AS 1428.5—2010

Australian Standard®

Design for access and mobility

Part 5: Communication for people who are deaf or hearing impaired

This Australian Standard® was prepared by Committee ME-064, Access for People with Disabilities. It was approved on behalf of the Council of Standards Australia on 29 May 2009. This Standard was published on 13 May 2010.

The following are represented on Committee ME-064:

- Association of Consultants in Access Australia
- Australian Association of Occupational Therapists
- Australian Building Codes Board
- Australian Industry Group
- Australian Institute of Building
- Australian Institute of Building Surveyors
- Blind Citizens Australia
- Commonwealth Department of Veterans Affairs
- Consumers Federation of Australia
- Deafness Forum of Australia
- Disabled Persons Assembly New Zealand
- Housing Industry Association
- Master Builders Australia
- Mobility Research Centre New Zealand
- National Acoustic Laboratories
- Physical Disability Council of Australia
- Property Council of Australia
- Royal Australian Institute of Architects

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Part 5: Communication for people who are deaf or hearing impaired

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-064, Access for People with Disabilities.

The objective of this Standard is to assist in the provision of an environment in which people who are Deaf or who have a hearing impairment are included and can share in information and communicate with all members of the community.

This Standard is part of a series that is comprised of the following:

AS		
1428	Design for access and mobility	
1428.1	Part 1:	General requirements for access—New building work
1428.2	Part 2:	Enhanced and additional requirements—Buildings and facilities
1428.3	Part 3:	Requirements for children and adolescents with physical disabilities
1428.4.1	Part 4.1:	Tactile ground surface indicators for the orientation of people with vision impairment
1428.5	Part 5:	Communication for people who are deaf or hearing impaired (this Standard)

This Standard was formulated as part of the expanded suite of Standards that was conceived to provide a set of requirements to satisfy the Disability Discrimination Act (1992).

The term ‘shall’ has been used in this Standard for mandatory requirements and the term ‘should’ has been used for desirable (best practice) and/or other measures which, while recommended, are not considered to be mandatory.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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FOREWORD

Clinical assessment of hearing loss in a section of the Australian population aged over 15 years shows that hearing loss affects approximately 22% of the community (*Hearing impairment in an Australian Population*, Wilson et al 1998). Additional clinical studies (*Blue Mountains Hearing Study 1997–99*, Mitchell P., 2002) show that age-related hearing loss increases steeply with age from 11% for people aged between 55 and 59 years to 24% for people aged between 60 and 69 years, to 51% for people aged between 70 and 79 years, to 78% for people aged over 80 years. *Listen hear! The economic cost and impact of hearing loss in Australia* by Access Economics (2006), shows that 1 in 6 Australians have some form of hearing loss and this is projected to increase to 1 in 4 by 2050.

Some 20 children per 10 000 births are born with a hearing loss while another 12 children per 10 000 acquire at least a moderate hearing impairment through accident, illness or other causes before the age of 17 years (Australian Hearing Information Sheet 1S 17.A, Anon 2004).

The causes of hearing loss are many: disease, hereditary factors, accidents (head injury), exposure to loud noise and the ageing process, which are the most common reasons for hearing loss. Acquired hearing loss accounts for the largest percentage of people with a hearing impairment. This is often a gradual process, which, depending on the type and degree of hearing loss, can have significant impact on daily listening, communication and quality of life.

The Standard deals with principles to consider when providing facilities for people who are Deaf or hearing impaired. Factors affecting speech intelligibility and hearing augmentation are also considered, including electromagnetic interference to communication equipment. Assistive listening systems (ALSs) are discussed in depth, including systems suitable for lifts and those suitable for use at security entrances. Auditory, visual and tactile alarm systems for use as early warning systems are also covered. Visual communication, using captions for information, public announcements and on large screens at sporting events and similar situations, is also described. There are sections on communication systems suitable for transport conveyances, telecommunications, and personal response systems. The appendices describe methods of test for assistive listening system equipment and information on audio loop systems together with good acoustic environments.

Good quality communication systems will benefit all people, including those from non-English speaking backgrounds, especially in crowded areas. No one solution will suit all people with hearing loss. The following Table provides a brief overview of the degrees of hearing loss and the most common design solutions to assist with effective communication.

The effects of hearing loss and associated conditions can have a significant impact on the individual's lifestyle. Attention must be given to providing appropriate acoustic environments that incorporate well-designed amplification and assistive listening systems (ALSs).

Hearing loss often requires a variety of new skills to be learned, e.g., lipreading, communication strategies, and/or sign language. It also requires access to a wide range of assistive technology, including hearing aids, cochlear implants, assistive listening devices and assistive listening systems (ALSs) for indoor areas such as theatres, places of worship, transport terminals, transport conveyances and outdoors. To facilitate lipreading and the use of sign language attention must be given to appropriate lighting and background decor.

EFFECTS OF HEARING LOSS AND POSSIBLE DESIGN SOLUTIONS

Degree of hearing loss	Average hearing threshold range	Effects	Possible hearing augmentation solutions
Normal hearing	0–20 dB HL	—	Good acoustic environment and amplification system.
Mild hearing loss	21–40 dB HL	Understanding soft speech or speech in a noisy environment is likely to be difficult. Hearing aids sometimes used.	Good acoustic environment and amplification system.
Moderate hearing loss	41–60 dB HL	Has trouble understanding speech in all situations when unaided. Benefits from visual cues (lipreading) in most situations. Unable to follow what is said in large open areas. Hearing aids often used. They assist considerably with understanding speech, but difficulties remain in noisy or reverberant situations.	Good acoustic environment with amplification system. Induction loop or other assistive listening system, i.e., infra-red or modulated radio system.
Severe hearing loss	61–90 dB HL	Unable to hear normal speech when unaided. Depends on visual cues (lipreading or sign language). Hearing aids usually used. They assist considerably with understanding speech and identifying environmental sounds, but difficulties in communication remain in most listening situations.	Good acoustic environment with amplification and induction loop, or other assistive listening systems, i.e., infra-red or modulated radio system. May require visual (text) communication mode in noisy situations. Some may require signing or interpreter.
Profound hearing loss	>91 dB HL	Considered deaf. Will hear only very loud sounds when not wearing hearing aids. Does not rely on hearing as primary channel for communication, even when wearing hearing aids. May wear hearing aids to assist with environmental and warning sounds and the rhythm of speech. Hearing aids may be of limited or no benefit.	Depends on a visual communication mode, i.e., lipreading, sign language or a combination of both. Requires signing or interpreting and/or visual text system.

LEGEND:
HL = hearing loss

NOTE: Classification and effects provided by National Acoustics Laboratories.

The Standard relates to hotels, motels, retail, commercial and industrial buildings, places of assembly, places of worship, recreational facilities commercial accommodation buildings, terminals, transport conveyances and the like. It will assist building designers, building outfitters and users (architects, property owners, regulators and the like) by providing details of the minimum design requirements for outfitting a building or transport conveyance to enable full access for people who are deaf or hearing impaired.

STANDARDS AUSTRALIA

Australian Standard

Design for access and mobility

Part 5: Communication for people who are deaf or hearing impaired

SECTION 1 SCOPE AND APPLICATION

1.1 SCOPE

This Standard sets out requirements for the design, application and testing of assistive listening systems (ALSs). It also provides information to enable access to communication for people who have a hearing impairment or who are deaf.

This Standard provides information in relation to varying degrees of hearing loss, and design solutions and equipment including—

(a) assistive listening systems (ALSs), speech intelligibility and environmental interference;

(b) assistive listening systems' (ALSs) application in the built and transport environments, indoor and outdoor;

(c) early warning systems—auditory, visual, and tactile requirements;

(d) visual display systems for intercommunication, public announcements and the like; and

(e) telephone services and telecommunications available to the public.

1.2 APPLICATION

This Standard is intended for use by planners, designers, regulators, builders, facility managers and operators of buildings, terminals and conveyances to choose appropriate design solutions and equipment for the design, installation, operation and maintenance of assistive listening, communication and warning systems.

This Standard is applicable where amplification systems are installed, where visual augmentation is required for audio announcements, for telecommunications systems, for early warning systems, or other communication services associated with access and egress, regardless of location (i.e., building, terminal, or conveyance).

1.3 NORMATIVE REFERENCES

The following documents are normative references in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS	
1428	Design for access and mobility
1428.2	Part 2: Enhanced and additional requirements—Buildings and facilities