tiles, provides a direction of travel to what is commonly referred to as a 'shoreline', the building's edge or a physical property edge. Note the unobstructed space along the length of the wall. Where the TGSIs are an integrated unit, it should have a minimum luminance contrast of 30% compared to the amount of light reflected from the surface of the adjacent path of travel. A shoreline must be free of obstacles that could interrupt the continuous path of travel. A minimum obstacle-free space should be 2000 mm x 1500 mm (height x width) adjacent to the shoreline.



◀ **Figure 6** Tactile wayfinding trail and shoreline

Location: Brisbane Square, North Quay

A shoreline is a very effective device that can be easily accommodated by not placing street furniture such as seats, rubbish bins, and signage or drink fountains within the dedicated accessway. This zone can easily be marked as a universal accessway, reminding users of the importance of an unobstructed space along the length of the path of travel.

Figures 5 and 6

Brisbane Square Architect: Denton Corker Marshall  
Architecture and Urban Design, Melbourne  
Access Consultants (External): Andrew Sanderson of  
Blythe-Sanderson Group, Melbourne  
Access Consultants (Internal and Brisbane City Council  
External Adviser): John Deshon of John Deshon Pty Ltd  
Environmental Graphic Designer: Dot Dash, Brisbane  
Signage Contractor: K-Vee Signs, Brisbane  
Design and Construct Contractor: Boulderstone  
Hornibrook  
Photography by: Amanda McLucas 30 March 2007  
Copyright: Department of Public Works.

## 5 Audit templates

### **Acknowledgement**

The following audit templates were derived from the Department of Health, UK, National Health Service (NHS)<sup>3</sup>.

### **How to use this audit template**

Using the existing site wayfinding information, find the route to your destination. At each decision point along the route, make a decision about which way to go. Complete a separate survey sheet for each new decision point.

The audit checklist is structured on a simple 'yes/no' methodology and gathers information about your situational analysis of the immediate surrounds.

If you answer 'yes' to a question, make brief comments on your personal experience and rate your level of satisfaction with the wayfinding system.

**Note that this template is a sample only and needs to be customised for your needs.**

**Completed by:** .....

**Time:** ..... **am/pm**

**Date:** ..... / ..... / .....

**Is the decision point:** ..... **internal / external**

**Survey sheet/decision point number:** .....

Complete the following pages at each decision point along the route you are surveying. Describe where you are or insert a plan or sketch below. Mark your position on it. Indicate with arrows the route you follow. Orientate plan or sketch for reference and record purposes.

.....  
.....  
.....  
.....  
.....

<sup>3</sup> Adapted from Department of Health, UK. NHS Estates website. Retrieved 20 March 2007 from [http://patientexperience.nhsestates.gov.uk/wayfinding/wf\\_downloads/site\\_survey\\_tool.pdf](http://patientexperience.nhsestates.gov.uk/wayfinding/wf_downloads/site_survey_tool.pdf).

## 6 External wayfinding site survey and checklist

### ***Mode of transport***

1. What mode of transport did you use to reach your destination?

- (a) walking
- (b) mobility device
- (c) taxi
- (d) public transport
- (e) car

**Other, please specify:** .....

**Please provide further comments:**

.....

.....

.....

.....

### ***Obstructions and visual clutter***

2. Do any elements make it difficult to see the route or sign system?

- ☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent
- ☐ No

**If yes, please describe:**

(e.g. the route or sign is obscured)

.....

.....

.....

.....

**Please provide further comments:**

.....

.....

.....

.....

or, please indicate the obstruction:

- (a) trees, shrubs etc.
- (b) raised planters
- (c) other signs
- (d) vehicles
- (e) people
- (f) buildings

### ***Landmarks***

3. Are there any prominent landmarks to use to remember the location or route?

- (a) Visual information
- (b) Olfactory information
- (c) Audible information
- (d) Kinaesthetic information
- (e) Tactile information

☐ Yes            Unsatisfactory            1            2            3            4            5            Excellent

☐ No

**If yes, please describe:**

(e.g. train station, cathedral, fountains)

**Please provide further comments:**

.....

.....

.....

.....

.....

### ***Entrances***

4. Is there a building or entrance clearly visible from this decision point?

☐ Yes            Unsatisfactory            1            2            3            4            5            Excellent

☐ No

**If yes, which entrance is identifiable?**

**Please provide further comments:**

.....

.....

.....

.....

.....

### ***Directional signs***

(e.g. 'This way to lifts'.)

5. Is a directional sign visible at this decision point?

☐ Yes            Unsatisfactory            1            2            3            4            5            Excellent

☐ **No: go to question 10**

6. Is the text legible from this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

7. Is your destination mentioned?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

8. Is the direction indicated clearly?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

9. Is the sign positioned in an appropriate location where the information is needed?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

**Please provide further comments:**

.....  
.....  
.....  
.....  
.....

### ***Locational signs***

(e.g. 'Garden Forecourt', 'Swiss Plaza')

10. Is a locational sign visible at this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ **No: go to question 14**

11. Is the text legible from this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

12. Is it clear which building or location the sign is referring to?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

13. Is the sign positioned in a location where the information is needed?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

**Please provide further comments:**

.....  
.....  
.....

### **Maps**

(e.g. 'You are here' maps or 'Fire Assembly Zones' maps)

14. Is a 'You are here' map visible at this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ **No: go to question 19**

15. Does the map actually show where you are?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

16. Does the map make the site or building easy to understand?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

17. Is your destination mentioned on the map?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

18. Is the map positioned where the information is needed?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

**Please provide further comments:**

.....

.....

.....

.....

.....

### **Directory board**

(e.g. list of building tenants, list of hospital wards)

19. Is a directory board visible at this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ **No: go to question 24**

20. Is the text legible from this decision point?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

21. Is your destination mentioned?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

22. Is it easy to find your destination on the directory board?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

23. Is the sign positioned in a location where the information is needed?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

**Please provide further comments:**

.....  
.....  
.....  
.....  
.....

***Staff assistance – information desk***

24. Is the height of information desk (service counter, reception etc.) accessible for a person in a wheelchair or a person of short stature?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

25. Are staff at this decision point available to answer questions about directions?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ **No: go to question 28**

**If yes, ask for directions.**

26. Were the directions clear and easy to follow?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

27. Did the staff offer to escort you to your destination?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

**Please provide further comments:**

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.....  
.....  
.....  
.....

***Telephone assistance – information desk***

28. Is there a telephone or buzzer at this decision point which you can use to ask for directions?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

If yes, dial the appropriate telephone number and ask for directions.

29. Were the directions given clear and easy to follow?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

30. Did the staff offer to escort you to your destination?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

**Please provide further comments:**

.....  
.....  
.....  
.....  
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## 7 Internal wayfinding site survey and checklist

**Completed by:** .....

**Time:** ..... **am/pm**

**Date:** ..... / ..... / .....

**Survey sheet/decision point number:** .....

**Address:** .....

Complete the following pages at each decision point along the route you are surveying. Describe where you are or insert a plan or sketch below. Mark your position on it. Indicate with arrows the route you follow. Orientate plan or sketch for reference and record purposes.

### ***Arrival point***

Note on the plan the point you personally determine is the 'arrival point', and why?  
Is it welcoming and easily recognisable as the arrival point to the building?

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### ***'You are here' map***

Comment on the location of the 'You are here' map. Is adequate information provided?  
Does the map consider people with disabilities? Other issues?

.....  
.....  
.....  
.....  
.....

### ***Directory board (external)***

Comment on the location of the directory board. Does the directory board provide adequate information? Does the directory board consider people with disabilities? Other issues?

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.....

### ***Information desk***

Is the information desk attended? Are the staff at the information desk knowledgeable and helpful? Other issues?

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### ***Lifts***

Comment on the location of the lifts. Are the lifts suitable for people with disabilities? Other issues?

.....

.....

.....

.....

.....

### ***Directory board (internal)***

Comment on the location of the directory board. Does it provide adequate information? Does the directory board consider people with disabilities?

.....

.....

.....

.....

.....

***Further signage:***

Make comments about other types of signage. Other types of signs to consider include: identification (e.g. room number); locational (e.g. 'Garden Forecourt'); directional (e.g. 'Lift this way'); informational (e.g. 'Hours of business'); emergency and location or reference maps (e.g. 'Fire Assembly Zones') and temporary or removable signs.

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### ***Architectural clues (built environment design)***

**Architectural built environmental design delineates spatial organisation, destination zones and information sequencing through environmental communication.**

**All architectural work should comply with the provisions of AS1428.1 part 1:**

**General requirements for access — New building work.**

1. Are the access and egress points clearly identified?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

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.....

.....

2. Is convenient on-site parking available?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

.....

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.....

.....

3. Are car parking spaces available for people with disabilities?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

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BCA Section D Access and Egress Requirements, part D3.5: 'Car parking must comply with AS2890.1, part 1: Off-street car parking and AS2890.6, part 6: Off-street parking for people with disabilities'.

4. Is there an accessible walkway to each entry point?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirements part D3.3: Parts of buildings to be accessible: 'Access, finishes and fittings, including passageways, ramps, step ramps or kerb ramps, signs, doorways and other parts of the building required by this part of the Code must comply with the provisions of the AS1428.1, part 1: General requirements for access — New building work'.

5. Are automatic opening doors at the building entry point?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirements of AS1428.1, part 1: General requirements for access — New building work and clause 7: Doorways, Doors and Circulation Space at Doorways, 7.3.3 Automatic doors.

6. Do the access and egress points comply with the *BCA* Section D Access and Egress Requirements for safe, equitable and dignified access to a building, to the services and facilities within a building, and to safeguard occupants of the building from illness or injury while evacuating in an emergency?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirement, part D3.3 Parts of buildings to be accessible: 'Access, finishes and fittings, including passageways, ramps, step ramps or kerb ramps, signs, doorways and other parts of the building required by this part must comply with the provisions of the AS1428.1, part 1: General requirements for access — New building work, clause 7: Doorways, Doors and Circulation Space at Doorways: 'where an entrance is not required to be accessible, a sign directing people with disabilities to accessible entrances shall be installed'.

7. Is there an inbuilt communication system for entry, information, entertainment or a service suitable for occupants who are hearing impaired?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirements, part D3.7: Hearing augmentation and the AS1428.1, part 1: General requirements for access — New building work, clause 16: Hearing Augmentation Listening Systems.

8. Are lighting, floor coverings and architectural finishes consistent in primary public corridor areas?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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.....  
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AS1428.1, part 1: General requirements for access — New building work and AS1680.0 Interior lighting, part 0: Safe movement, Appendix A: Lighting for the Partially Sighted (Informative).

9. Are there memorable 'landmarks' along the corridors and at key decision points?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

10. Are the public waiting areas to the side of main corridors and are they visually 'open'?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

11. Are the public and non-public corridors distinguished easily by varied finishes, contrasting colours or lighting?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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12. Are the floors numbers aligned between connecting buildings?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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.....

BCA Section D Access and Egress Requirements, part D3: Access for People with Disabilities and AS1428.1, part 1: General requirements for access — New building work.

13. Are the stairs, escalators, lifts, elevators, and travelators placed within view of the main entries?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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AS1428.1, part 1: General requirements for access — New building work, clause 8 Lifts: 'Where required, lift facilities shall comply with the current AS1735.1: Lifts, escalators and moving walks, General requirements'.

14. Are the stair and step nosings highlighted for safety?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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.....

BCA Section D Access and Egress Requirements, part D3: Access for People with Disabilities and AS1428.1, part 1: General requirements for access — New building work.

15. Are the lifts designed for people who are vision impaired or hearing impaired?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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.....  
.....

AS1428.1, part 1: General requirements for access — New building work, clause 8 Lifts: 'Where required, lift facilities shall comply with the current AS 1735.1 Lifts, escalators and moving walks, General requirements'.

***Have people who are vision impaired or hearing impaired been adequately considered?***

BCA Section D Access and Egress Requirements, part D3: Access for People with Disabilities and AS1428.1, part 1: General requirements for access — New building work.

16. Are tactile ground surface indicators (TGSIs) used appropriately at the top and bottom of stairs and ramps?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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.....  
.....

BCA Section D Access and Egress Requirements, part D3.8: Tactile Ground Surface Indicators (TGSIs). Refer also to AS1428.4 Design for access and mobility, part 4: Tactile indicators: 'In all public buildings, warning TGSIs are to be installed at stairways, ramps, escalators, lifts and near any obstacle located at head height'.

17. Is there adequate contrast between the doorway glazing and the side glazing of walls?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....

BCA Section D Access and Egress Requirements, part D3: Access for People with Disabilities and AS1428.1, part 1:  
General requirements for access — New building work, Clause 7.5: Glazing and AS1288 Glass in buildings  
— Selection and installation, section 5: Criteria for Human Impact Safety.

18. Are the interior colour schemes helpful for people who are vision impaired to find their way around the building?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

19. Are the interior colour schemes helpful for people with other impairments (cognitive disorders, language differences etc) to find their way around the building?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

20. Is there sufficient luminance contrast between walls and floors?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

21. Is there sufficient luminance contrast between doors and walls?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

22. Is there sufficient luminance contrast or textural contrast between the furniture and the surrounding surfaces?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

23. Is there sufficient luminance contrast between sign text and sign background?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

24. Is there sufficient variation in texture to help people follow routes?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

25. Are matt finishes applied to prevent glare and confusing reflections?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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.....

.....

26. Do free-standing objects have sufficient luminance contrast with background colour to stop users tripping over them?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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.....

27. In conference rooms, meeting rooms and auditoriums is the lighting adequately focused?  
The face of presenters and interpreters should be clearly visible without too many shadows for lip-reading and sign language interpretation.

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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.....

Current AS1428.1, part 1: General requirements for access — New building work, clause 17: Lighting for People with Hearing Impairment.

28. Is there adequate signage complying with AS1428.1?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....

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.....

Current AS1428.1, part 1: General requirements for access — New building work, clause 14: Signs Indicating Access for People with Disabilities

## ***Graphic communication***

**Signs, maps, colour coding, banners, websites, directional, identification and regulatory information are all examples of graphic communication.**

**All signage must comply with the provisions of AS1428.1, part 1: General requirements for access — New building work, clause 14: Signs Indicating Access for People with Disabilities.**

**Many signs are not legible when viewed from a distance.**

**The following recommendations can assist in the optimal readability of signs.**

- Colour contrast on signs.
- Luminance contrast between the background and the letters and graphics.
- Clear definition between buildings, roads, pathways, bridges and other built elements such as landmarks or prominent site features.
- Sufficient detail of the building form or layout, maintaining the hierarchy of form and layout.
- Informative content providing unambiguous directions.
- Combination of pictograms, raised tactile signage letters and braille signage. Raised tactile signage and braille signage should be positioned between 1200 mm and 1600 mm above ground or floor level, outside the swing of doorways or other fixtures so it can be read without physical discomfort to the reader.
- Suitable font style and spacing between letters and words. For example, a combination of uppercase and lowercase letters is easier to read than all uppercase. The size, type and layout of lettering should be clearly legible and easily understood. Typeface should be Sans Serif — Arial, MS Sans Serif, Tahoma, Futura, Geneva and Helvetica Medium are preferred. The size and spacing between letters and words should be in proportion to the size of the sign and the amount of information provided.
- Lighting should be positioned to reduce glare on signage surfaces as reflective surfaces hinder visibility.

1. Are the names for all facilities, services and displays standardised and consistent?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent

☐ No

Comment: .....

.....  
.....  
.....  
.....

2. Are the names for buildings and services standardised?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

3. Are the signs legible?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

AS1428.1, part 1: General requirements for access — New building work, clause 14: Signs Indicating Access for People with Disabilities

4. Has luminance contrast criteria between lettering and background been applied?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
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AS1428.1, part 1: General requirements for access — New building work, Appendix D.

5. Is sign placement consistent?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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.....  
.....  
.....

6. Have the 'viewing distance to signage' criteria been applied?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

7. Are signs positioned between heights of 1200 mm to 1600 mm above ground or floor level to assist people who are vision impaired or mobility impaired?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

8. Are signs located on fixed wall panelling *beside* rather than *on* opening doors?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

9. Are standardised 'You are here' maps or floor plans suitably located near the entry to the building or floors?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

10. Do the 'You are here' maps or floor plans incorporate raised tactile lettering or braille?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

11. Are the 'You are here' maps or floor plans correctly oriented in relation to the building layout?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

12. Are the 'You are here' maps or floor plans placed at all entrances and major decision points?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

13. Do the locational maps or floor plans provide sufficient detail?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

14. Have standardised pictograms or symbols (with words) been used to describe 'Fire Exits', 'Toilets', 'Carers' Room' etc.?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
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BCA Section D Access and Egress Requirements, part E3: Lift Installations and part E4: Emergency Lighting, Exit Signs and Warning Systems, particularly clause E4.4: Design and operation of emergency lighting, clause E4.5: Exit signs and clause E4.6: Direction signs. Emergency lighting systems must comply with AS2293.1 Emergency escape lighting and exit signs for buildings, part 1: System design, installation and operation.

Where applicable, an emergency warning and intercommunication system complying with AS1670.4 Fire detection, warning, control and intercom systems — System design, installation and commissioning, part 4: Sound systems and intercom systems for emergency purposes must also comply with AS4428.4 Fire detection, warning, control and intercom systems — Control and indicating equipment, part 4: Intercommunication systems for emergency purposes.

15. Has a visual barrier been applied on fully glazed doors and sidelights?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirements, part D3: Access for People with Disabilities and AS1428.1, part 1: General requirements for access — New building work, clause 7.5: Glazing.

16. Are the lifts buttons highlighted?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

AS1735.12 Lifts, escalators and moving walks, part 12: Facilities for persons with disabilities, clause 7: Control buttons and clause 8.6: Provision in Lift Cars.

17. Do the lifts buttons or control panel incorporate raised tactile lettering or braille?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
.....  
.....  
.....  
.....

AS1735.12 Lifts, escalators and moving walks, part 12: Facilities for persons with disabilities, clause 7:  
Control buttons and section 8: Information.

18. Are lifts fitted with a sign to warn occupants not to use them during a fire?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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BCA Section D Access and Egress Requirements, part E3: Lift Installations and part E4: Emergency Lighting,  
Exit Signs and Warning Systems, particularly E4.4: Design and operation of emergency lighting, clause E4.5:  
Exit signs and clause E4.6: Direction signs and the current AS 1735.12 Lifts, escalators and moving walks,  
part 12: Facilities for persons with disabilities.

19. Are public and non-public areas colour coded to ensure easy recognition of public  
and private space?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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### ***Audible communication***

**Audible communication is undertaken through verbal instructions via PA systems, talking signs, infrared signs and water fountains. These prompts may assist people with perceptual or cognitive impairments.**

**Generally, all audible communication must comply with the BCA Section D Access and Egress Requirements, part D3.7: Hearing augmentation and with AS1428.1, part 1: General requirements for access — New building work, clause 16: Hearing Augmentation Listening Systems.**

**The BCA defines ‘hearing augmentation’ as an inbuilt amplification system, other than one used for emergency warning purposes only. Where hearing augmentation is required, a listening system to assist people who are hearing impaired should also be available. A sign indicating that an assistive hearing device is available must be provided in accordance with the requirements for the international symbol for deafness at the main doors to the enclosed space. Where the listening system does not cover the total area of the enclosed space, the boundaries of the area must also be designated.**

**Emergency warning and intercommunication systems must also comply where applicable, with AS1670.4 Fire detection, warning, control and intercom systems — System design, installation and commissioning, part 4: Sound systems and intercom systems for emergency purposes and AS4428.4 Fire detection, warning, control and intercom systems — Control and indicating equipment, part 4: Intercommunication systems for emergency purposes.**

1. Are audible tactile push-buttons used at the pedestrian crossings near the building or space?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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2. Are information desks staffed by helpful attendants who are familiar with the facility layout?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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3. Are there information self-help phones at unattended information desks?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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4. Do information desk staff use standardised names for all buildings and services in their verbal communications?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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5. Do all lifts have audible output?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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Current AS1735.12 Lifts, escalators and moving walks part 12: Facilities for persons with disabilities, section 8: Information, particularly clause 8.1: Automatic Audible Information and clause 8.5: Indication of Travel Direction.

6. Is the audible output clear and sufficiently loud?

☐ Yes                      Unsatisfactory                      1                      2                      3                      4                      5                      Excellent  
☐ No

Comment: .....  
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7. Is an audible emergency warning and intercommunication system installed in the building?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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8. Are infrared or talking signs at main entrances, facilities (such as public transport sites) or at major decision points?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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9. Are trigger devices required to activate the infrared or talking signs?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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10. Are audible location landmarks, such as water fountains, located at entrances or major decision points?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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## ***Tactile communication***

**Tactile communication includes raised tactile letters, braille, TGSIs and tactile kerbs, shorelines<sup>4</sup> or trails between major destinations.**

**Generally, all tactile communication must comply with the BCA Section D Access and Egress Requirements, part D3.8: Tactile Ground Surface Indicators (TGSIs).**

**Refer to AS1428.4 Design for access and mobility, part 4: Tactile indicators.**

**All signage must comply with the provisions of AS1428.1, part 1: General requirements for access — New building work, clause 14: Signs Indicating Access for People with Disabilities.**

1. Are 'shorelines' and 'trails' established between major destinations and information areas?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

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2. Are the shorelines clear of all obstructions up to a height of 2000 mm above ground or floor level?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

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3. Are warning TGSIs installed at the top and bottom of stairs and ramps?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent

☐ No

Comment: .....

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BCA Section D Access and Egress Requirements, part D3.8: Tactile Ground Surface Indicators (TGSIs).

Refer to AS1428.4 Design for access and mobility, part 4: Tactile indicators.

<sup>4</sup> A shoreline is a detectable outline along, or around, part or all of a building. A trail is a linear path of travel or designated corridor.

4. Are directional TGSIs used across open areas where no other tactile cueing is available to identify, for example, mid-block crossings or bus stops?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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BCA, part D3.8: Tactile Ground Surface Indicators (TGSIs).

5. Are tactile or braille signs between 1200 mm and 1600 mm above ground or floor level to assist people who are vision impaired or mobility impaired?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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6. Are raised tactile or braille maps or floor plans at all entrances and major decision points?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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7. Do the lifts buttons incorporate raised tactile lettering or braille on the control panel of the lift car?

☐ Yes      Unsatisfactory      1      2      3      4      5      Excellent  
☐ No

Comment: .....  
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AS 1735.12 Lifts, escalators and moving walks, part 12: Facilities for persons with disabilities, clause 7: Control buttons, section 8: Information, particularly section 8.3: Tactile Information.

## 8 References

- ADAS. (1999). *Good Sign Practices*. ADAS in association with E. Collis, Eye Catch Signs Ltd Nova Scotia, Canada and I. Peterson, Automated Disability Access Systems Brisbane and Melbourne Australia. The original document was modified, with permission, for the Australian context by B. Tolliday and I. Peterson, Brailliant Touch, Australia.
- Arditi, A. (2005). *Effective Color Contrast: Designing for People with Partial Sight and Color Deficiencies*. Retrieved 20 March 2007 from Lighthouse International [http://www.lighthouse.org/color\\_contrast.htm](http://www.lighthouse.org/color_contrast.htm)
- Australian Braille Authority (ABA). (various dates). Retrieved 20 March 2007 from <http://www.e-bility.com/roundtable/aba/> and [http://www.ebility.com/roundtable/aba/braillecodes\\_aust04.php](http://www.ebility.com/roundtable/aba/braillecodes_aust04.php)
- Australian Human Rights and Equal Opportunity Commission, (2007), *Disability Rights, Access to buildings and services - draft guidelines and information*, Retrieved 20 March 2007 from [http://www.humanrights.gov.au/disability\\_rights/buildings/guidelines.htm](http://www.humanrights.gov.au/disability_rights/buildings/guidelines.htm)
- Berger, C., (2005) *Wayfinding: designing and implementing graphic navigational systems*, Mies; Hove, RotoVision.
- Blind Citizens Australia, (nd) Retrieved 20 March 2007 from [http://www.bca.org.au/Accessible\\_Environments\\_Signage\\_Specification.htm](http://www.bca.org.au/Accessible_Environments_Signage_Specification.htm)
- Center for Inclusive Design and Environmental Access. (2001). *Universal Design New York, 4.1C Wayfinding*. New York: A City of New York Office of the Mayor Publication, Center for Inclusive Design and Environmental Access, School of Architecture and Planning. Retrieved 20 March 2007 from <http://www.ap.buffalo.edu/idea/udny/index.htm> and <http://www.ap.buffalo.edu/idea/udny/Section4-1c.htm>
- Center for Universal Design. (1997). Compiled by Connell, B.R., Jones, M., Mace, R., Mueller, J., Mullick, A., Ostroff, E., Sanford, J., Steinfeld, E., Story, M., Vanderheiden, G. *The Principles of Universal Design*. Version 2.0. Raleigh, NC: North Carolina State University. Retrieved 20 March 2007 from [http://www.design.ncsu.edu/cud/about\\_ud/udprinciplestext.htm](http://www.design.ncsu.edu/cud/about_ud/udprinciplestext.htm)
- [http://www.design.ncsu.edu/cud/about\\_ud/docs/use\\_guidelines.pdf](http://www.design.ncsu.edu/cud/about_ud/docs/use_guidelines.pdf)
- Disability Discrimination Act 1992* (Cwlth). Retrieved 20 March 2007 from <http://www.comlaw.gov.au/ComLaw/Legislation/ActCompilation1.nsf/0/FA7B7B21EDC9BD68CA256FC0001C97D8?OpenDocument>
- Disability Rights Commission. (2006). Retrieved 20 March 2007 from [http://www.hreoc.gov.au/disability\\_rights/publications.html](http://www.hreoc.gov.au/disability_rights/publications.html)
- Gregg B. & Signcorp Australasia. (2003). *UTS Sign Standards Manual*. Sydney: University of Technology. Harry Williams prepared the original manual, dated July 1996. This manual was expanded considerably by Minale Tattersfield Bryce and Partners (MTB&P) in October 1998. Signcorp Australasia prepared an upgrade of the existing UTS Signage Standards manual in September 2003. Retrieved 20 March 2007 from <http://www.fmu.uts.edu.au/policies/Downloads/UTSSignStandards.pdf>
- Golledge, R.G. & Stimpson, R.J. (1997). *Spatial Behaviour: a geographic perspective*. New York: The Guilford Press.
- Ittens, J. (1974). *The Art of Color: The Subjective Experience and Objective Rationale of Color*. John Wiley & Sons Inc
- Ittens, J. (1970). *The Elements of Color*. John Wiley & Sons Inc
- Jacobson R.D. (1998) Cognitive Mapping without Sight: Four Preliminary Studies of Spatial Learning. *Journal of Environmental Psychology*, 18, pp. 289–305.
- Lam W.M.C. & Ripman, C.H. (1992). *Perception & Lighting as Formgivers in Architecture*. New York: Van Nostrand Reinhold.
- Levine, D. ed. (2003). *The NYC Guidebook to Accessibility and Universal Design*. New York: Center for Inclusive Design & Environmental Access, - (also referred to as Universal Design New York) University at Buffalo, The State University of New York. Retrieved 17 November 2006 from <http://home.nyc.gov/html/ddc/pdf/udny/udny2.pdf>
- Lynch, K. (1960). *The Image of the City*. Cambridge: MIT Press.

Muhlhausen, J. (2000). Wayfinding is not signage: signage plays an important part of wayfinding, but there's more. *Signs of the Times*.

Retrieved 20 March 2007 from <http://www.signweb.com/index.php/channel/6/id/1433/>

Passini, R. (1992). *Wayfinding in Architecture*. New York: Van Nostrand Reinhold.

Pollet D. & Haskell P. C. (1979). *Sign Systems for Libraries: Solving the Wayfinding Problem*. New York: R.R. Bowker Company.

PROWAAC. (2001). *Public Rights-of-Way Access Advisory Committee (PROWAAC) for the Architectural and Transportation Barriers Compliance Board (Access Board) Final Report*: referred to as an 'Universal Access Corridor' at p.161 Appendix H *Minority Report* submitted by Hol'Lynn d'Lil What to Call the 'Accessible Route'. Retrieved 20 March 2007 from <http://www.access-board.gov/prowac/commrept/PROWreport.pdf>

Queensland Health. (1996). *Building Guidelines for Queensland Mental Health Facilities*. Brisbane: Queensland Government. Retrieved 20 March 2007 from [http://www.health.qld.gov.au/cwamb/mhguide/1934B\\_GuideSec\\_2.pdf](http://www.health.qld.gov.au/cwamb/mhguide/1934B_GuideSec_2.pdf)

Royal Blind Society of NSW and ACT. (2003). *Accessible design recommendations for people with vision impairment*.

NHS Estates. (nd). *Improving the Patient Experience Wayfinding*. London: Department of Health, UK Government. Retrieved 20 March 2007 from [http://patientexperience.nhsestates.gov.uk/wayfinding/wf\\_content/home/home.asp](http://patientexperience.nhsestates.gov.uk/wayfinding/wf_content/home/home.asp)

National Institute on Disability and Rehabilitation Research. (nd). *Notice of Proposed Funding Priorities for Fiscal Years 2001–2003 for three Disability and Rehabilitation Research Projects*. Retrieved 20 March 2007 from <http://www.ed.gov/about/offices/list/osers/nidrr/index.html>

Systech Signage Technology Braille Signage. (nd). Retrieved 20 March 2007 from <http://www.systech-signage.com/pages/braille.htm>

University of New South Wales. (nd). *Buildings and Grounds, Signage and Directory Boards, Signage Guidelines Part 6.0*. Sydney: University of New South Wales, Facilities Department. Retrieved 20 March 2007 from [http://www.facilities.unsw.edu.au/Buildings/Signage\\_Standards.pdf](http://www.facilities.unsw.edu.au/Buildings/Signage_Standards.pdf) and <http://www.facilities.unsw.edu.au/Buildings/signage.htm>

## **Reference sources on lighting and the visual environment**

International Commission on Illumination. (1997). Low vision — Lighting needs for the partially sighted. *CIE Publication No. 123*. Vienna: CIE.

Barker, P., Barrick, J. & Wilson, R. (1995). *Building sight: A handbook of building and interior design solutions to include the needs of visually impaired people*. London: HMSO in association with Royal National Institute for the Blind.

Bright, K., ed. (1997). *A design guide for the use of colour and contrast to improve the built environment for visually impaired people*. United Kingdom: University of Reading.

Cook, G. & Bright, K. (2005). Colour and Luminance Contrast — What, Why, How and When? *Access Journal 18*, Spring.

## **Technical references**

### **Building Code of Australia 2007**

#### **Australian Standards**

AS1288:2006 Glass in buildings  
— Selection and installation

AS1428.1:2001 Design for access and mobility,  
part 1: General requirements for access  
— New building work

AS1428.2:1992 Design for access and mobility,  
part 2: Enhanced and additional requirements  
— Buildings and facilities

AS/NZS 1428.4:2002 Design for access and  
mobility, part 4: Tactile indicators

AS1670.4: 2004 Fire detection, warning,  
control and intercom systems  
— System design, installation and commissioning,  
part 4: Sound systems and intercom systems for  
emergency purposes

AS/NZS1680.0:1998 Interior lighting,  
part 0: Safe movement

AS1735.1:2003 Lifts, escalators and  
moving walks, part 1: General requirements

AS1735.12:1999 Lifts, escalators and moving walks,  
part 12: Facilities for persons with disabilities

AS1744:1975 Standard alphabets for road signs  
— Metric units

AS2293.1:2005 Emergency escape lighting and  
exit signs for buildings, part 1: System design,  
installation and operation

AS2700:1996 Colour Standards for  
general purposes

AS/NZS2890.1:2004 Parking facilities, part 1:  
Off-street car parking

AS2890.5:1993 Parking facilities, part 5:  
On-street parking

AS2899.1:1986 Public information symbol signs,  
part 1: General information signs (withdrawn)

AS4428.4:2004 Fire detection, warning, control  
and intercom systems — Control and indicating  
equipment Part 4: Intercommunication systems  
for emergency purposes

### **British Standards**

BS8501: 2002 Graphical symbols and signs.  
Public information symbols

### **International Standards**

ISO7001: 2007 Graphical symbols  
— Public information symbols

## 9 Glossary

**Accessible:** Buildings or spaces with features to permit use by people with disabilities.

Reference: *Building Code of Australia* (2007).

**Accessway:** A continuous, accessible path of travel to, or within, a building suitable for people with disabilities.

Reference: AS1428.1, part 1: General requirements for access — New building work, *Building Code of Australia* (2007).

**Bluetooth:** A short-range wireless specification for connecting mobile products such as mobile computers, mobile phones, digital cameras and other portable devices.

Reference: CRC for *Construction Innovation* (2006)

**Braille:** A system of touch reading for people who are blind or vision impaired that employs raised dots, evenly arranged in quadrangular letter spaces or cells. Braille symbols are formed within units of space known as braille cells. A full braille cell consists of six raised dots arranged in two parallel rows, each having three dots. The dot positions are identified by numbers from one to six. Sixty-four combinations are possible using one or more of these six dots. A single cell can be used to represent a letter, number, punctuation mark or a whole word.

When every letter of every word is expressed in braille, it is referred to as Grade 1 braille (uncontracted).

Grade 2 braille uses a similar system of cells, either individually or in combination with others, to form a variety of abbreviations and contractions or whole words. Grade 2 braille is the more commonly used form in publications and signage.

Australia inherited the British system of braille that is referred to as the Unified English Braille Code (UEBC) Grade 1 braille.

This system of braille is constantly being reviewed and upgraded.



Examples of signage with combinations of tactile and braille

Reference: Australian Braille Authority (ABA) website.

Examples of signage referenced from Systech Signage Technology Braille Signage.

**Braille signage:** Braille signage is a specialist wayfinding device that incorporates UEBC Grade 1 braille as a primary source of information for people who are blind or vision impaired and may be enhanced with raised tactile lettering, maps or pictorial images.

Some areas that may require special signs include:

- accessible parking spaces and passenger loading zones
- accessible entrances
- accessible toilets and parent rooms
- directions and information signs regarding functional areas
- directions to the nearest accessible facility, posted at non-accessible facilities
- designated areas for emergency assistance
- volume control telephones
- tactile signs identifying all permanently designated rooms and spaces
- elevator and lift signage
- approaching stairways, escalators, travelators, ramps or overhead obstructions less than two metres above the ground where there is no suitable barrier.

Reference: *Building Code of Australia* (2007) and Royal Blind Society (2003).

**Continuous accessible path of travel (refer also 'universal accessway'):** An uninterrupted path of travel to, or within, a building providing access to all facilities. A continuous accessible path should not incorporate any step, stairway, turnstile, revolving door, escalator or other impediment that would prevent safe negotiation by people with disabilities.

Reference: AS1428.1, part 1: General requirements for access — New building work, *Building Code of Australia* (2007).

**Contrasting textures:** Contrasting textures act as tactile markers that people can identify by touch. Examples include carpet matting on a vinyl floor surface, domed buttons on handrails to indicate the end of the stairway is approaching and TGSi at the top and bottom of stairs.

References: *Building Code of Australia* (2007) Section D3.8 Tactile Ground Surface Indicators (TGSi) and Royal Blind Society (2003).

**Colour contrast:** Viewing any object involves the concept of 'figure-ground relationship' — the more an object contrasts with its surrounds, the more visible it is.

The concept of 'figure-ground relationship' also includes the relationship between 'positive' and 'negative' space and the effective use of colour combinations. Three basic guidelines for making effective colour choices rely on the three perceptual attributes of colour: hue, lightness and saturation.

Johannes Itten (1888-1967) is credited as one of the first people to define and identify strategies for successful colour combinations. The seven colour contrasts, originating from his colour theory are:

1. **Saturation:** This contrast is formed by the juxtaposition of light and dark values and their relative saturation.
2. **Light and dark:** This contrast is formed by the juxtaposition of light and dark values. It could be a monochromatic composition.
3. **Extension (or contrast of proportion):** This contrast is formed by assigning proportional field sizes in relation to the visual weight of a colour.
4. **Complements:** This contrast is formed by the juxtaposition of colour wheel or perceptual opposites.

5. **Simultaneous contrast:** This contrast is formed when the boundaries between colours perceptually vibrate. Some interesting illusions are accomplished with this contrast.

6. **Hue:** This contrast is formed by the juxtaposition of different hues. The greater the distance between hues on a colour wheel, the greater the contrast.

7. **Warm and cool:** This contrast is formed by the juxtaposition of hues considered 'warm' or 'cool.'

These seven colour contrasts for coordinating colours use the hues' contrasting properties, not the colour's physical and chemical properties. Primary colours, yellow, red and blue, produce the strongest contrasts.

Colour contrasts add other variations with the intensity of the hues. The colour contrast becomes weaker with secondary or tertiary colours or as the colour saturation decreases.

References: Arditi (2005), The Disability Rights Commission UK (2006)<sup>5</sup> and Ittens (1974).

**Disability:** A condition or state of being broadly defined by the *Disability Discrimination Act 1992* (Cwlth). The term includes physical, sensory, psychiatric, intellectual and neurological disabilities, physical disfigurement and the presence of organisms in the body causing, or capable of causing, disease.

Reference: *Disability Discrimination Act (1992)* Cwlth; Human Rights and Equal Opportunity Commission (HREOC) (2007).

**Discrimination:** Treating a person less favourably (on the basis of a disability that person has, may have, used to have or may have in the future) than a person without a disability, in the same circumstances or circumstances which are not materially different. Discrimination may be either direct or indirect.

Reference: *Disability Discrimination Act 1992* (Cwlth); Human Rights and Equal Opportunity Commission (HREOC) (2007).

<sup>5</sup> This website ([www.equalityhumanrights.com/pages/eocdrccre.aspx](http://www.equalityhumanrights.com/pages/eocdrccre.aspx)) provides a number of educational and informative publications on various issues confronting people with a disability. The website can be accessed by people who are vision impaired and hearing impaired by assisting them with screen options via purpose-written software to change text size, colour contrast, 'text-to-speech' systems' and navigational access keys.

**Direct discrimination:** Treating a person less favourably because of their disability, such as a policy where people with infectious diseases may not enrol at a particular institution.

Reference: *Disability Discrimination Act 1992* (Cwlth); Human Rights and Equal Opportunity Commission (HREOC) (2007).

**Forward-up equivalence principle:** refers to the upward direction on a map which must always show what is in front of the viewer.

Reference: Levine (2003).

**Geographic Information System (GIS):**

A computer system for capturing, storing, checking, integrating, manipulating, analysing and displaying spatial data related to positions on the earth's surface. Typically, a GIS is used for handling maps, which might be represented as different layers where each layer holds data about a particular kind of feature, for example roads.

Reference: CRC for *Construction Innovation* (2006).

**Global Positioning System (GPS):** Satellite system providing information such as the latitude, longitude, altitude or elevation of any location.

Reference: CRC for *Construction Innovation* (2006).

**Human Rights and Equal Opportunity**

**Commission (HREOC):** A statutory authority responsible for administering a number of pieces of Commonwealth legislation relating to human rights and anti-discrimination. The Commission also acts as a decision-making tribunal for matters that cannot be conciliated. These decisions are made after the Commission holds formal inquiries.

Reference: CRC for *Construction Innovation* (2006).

**Indirect discrimination:** Imposing a requirement or condition where people with disabilities are disproportionately unable to comply. For example, a student with a mobility disability, which affects their capacity to write, may argue that a requirement for all students to write their exam responses unassisted is indirect discrimination. As there are alternative ways of assessing a person's knowledge,

this requirement may not be reasonable and one where some students with disabilities are disproportionately unable to comply.

Reference: *Disability Discrimination Act 1992* (Cwlth); Human Rights and Equal Opportunity Commission (HREOC) (2007).

**Illuminance:** The luminous flux falling onto a surface area.

Reference: *Building Code of Australia* (2007).

**Luminance contrast:** Luminance contrast is described as the level of perceived lightness and brightness between one surface and another.

Luminance contrast is the amount of light reflected from one colour surface or component, compared to the amount of light reflected from the background or base colour surfaces under all lighting conditions including artificially lit (indoor) scenes, and naturally lit (outdoor) scenes in all natural weather conditions.

The measurement of luminance contrast is the difference between the luminance factors of the surfaces and comparing them under natural and artificial lighting conditions in all weather conditions for their legibility.

It has been shown that legibility is reasonably predicted by Richard Bowman's algorithm now found in Australian Standards AS1428.1. This research was originally published in Bowman, R. (1999), *Inadequate Colour Contrasts and Other Illuminating Considerations*, *Tile Today*, Issue 23, May 1999, pp. 48, 49, 52, 54 and 56.

Luminance contrast is preferred to colour contrast alone. The use of luminance contrast is very helpful to assist people who are vision impaired to locate important aspects of a building such as doorways, signs, handrails, shorelines, hazards and objects of interest. Luminance contrast can also be used to highlight potential hazards such as the edges of steps or a roadway. Reference: AS1428.1, part 1: General requirements for access — New building work, Appendix D, and Royal Blind Society (2003).

**AS1428.1, part 1: General requirements for access — New building work, Appendix D**

**— Luminance Contrast states:**

*The luminance contrast is obtained by measuring the luminance factor of the surfaces and comparing them under natural and artificial lighting conditions and all weather conditions. For the purpose of this Standard, the **luminance contrast differential is 0.3 or 30%.** The following equation is used:*

$$C \text{ (Luminance Contrast)} = (L2 - L1) / 0.5 (L1 + L2)$$

(where L1 and L2 are the luminance values).

**Luminance contrast and signage**

With signs, contrast is the measured relationship between the luminance of the area of interest and that of its immediate background.

The luminance contrast in signs is normally calculated as the difference between the two luminance factors divided by the luminance of the background. Thus the following equation applies:

$$C \text{ (Luminance Contrast)} = (L2 - L1) / L1$$

(where L1 and L2 are luminance values).

**Equally:**

$$\text{If } L2 > L1, \text{ then } C = (L2 - L1) / L2$$

**or**

$$\text{If } L1 > L2 \text{ then } C = (L1 - L2) / L1$$

**Luminance factor**

Luminance factor is the ratio of the luminance of a surface to that of an ideal white diffusing surface when illuminated and viewed under the same conditions and viewing geometry.

**Luminance factor is expressed as a decimal in the range of 0 to 1.**

**The unit measure for luminance is candelas/m<sup>2</sup> (cd/m<sup>2</sup>).**

**Note: Lux is the unit measure of illuminance** and is the key measure of lighting and visibility. **Illuminance** of an object or surface is the amount of light that is incident or falling onto a surface. The optical perception is actually what is reflected or emitted from that surface.

In other words it is the optical brightness or luminance.

**Shoreline and trails:** A shoreline is a detectable outline along, or around, part or all of a building. A trail is a linear path of travel, or designated corridor, such as building frontages and pathways.

Reference: CRC for *Construction Innovation* (2006).

**Tactile:** Tactile means information and interpretations derived from the sense of touch. This involves sensory transfer through physical contact of the hands or feet with other surfaces, as well as sensory transfers received by contact with non-physical elements such as pressure, wind and temperature.

Reference: Adapted from CRC for *Construction Innovation* (2006).

**Tactile signs (refer also to braille signage):**

Tactile signs incorporate raised text or symbols to enable touch-reading by blind people and touch enhancement of visual perception for people who are vision impaired.

Reference: AS1428.1–2001, part 1: General requirements for access — New building work.

**Tactile Ground Surface Indicators (TGSIs):**

TGSIs are areas of raised ground surface texture treatments, designed to provide people who are vision impaired with warning and directional orientation information. Typically, square tiles with regular, raised patterns are laid in various groupings at key points to indicate where ground levels or directions change.

TGSIs should be provided at the following locations:

- (a) stairways, escalators, ramps and travelators
- (b) kerb ramps and step ramps
- (c) pedestrian crossings at roadways
- (d) pedestrian crossings in high-use vehicular areas, e.g. car parks
- (e) vehicle pick-up and drop-off areas
- (f) railway platforms
- (g) passenger wharves
- (h) car park crossings
- (i) bus stops
- (j) trams/light rail
- (k) level path/carriageway junctions
- (l) projecting hazards in circulation spaces
- (m) change of direction, directional indicators

Reference: Adapted from AS1428.2:1992 Design for access and mobility, part 2: Enhanced and additional requirements — Buildings and facilities and AS/NZ1428.4:2002 Design for access and mobility, part 4: Tactile indicators.



Typical warning tactile surface tile (ivory coloured)<sup>6</sup>



Typical directional tactile surface tile (canary yellow coloured)<sup>7</sup>

**Texture contrasting:** Texture contrasting can also be helpful as tactile markers that people can identify by feel. Examples include carpet matting on a vinyl floor surface, and domed buttons on handrails to indicate the end of the stairway or ramp is approaching.

References: *Building Code of Australia* (2007) Section D Access and Egress Requirements D3.8 Tactile Ground Surface Indicators (TGSi) and Royal Blind Society (2003).

**Unjustifiable hardship:** Unjustifiable hardship is the basis on which a respondent can defend a complaint of disability discrimination. The respondent may argue that not to discriminate would impose an unjustifiable hardship. In determining unjustifiable hardship, HREOC considers all the circumstances of the particular case, including the benefits and detriment to relevant persons, the effect of the disability, financial circumstances and any action plan given to HREOC by the respondent.

Reference: *Disability Discrimination Act 1992* (Cwlth); Human Rights and Equal Opportunity Commission (HREOC) (2007).

<sup>6,7</sup> Image courtesy of Granito tiles [www.granito.com.au](http://www.granito.com.au)

### Universal accessway (refer also to continuous accessible path of travel):

A universal accessway (PROWAAAC, 2001) provides a continuous accessible path of travel that is a dedicated and marked route clearly distinguishing its importance as a public right of way. A universal access way:

- is within the boundary of the site from transport stops, accessible parking and passenger loading zones and public streets or walkways to the building or site entrance
- connects buildings, facilities and spaces on the same site and connects exterior and interior spaces and facilities
- minimises the distances travelled between all elements of buildings and spaces.

A universal accessway should be clearly marked using surface-level markers at a nominal distance, determined by site context and design, with at least two surface-level markers at either end of the accessway. It should be labelled as a universal accessway with directional arrows. Discreet surface-level markers include, for example, 75 mm diameter brass inscribed plates or ceramic plates laid on the pavement surface.

As a guideline dimension for an external universal accessway, the space should have an optimum minimum vertical and horizontal clearance of 2000 mm. Wherever possible, an all-weather cover is recommended to and from a building, but it is essential that an all-weather cover is placed at the building entrance.

**Viewing distance:** Viewing distance is a concept that printing and signage industries use to capture attention for an image on display. Viewing distance is also closely aligned with the resolution and size of the image.

This concept of viewing distance requires an understanding of perspective theory as the resolution of the image and its detail is always taken from where the viewer is positioned and whether the viewer is standing, walking, sitting or viewing from a moving vehicle. The clarity of atmospherics such as light and shade and weather conditions play a part in viewing distance. Construction materials and the position of signs in space are also important.

The simple rule of viewing distance is that the closer a person is to an object, the higher the resolution of the image needs to be. The perception of the human eye varies from person to person, and some people are vision impaired so the only true viewing distance comparison is the distance at which most people can see the image or sign.

Lettering height depends on the importance of the sign, the architectural detail at the building entrance, the size of sign for its location and placement, as well as the distance it should be read at.

The literature varies on recommended minimum letter heights and viewing distances. However, it is suggested that for sighted people, 50 mm minimum height for a maximum of 15 metres viewing distance is an acceptable standard for visual legibility.

Some other suggested minimum letter heights for various sign types:

- vehicular direction signs, internal roads, car parks and service areas: 60 mm
- external pedestrian direction signs: 60 mm
- internal direction signs: 30 mm
- building directory listings: 20 mm
- door signs: 17 mm
- tactile lettering<sup>8</sup>: 15 mm (55 mm maximum).

For road signs the speed of travel and the number of letters in the message bring in other factors; however for the lower road speed environments of, for example, university campuses and hospitals, the letter height used for public roads is acceptable. Direction signs require a greater letter height than information signs (Gregg, 2003). Refer also to Appendix A.

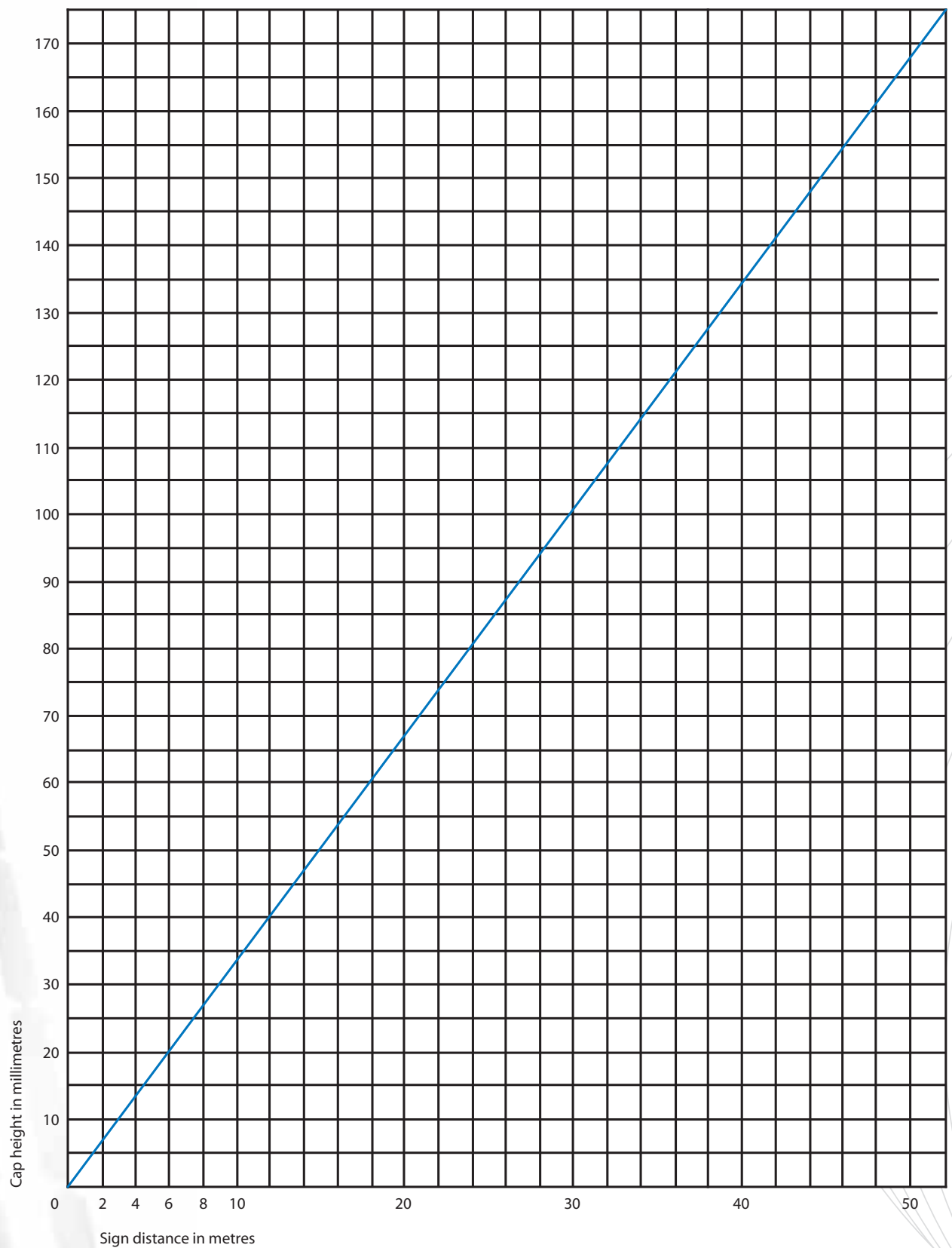
**Vision impairment:** Vision impairment is any significant loss of sight.

Reference: Adapted from AS1428.4 part 4 Tactile indicators.

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<sup>8</sup> For tactile lettering, the width of the character should allow for both sides of the embossed shape to be felt.

### ***Suggested letter height***



Suggested letter height as per viewing distance

Reference: Extracted with permission from University of New South Wales (n.d.),

# Appendix B

## Signage hierarchical structure

Each sign has a hierarchal structure that communicates meaningful content for individual readers. The hierarchical structure is:

- the colour scheme and general layout as the base, or background, layer
- specific logos, maps, pictograms and other symbols or artwork layered on top of the base
- textual information and directional arrows providing specific details.

The signage hierarchy is depicted in the table below

Design elements	Meaning and content
Background colour	Corporate or organisation's image
Marketing image or overall presentation	Corporate colour scheme and style
Text colours	Sign system hierarchy
Luminance contrast	Colour consistency as established by design protocol
Colour contrast	
Maps, logos, pictograms, symbols and artwork	Corporate or organisation's image International symbols or pictograms Facility or building layout
Text and directional arrows	Tactile signage incorporates raised text and symbols to enable touch-reading by people who are blind and allow touch enhancement of visual perception for people who are vision impaired.
Tactile information	
Braille	Braille signage is a specialist wayfinding device that incorporates UEBC Grade 1 braille as a primary source of information for vision impaired people and may be aided by raised tactile lettering, maps or pictorial images.
Signage information in multiple languages	



### Signage hierarchy example

This Metlink sign<sup>9</sup> incorporates a number of design elements that provide meaning and content when read together. The signage hierarchal structure provides a layering of information that is easily understood and provides simple directions and messages for individual readers.

### Sign legibility

Effective signs should communicate a clear message. While words and phrasing are important elements of effective signs, the most significant influence on legibility is typeface. Arial, MS Sans Serif, Tahoma, Futura, Geneva and Helvetica.

<sup>9</sup> Image courtesy of Metlink Victoria Pty Ltd.

Medium typefaces are some examples people who are vision impaired people find easier to read. Title case (lower case with an initial capital) or lower case typefaces are also easier to read.

### ***System design criteria***

Interior signage systems should be designed to meet the following criteria:

- uniformity throughout all buildings and external spaces
- consistency in sign types to assist in identifying and recognising signage, for example consistent materials and construction; consistent typeface, colours and logos; consistent graphic layouts and consistent overall appearance
- standardised message design, nomenclature and application protocols for each sign type
- standardised graphic protocols applied to typeface, colours, logos, arrows and pictograms<sup>10</sup>
- standardised room numbering and naming system protocol
- message legibility, considering the information from the perspective of a variety of users: occupants, visitors, service people and vision- and mobility-impaired users
- standardised signage placement protocol for each sign type, considering the placement of signs for people with disabilities.

<sup>10</sup> For guidance refer to BS8501:2002 Graphical symbols and signs — Public information symbols, the withdrawn AS2899.1–1986 Public information symbol signs and ISO 7001:2007 — Public information symbols.

### ***Types of signs***

There are four basic types of signs:

- identification
- information
- directional
- safety, regulatory, prohibition and advisory (ADAS, 1999).

### ***Identification signs***

Identification signs, also referred to as 'destination signs', typically identify entrances, street addresses, buildings, rooms, facilities, places and spaces.

### ***Information signs***

Information signs inform users about the features and facilities of a place or space. Information signs include directories, maps, building identification signs, notices and interpretative signs. Orientation maps provide a graphic layout of a building or space with text indicating current location, landmarks, features, routes and other amenities. Directory boards guide visitors to specific destinations, facilities and amenities. Interpretative signs provide users with more detailed information about the surroundings by explaining the significance of what they may be feeling, touching, seeing and hearing.

### ***Directional signs***

Directional signs are typically wall-mounted or overhead signs and also include directional arrows.

### ***Safety, regulatory, prohibition and advisory signs***

Safety, regulatory, prohibition and advisory signs are used to assist control of movement and activity for user safety, comfort and site management by providing information about known dangers and warning against unsafe behaviour. Examples include fire exits, disability car parks and clearway areas.

## Recommended reading

ACT Government, Urban Services, *Design Standards for Urban Infrastructure 25 Urban Park And Open Space Signage* (n.d.), based on the Signage Policy for Canberra Urban Parks and Places prepared by Minale Tattersfield Bryce & Partners (July 2001) with technical advice from landscape architects Dorrough Britz and Associates. Edition 1 Revision 0, Urban Services, Australian Capital Territory Government. Retrieved 20 March 2007 from [http://www.parksandplaces.act.gov.au/\\_\\_data/assets/pdf\\_file/28337/25\\_Urban\\_Park\\_and\\_Open\\_Space\\_Signage\\_Edition\\_1\\_Revision\\_0.pdf](http://www.parksandplaces.act.gov.au/__data/assets/pdf_file/28337/25_Urban_Park_and_Open_Space_Signage_Edition_1_Revision_0.pdf) and <http://www.parksandplaces.act.gov.au/publicplaces/designstandards>

ADAS (1999), *Good Sign Practices*, in association with Collis, E., Eye Catch Signs Ltd. Nova Scotia, Canada and Peterson, I., of Automated Disability Access Systems, Brisbane and Melbourne Australia. With permission the original document was modified for the Australian context by Tolliday, B. and Peterson, I., Brailliant Touch, PO Box 952, Buderim, 4556, Queensland, Australia.

Arditi, A., PhD (2005), *Making Text Legible: Designing for People with Partial Sight*, Lighthouse International, Retrieved 20 March 2007 from [http://www.lighthouse.org/print\\_leg.htm](http://www.lighthouse.org/print_leg.htm)

Barker, P. and Fraser J. (2000), *Sign Design Guide*, JMU Access Partnership and Sign Design Society, Royal National Institute of the Blind, London.

CRC for *Construction Innovation* (2006), *Wayfinding in the Built Environment – Reports* (Stage 2, 3 – Final). Brisbane: Queensland University of Technology. Retrieved from <http://www.construction-innovation.info/index.php?id=956>

University of New South Wales (n.d.), *Buildings and Grounds, Signage and Directory Boards, Signage Guidelines Part 6.0*, University of New South Wales, Facilities Department. Retrieved 20 March 2007 from [http://www.facilities.unsw.edu.au/Buildings/Signage\\_Standards.pdf](http://www.facilities.unsw.edu.au/Buildings/Signage_Standards.pdf) and <http://www.facilities.unsw.edu.au/Buildings/signage.htm>

Vision Australia (2006), *Accessible Design for Public Buildings, Signage*, Retrieved 20 March 2007 from <http://www.rvib.org.au/info.aspx?page=721#Signage>





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## Wayfinding system audit

Project partners

*Government*



*Research*



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