



Universal Design & Barrier-Free Access

Guidelines for Persons with Hearing Loss



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Foreword

Wikipedia defines Universal Design as a relatively new paradigm that emerged from “barrier-free” or “accessible design” and “assistive technology. The definition continues by stating that this new concept provides a level of accessibility for people with disabilities.

For most people the concept of universal design or barrier free access creates the image of a wheelchair ramp to a building. However, for the Canadian Hard of Hearing Association the concept of universal design is about accessible communication, the ability to be able to understand and interact with the world around them. Ten percent of the world’s population has some degree of hearing loss making hearing loss the largest disability in the world. These percentages are modest compared to the incidence level expected in the coming decades.

Hearing loss has enormous social, economic and emotional impact, affecting individuals, families and all members of the community. Communication breakdown is the primary effect of hearing loss creating issues in interpersonal relationships, educational participation, employment, and socio-economic status. Societal impacts are far-reaching in terms of healthcare costs, poverty, loss of economic gains, and reduction in quality of life. Self-sufficiency and individual well-being are adversely impacted. Society loses out when a significant portion of its members are unable to communicate and participate effectively; this affects not only the quality of life, it also affects the economic viability of the community.

Upon examination of the rising population of persons with hearing loss it became apparent that a Universal Design document focusing on access for persons with hearing loss would be a much needed and sought after resource tool. With assistance from Human Resource Social Development Canada, Social Development Partnerships Program, The Canadian Hard of Hearing Association has attempted to fill this void with this document; **“Universal Design & Barrier-Free Access, Guidelines for Persons with Hearing Loss”** created by Michel David and his Advisory Committee; Dr. Charles Laszlo, Dr. Marilyn Dahl, Mr. Colin Cantlie and Mr. Duane Simpson. We believe this resource guide has encapsulated the necessary information required to ensure a “Universal Design” concept for all persons with hearing loss.

It is our intent that this document will provide the necessary information required to ensure accessible communication will be prevalent in mainstream society thereby ensuring access for persons with hearing loss everywhere.

Janice McNamara

Executive Director
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Endorsements

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<http://www.voicefordeafkids.com>



<http://www.hearcanada.com/>



<http://www.canadianaudiology.ca/>



<http://www.anac.ca/en/>

Terminology

To assure clarity in studies and reports, the definition of terms used is always necessary. In the field of hearing loss proper definitions are exceptionally important because there is much confusion about terminology. The definitions of hearing loss and deafness are poorly understood not only by the general population but also by researchers, analysts, and planners.

Hearing loss can be defined in one of two ways:

1. **Audiometric:** the medical diagnosis made by a hearing healthcare professional that specifies the degree and configuration of hearing loss.
2. **Functional:** specifies how a person with a hearing loss functions in terms of language, communication mode, and preference.

The Canadian Hard of Hearing Association defines hard of hearing individuals as 'a person who has a hearing loss and whose usual means of communication is spoken language.' This definition includes a broad spectrum of hearing loss, including those who are deafened and those deaf in childhood and educated orally.

(Source: Canadian Hard of Hearing Association, Characteristics, and Needs of Persons with Hearing Loss, May 2007)

"The Canadian Association of the Deaf [CAD] recognizes a person to be medically/audiologically deaf when that person has little or no functional hearing and depends upon visual rather than auditory communication. Visual means of communication include sign language, lipreading, speechreading, and reading and writing. The CAD also accepts the definition developed by Gallaudet University for use in the United States census: "Anyone who cannot understand speech (with or without hearing aids or other devices) using sound alone (i.e. no visual cues such as lipreading) is deaf." Source: (Canadian Association of the Deaf, Definition of Deaf, July 2002)

(For detailed definitions, refer to our glossary in Section 11 and to our website at <http://www.chha.ca/chha/projects-words.php>).

Deaf and deafened persons do not generally benefit from audible warnings, devices, etc. They rely mainly on visual cues that allow them to understand or be aware of their environments.

Hard of hearing persons on the other hand rely on both audible and visual signals and cues.

These differing needs should be kept in mind when developing plans for new buildings, renovating older ones, and providing meeting and event accessibility.

Section 1: Purpose of Document

The Canadian Hard of Hearing Association has long recognized the need to compile a document that clearly states the barrier-free needs of hard of hearing persons in contrast to the needs of other disabilities. Our experience is that hard of hearing persons have not received the same attention and consideration as those with mobility and visual disabilities. Given the increasing attention that Universal Design and Barrier-Free access is receiving from government organizations intent on making Canadian facilities accessible, it is time to put hearing loss at the forefront of planning exercises.

When researching the Internet, researchers face the problem of defining the needs of the two major groups with hearing loss. However, there is no body of academic publications that could be cited. Various organizations have attempted to provide guidelines in some areas such as education, and transportation, however there are few design guidelines related to residences, mercantile, indoor entertainment facilities, outdoor recreation facilities or restaurants.

The purpose of this document is to provide researchers, planners, and event coordinators with the information they require to make sound decisions.

This document will:

- Provide resources and information pertaining to the accessibility needs of persons with hearing loss.
- Encourage the review and updating of existing standards and guidelines to bring them into line with current and future requirements of the population.
- Foster discussion and continuing updating of this document to keep it relevant and useful.

Section 2: Principles of Universal Design (UD)

“Designing environments involves the consideration of many factors, including aesthetics, engineering options, environmental issues, industry standards, safety concerns, and cost. Typically, products and environments are designed for the average user. In contrast, universal design (UD) is “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (http://www.design.ncsu.edu/cud/about_ud/about_ud.htm).

The Principles of Universal Design are defined by the Centre for Universal Design as:

- 1. Equitable Use:** The design is useful and marketable to any group of users.
- 2. Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
- 3. Simple and Intuitive Use:** Use of the design is easy to understand.
- 4. Perceptible Information:** The design communicates necessary information effectively to the user.
- 5. Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintentional actions.
- 6. Low Physical Effort:** The design can be used efficiently and comfortably.
- 7. Size and Space for Approach and Use:** Appropriate size and space is provided for approach and use.

Source: *The Centre for Universal Design*
<http://www.design.ncsu.edu/cud/>

A standard bank of pay-phones is not accessible to everyone. If one of those pay-phones has Text Telephone/TTY capability, the telephone becomes accessible to everyone, regardless of their hearing acuity.

“When designers apply universal design principles, their products and environments meet the needs of potential users with a wide variety of characteristics. Hearing loss is just one of many characteristics that an individual might possess and should be considered when developing a product or environment she and others might use”.

Source: <http://www.washington.edu/doi/Brochures/Academics/instruction.html>

Making an environment accessible to people with hearing loss often benefits others. For example, captioning designed to make the audio portion of film and TV programs accessible to those with hearing loss, is today often used by all patrons in noisy environments such as sports bars and in museums. When computer assisted realtime translation (CART) is provided at conferences, they become accessible to more people, including seniors who do not wear hearing aids and new Canadians still perfecting their language skills.

It makes sense therefore to take into consideration the needs of persons with hearing loss. But what are those needs?

Section 3: Laszlo's Principles of Design for Hard of Hearing Access

According to Dr. Charles Laszlo, Founding President of the Canadian Hard of Hearing Association, CM, OBC, PhD, PEng, CCE, Professor Emeritus, Department of Electrical and Computer Engineering, University of British Columbia, “[when doing an Internet search on accessibility for persons with hearing loss]... Unfortunately, much of the information is repetitive and few, if any, are formulated in terms of Universal Design Principles.” Professor Laszlo has for years argued that the needs of hard of hearing persons must similarly be recognized and formulated in terms of Universal Design Principles. The following table summarises the design elements to be considered. CHHA is the first organization to promote Laszlo's Principles as the foundation for hard of hearing accessibility and we encourage all architects, designers and planners to incorporate them in their strategic plans, accessibility audits, events planning, architectural and interior designs.

1. Design for good acoustics and noise control
2. Design for appropriate visual conditions, including placement of light sources, levels of illumination and adequate signage
3. Non-acoustic alerting and notification systems are built-in
4. Augmented telecommunication systems are included
5. Provisions for assistive communication technologies are part of the organization's Best Practices
6. The design includes awareness of the effect of design elements on people with hearing loss

Source: Charles A. Laszlo, *Private communication*, 2006

Section 4: Codes, Standards and Guidelines

The laymen will come across many terms used by various government levels and organizations when preparing their accessibility plans. This section seeks to clarify the difference between Codes, Standards and Guidelines and help answer the question: "Why are some facilities accessible and others less so, or not at all?"

National Building Codes (NBC): These codes apply to the construction or renovations of federal buildings and structures including those of Crown Corporations and construction in those provinces which have adopted part or all of the NBC under provincial acts. Buildings leased by the Government of Canada are not bound by The National Building Code but fall under Provincial Building Code regulations.

"The National Building Code of Canada is a model code whose principal objective is to set out requirements and criteria to provide a minimum acceptable level of health and safety for occupants of buildings across Canada. As a model code, the NBC has no legal status unless adopted or adapted by an authority having jurisdiction. Through adoption and adaptation, it serves as the basis for all building regulation in Canada."
(Source: National Research Council).

Government departments and Crown corporations must follow the National Building Code but are free to exceed its regulations.

Provincial Building Codes (PBC): Each province has its own Building Code covering construction. Builders may refer to the National Building Code for guidance, but there is **no obligation** or guarantee on their part that they will duplicate it.

"Provincial codes are model National Building Codes, Fire Codes, and Plumbing Codes, that are adopted as they are or modified to suit local needs. Once adopted these codes become the legal regulations for construction for that province and are enforced by that province."

(Source: <http://www.about-building-in-canada.com/provincial.html>)

Municipalities must enforce provincial building code regulations; however they are free to exceed these regulations.

Canadian Standards Association (CSA): The CSA "is a not-for-profit, non-statutory, voluntary membership association engaged in standards development and certification activities. CSA standards reflect a national consensus of producers and users – including manufacturers, consumers, retailers, unions and professional organizations and governmental agencies. The standards are used widely by industry and commerce and often adopted by municipal, provincial, and federal governments in their regulations, particularly in the fields of health, safety, building and construction, and the environment."

(Source: Neutropenia Support Association Inc.).

The Standards Council of Canada (SCA) is the coordinating body of the National Standards System, a federation of independent, autonomous organizations working towards the future development and improvement of voluntary standardization in the national interest."

(Source: Canadian Standards Association, CAN/CSA B651-M90)

Because the Barrier-Free Design standards developed by the CSA and the SCA are **voluntary standards**, they are not legally binding until adopted and/or mandated by appropriate jurisdictions. Without such incorporation of standards into regulations, builders are not obligated to follow them.

FROM VOLUNTARY COMPLIANCE TO INDUSTRY STANDARDS

In its role as the only national consumer association for the hard of hearing in Canada, the Canadian Hard of Hearing Association strongly encourages municipal, provincial and national jurisdictions to adopt the guidelines set forth in this document and adapt them to their existing or future accessibility plans. **Voluntary compliance needs to be replaced by standards that are adopted and enforced by Industry.**

“Why are some facilities accessible and others less so, or not at all?”

The most common reasons are:

1. The voluntary nature of the standards, unless adopted by a government is one of many loopholes that allows construction of barrier-prone facilities. Unfortunately it is the cost of doing business to the detriment of hard of hearing citizens.
2. In order to protect businesses from financial hardships, the barrier-free requirements of building codes cover only new construction or major renovations. Older buildings are often exempt from meeting accessibility standards and guidelines until they are due for major renovations.
3. Building codes, standards and guidelines often recommend the minimum accessibility standards acceptable. There is no incentive for the architect/construction company to provide more than this minimum. This is possibly due to the limited awareness of architects and designers and the possible additional costs involved. Awareness training of both designers and project sponsors is essential.
4. Since national, provincial, municipal codes may differ, the accessibility provided may differ substantially even though the facilities constructed/renovated may all be in the same city.

Section 5: Role of Architects, Designers And Planners

Architects, Designers, Managers, and Event Planners play a special role in ensuring that building constructions and renovations, Building Codes and existing Standards and Guidelines used by their facility **exceed the minimum requirements** presently in use. Minimum requirements will no longer stand court challenges under the Human Rights Acts.

- 5.1** *City Planners, Architects, Policy Analysts, Administrators, Building Management, Interior Designers, Events Planners and Landscape Architects should take into consideration guidelines and standards that*

MEET:

- the needs of persons with hearing loss
- regulatory requirements (municipal, provincial and federal)

ANTICIPATE:

- the future requirements of their facilities given the rise in noise induced hearing loss in youth who use unprotected music players
- The future requirements of our aging population. More than half of all individuals over the age of 75 (56%) report some degree of hearing loss

(**Source:** *Canadian Association of Speech-Language Pathologists and Audiologists, 2000*)

(**Source:** *Participation and Activity Limitation Survey (PALS), Statistics Canada, 2001*)

- 5.2** The multiple roles of the organization as both service provider and employer will influence the degree, scope, standards, and guidelines to be used.
- 5.3** The organization needs to examine its procedures and infrastructure in a step-by-step process that identifies and eliminates all barriers to communication. A sample Communication Accessibility Checklist can be downloaded from CHHA at <http://www.chha.ca/chha/projects-communication.php>
- 5.4** Annual accessibility reports shall identify steps to be taken over time to remove identified barriers and to prevent new ones.
- 5.5** To achieve effective, efficient, and economical outcomes, organizations need to consider integrating accessibility planning into their business planning cycles.
- 5.6** Accessibility standards and guidelines should be made available for public consultation as part of the organization's accountability to the community.
- 5.7** Under provincial and federal Human Rights Acts, organizations are required to accommodate the needs of individuals, except where this would cause undue hardship to the service provider. However, the modest costs involved in providing effective accessibility has made the assertion of undue hardship a virtual non-issue which the courts could dismiss without detailed analysis.

Section 6: Best Practices and Policies

UD PRINCIPLE: GOOD ACOUSTICS & NOISE CONTROL

- 6.0 DESIRABLE ACOUSTICS** – Rooms need to be designed for proper reverberation and attenuation of sound:
- a.** Too little or too much furnishing will affect comprehension
 - b.** Piped-in music, waterfalls and fountains, radios, air conditioners, fluorescent lighting and open windows are all potential sources of noise that require reduction or elimination
 - c.** Sound reverberation and attenuation can be controlled through the judicious use of carpeting, lowered ceilings, textured wall paper or wall surfaces and the use of sound reducing chair and table leg covers
 - d.** When choosing material for plumbing, heating and air ducts, designers need to consider choosing the quietest devices, pipes and fixtures to further reduce noise
 - e.** Designers need to consider locating rooms that are potentially noisy such as lunch rooms, copying rooms, etc., away from lecture halls, offices and wherever persons with hearing loss may work or gather
 - f.** Investigate and remedy all causes of extraneous noise

6.1 PROVIDE TV CAPTIONING –

Televisions used in hotel rooms, restaurants, pubs, meeting rooms, etc., should be capable of displaying captions. The provision of Open Captioning is recommended for the benefit of all clients, especially in a noisy area. In public venues, TVs need to be defaulted to Open Captioning and the proprietor needs to stand by the policy. It is imperative for everyone to have accessible communication at all public venues.

6.2 MAKE USE OF ALDs – Assistive

Listening Devices (ALDs) are technical devices that make communication easier in difficult listening environments. They are used to minimize the effects of noise, echoes, and distortion when a hard of hearing person must listen to speakers at a distance or a noisy place. There are three types of ALDs: Frequency Modulation (FM), Infrared (IR) and Audio Loop (AL). Wiring for sound amplification systems should be considered when building or renovating.

6.3 PUBLIC ADDRESS SYSTEMS – ALDs

can work in conjunction with public address systems providing the person with hearing loss high acoustic clarity without distortion. Public address systems are notorious sources of noise for persons with hearing loss and no longer need to be sources of frustration. Public address systems can also be joined with text-communication systems to provide both audio and visual messaging capabilities.

UD PRINCIPLE: APPROPRIATE VISUAL CONDITIONS

6.4 INDOOR LIGHTING – Adequate ambient and artificial lighting is important for speechreading or watching sign language interpreters. Designers need to consider that certain lighting situations can be a detriment to persons who use visual clues to help them understand the speaker. Ambient light can be controlled by the architect's judicious placement of windows and where he decides to locate the building on the lot, or controlled by the use of curtains in older buildings. Artificial light should likewise be controllable through dimmers and spot lights.

6.5 OUTDOOR LIGHTING – At night adequate artificial light is important for speechreading and safety reasons.

6.6 ACCESSIBLE SEATING – Meeting rooms should be designed so that all members of the audience have clear sight-lines to the speaker. Further, the design must ensure that speakers cannot be placed in front of a window.

6.7 INFORMATIONAL SIGNAGE – Internationally accepted signs and symbols provide persons with hearing loss visual cues about which accessibility services are provided by the organization.

6.8 DIRECTIONAL SIGNAGE – Adequate signs and symbols provide persons with hearing loss visual cues about the direction to various services, business locations, floor numbers and level location in parking lots. It is recommended that CNIB standards for contrasts and colours be adopted.

(Source: The Canadian National Institute for the Blind and Transport Canada: "Design Guidelines for Meeting the Access Needs of Blind and Visually Impaired Travelers in Transportation Terminals" 1989)

6.9 MAKE USE OF RECOGNIZED SYMBOLS – Accessible facilities should be identified by the internationally accepted symbols of hearing loss accessibility. Organizations are strongly encouraged to use the designated symbol in all their promotional activities.

6.10 ELECTRONIC TRANSACTIONS – Kiosks, point of sales, and other interactive transaction machines require text messages in conjunction with audio messages.

UD PRINCIPLE: BUILT-IN ALERTING SYSTEMS

6.11 NON-ACOUSTIC EMERGENCY ALARMS – Alarms that light and flash in conjunction and in unison with audible emergency signals are required and legislated in some provinces.

Research supports the findings that lower frequencies are more effective for all building occupants, including those who are hard of hearing.

Non-acoustic notification should be considered for use in, but not limited to:

- a. Fire/smoke alarms in public facilities and private residences
- b. Security entrances, gates and barriers
- c. Emergency alarms and sirens
- d. Fire station sirens warning road traffic to beware
- e. Telephone ringers
- f. Door bells
- g. Microwave ovens
- h. Oven timers
- i. Electronic kiosks (ex. automated bank tellers)
- j. Perimeter, baby and similar monitors
- k. End-of-class and end-of-period buzzers
- l. Elevator alarms

UD PRINCIPLE: INCLUDE AUGMENTED TELECOMMUNICATION SYSTEMS

6.12 DO NOT DEPEND ON THE TELEPHONE – The organization should not rely on the telephone as their primary communication tool with hard of hearing customers. Since they cannot hear, or have problems understanding when using telephones, persons with hearing loss often prefer to use alternative communication modes when made available. Preferred alternatives include but are not limited to Text Telephones (TTY), fax, email and instant messaging networks (ex. MSN and Skype).

6.13 USE MESSAGE RELAY SERVICES (MRS) – MRS is a free service provided by major telephone companies that allows persons with Text Telephones to call those who do not have a Text Telephone, or vice versa. Organizations should make their staff aware of the service and consider integrating it as part of their normal business practices.

6.14 SIMPLIFY INQUIRIES – Provide a toll-free inquiries line for Text Telephone users. Email inquiry lines should be available.

6.15 PROVIDE TEXT MESSAGING – Kiosks, point of sales and other interactive transaction machines, including restaurant drive-throughs require text messages in conjunction with audio messages.

6.16 PUBLIC ADDRESS SYSTEMS – See Sec. 6.3

6.17 PROVIDE ACCESSIBLE TELEPHONES – Accessible telephones (TTY, volume control and hearing aid compatible (emitting an electromagnetic field accessible to a hearing aid's Telecoil) should be provided by employers and merchants, in elevator and taxi telephones.

6.18 PROVIDE ACCESSIBLE PAY-PHONES –

Public Pay-TTY Telephones should be available at every cluster of public pay-phones. The Canadian Radio-television and Telecommunication Commission (CRTC) requires that “for all new pay telephone installations and pay telephone replacements in banks of pay telephones, the Commission directs Bell Canada et al. and TCI to equip at least one of the pay telephones with a TTY unit.”

(*Source: Telecom Decision CRTC 2004-47-144*).

6.19 IDENTIFY ACCESSIBLE TELEPHONES

– Accessible telephones should be clearly identified. (See Sec. 6.9)

UD PRINCIPLE: PROVISION OF ASSISTIVE COMMUNICATION TECHNOLOGIES

6.20 PROVIDE AN ASSISTIVE LISTENING DEVICE (ALD) –

Assistive Listening Devices (See Sec. 6.2) are devices that make communication easier in difficult listening environments. ALDs should be provided in recreational facilities, theatres, conference centres other places of assembly such as meeting rooms, auditoria and classrooms. The successful use of ALDs depends on the appropriate provision of hearing aid compatible accessories such as headsets, ear-buds, neckloops and silhouettes.

6.21 PROVIDE PRINTED RESOURCES –

Persons with hearing loss benefit by reading material and handouts ahead of any meeting. Having read the material ahead of time they are better prepared to expect certain words when speech-reading. For similar reasons, materials should be provided to communication providers ahead of meetings (Captioners and Interpreters).

6.22 ELECTRONIC TRANSACTIONS – See Sec. 6.10

6.23 CASH REGISTERS – The LCD or other display of the price on the cash registers should face outward towards the customer.

6.24 PROVIDE TV CAPTIONING – See Sec. 6.1

6.25 PROVIDE COMPUTER ASSISTED REALTIME TRANSLATION (CART) –

Another type of interpretation, CART provides visual text with nearly instantaneous translation of the spoken word. The CART provider types the speaker’s words on a stenographic machine which is connected to a computer with software to translate the stenographic code into English. The translation can then be read on the computer screen; for larger group events the CART text can be displayed on a large video screen or projected onto the wall. CART can be provided remotely through an Internet and telephone link. Not all meetings require the use of CART but if offered, CART can provide a transcript of the proceedings and facilitate the understanding of all the meeting’s participants, especially in facilities with poor acoustics.

6.26 PUBLIC ADDRESS SYSTEMS – See Sec. 6.3

6.27 PAD AND PAPER – The oldest form of effective communication technology is often the only low-tech requirement staff may need to communicate effectively.

UD PRINCIPLE: AWARENESS OF DESIGN ELEMENTS

6.28 EVALUATE THE DESIGN

CHARACTERISTICS OF YOUR SPACE –

The design of interior and exterior space has a major impact on the ability of hard of hearing people to function and on the steps that should be taken to serve persons with hearing loss. For this reason, the design characteristics of the space and environment in which services are delivered must be evaluated.

6.29 BEWARE OPEN SPACE DESIGNS –

Open Space Designs provide sight and light solutions that benefit persons with hearing loss, **but acoustics are generally worse**. The problem does not affect only hard of hearing people. Open Space Designs are noisy with the increased use of cell phones, computers, copiers, and human interactions. While clear lines of sight to speakers and alarms via office doors and walls with windows, adequate lighting, corner mirrors, and similar Open Space Design solutions are beneficial, the need to vigorously control acoustical and noise aspects should be a major concern to Interior Designers.

6.30 ARCHITECTURAL LANDSCAPE DESIGN –

Consideration should be given to the following:

- a.** Locate the building on the lot that faces away from environmental noise such as roads
- b.** Locate the building on the lot that faces away from the rising and setting sun in order to control ambient light
- c.** Provide a clear line of sight for persons with hearing loss to entrances, exits, band shells and other venues
- d.** Landscaping should take into consideration the necessity to reduce noise but still allow a clear line of sight

- e.** Garden landscaping, ornaments and plant material should also take into consideration the need for visual cues for the hard of hearing

6.31 BEWARE ELECTROMAGNETIC INTERFERENCE (EMI) –

“...Electromagnetic fields are the by-product of many electrical devices and systems, such as fluorescent lighting, electric motors, and electric power lines. Many modern digital devices, such as computers, electronic game systems, and microprocessor-controlled equipment, have switching rates whose frequencies can produce interference (EMI). Digital wireless telephones, wireless local area networks and other data transmission devices that operate at high frequencies can also cause interference problems for listeners whose hearing aids contain telecoils. There are also naturally occurring sources of electromagnetic fields, such as those created by lightning and perhaps most commonly, electrostatic charges...[Electromagnetic] fields can be serious sources of interference for hearing aids being operated in the telecoil (T-coil) setting to use telephones and assistive listening devices (ALDs). Interference can be experienced as a hum, buzz, crackle, or feedback whine through a hearing aid, competing with and often entirely masking the sound source one is trying to hear... Guidance on the application of various interference reduction techniques is readily available from a number of books and other sources. Measurement of hearing aids from a number of manufacturers has demonstrated that the levels of immunity recommended by ANSI C63.19 “*American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids*” are quite achievable and in

fact are available in a number of commercially available products today”.

(**Source:** Access Board Research).

The EMI aspects should always be considered by the electrical designer, usually a consulting engineer. For example, the use of single-phase motors requires the flow of large currents in the wires and these generate magnetic fields.

Depending on where the wires run, these fields may interfere with loops and hearing aids. The use of three-phase motors eliminates the problem.

6.32 MAKE USE OF ACOUSTICAL CONSULTANTS – Sections 6.28-6.32 are guidelines only. In the evaluation of existing spaces and in the design of new indoor and outdoor environments, the use of acoustical consultants experienced in hard of hearing needs is highly recommended.

6.33 USE CHECKLISTS – Communication and Accessibility Checklists specifically designed with the needs of persons with hearing loss are useful tools when planning or designing accessibility components. Their use is highly recommended. A sample Communication Accessibility Checklist can be downloaded from CHHA at <http://www.chha.ca/chha/projects-communication.php>

6.34 EXCEED MINIMUM REQUIREMENTS – The minimum accessibility requirements of building codes, guidelines and standards provide for basic and often inadequate accessibility of facilities. The growing population of persons with hearing loss requires organizations to maximize their accessibility provision. Exceeding the accessibility requirements of building codes is economical, efficient and effective and will reduce the possibility of challenges under the Human Rights Acts.

6.35 INVESTIGATE – Investigate to determine what emergencies might disproportionately affect building occupants who receive your services and what non-acoustic alerting devices, systems, and procedures could be provided to address their needs. This may require the provision of appropriate fire alarms. To ensure persons with hearing loss are aware of emergency signals alarms should provide both visual and auditory signals.

6.36 RECEPTION AND FRONT ENTRANCES – In tandem with appropriate signage, the provision of ALDs, accessible telephones and good acoustics in reception rooms, the organization’s front-line staff should receive awareness training in communicating with persons with hearing loss. Such training is available online or from local community resources.

6.37 DEVELOP KNOWLEDGEABLE STAFF – Participation in Hearing Awareness and Sensitivity Training helps staff (minimum of all front line workers in contact with customer) feel comfortable in serving persons with hearing loss. Annual refresher training is necessary to ensure that new and summer staff continues to provide the organization’s mandated level of service. Staff training should be provided in conjunction with and as part of a Best Practices Policy.

6.38 DEVELOP A BEST PRACTICES POLICY – The organization’s Best Practices Policy should include staff when preparing policy. The Policy should include proven solutions to common problems such as:

- a. How to speak to hard of hearing clients
- b. What community resources are available and how to contact them
- c. Where technical devices are available in the facility and how to obtain them

- d. How to troubleshoot assistive listening devices
- e. How to prepare for meetings and interviews
- f. How to communicate by telephone, TTY, etc.

6.39 IDENTIFY CLIENTS – Organizations should consider keeping a database of their clients who have hearing loss. By marking their files with a code or access symbol, they are helping their staff provide appropriate services. Privacy legislation should be taken into account before such measures are taken.

6.40 ENCOURAGE EMERGENCY PREPAREDNESS – Awareness training is a two-way street. Persons who are hard of hearing will benefit from emergency preparedness in the same manner that staff will benefit from communication and sensitivity training. Provide hard of hearing persons with written material on what to do in an emergency. (See Bibliography for one possible source)

6.41 PROMOTE/ADVERTISE YOUR SERVICE – To ensure that accessible services for persons with hearing loss are used by consumers, organizations are encouraged to promote and advertise their availability in corporate websites, brochures, posters and all other means of advertising and promotion.

Section 7: Facility-Specific Guidelines

7.0 SECTION 7 CANNOT BE USED IN ISOLATION.

SECTION 6 MUST BE READ AND ITS GUIDELINES TAKEN INTO CONSIDERATION WITH THE ADDITIONAL FACILITY-SPECIFIC GUIDELINES PROVIDED BELOW.

7.1 RECREATIONAL FACILITIES (BAND, FOOTBALL, BASEBALL, AND OTHER STANDS, SPORTSPLEXES, SWIMMING POOLS, ETC.)

7.2 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.3 PUBLIC ADDRESS SYSTEMS – The Assistive Listening Devices noted earlier can work in conjunction with public address systems providing the person with hearing loss high acoustic clarity without distortion. Public address systems are notorious sources of noise for persons with hearing loss and no longer need to be sources of frustration. Public address systems can also be joined with text-communication systems to provide audio and visual messaging capabilities.

7.4 ELECTRONIC BILLBOARDS – Also known as Jumbotrons, provide excellent means for captioning, video, and emergency messages. Provide CART through this mode.

7.5 CAFETERIAS, RESTAURANTS AND PUBS

7.6 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.7 UP-TO-DATE MENUS including the “Day’s Special” increases comprehension and maximizes communication between client and servers. Text information should be between 12-18 pt. For Web Pages, font sizes should be adjustable by the user.

(Source: Canadian National Institute for the Blind. Clear Print Accessibility Guidelines)

7.8 QUIET SEATING AREAS without background music improves customer satisfaction and maximizes communication between client and servers.

7.9 DINING ROOMS – Increasingly, eating establishments are providing the comforts of home. Many requirements of residential dining, living and kitchen are similar to those in an eating establishment. See Sec. 7.71-7.79

7.10 ADEQUATE LIGHTING – Care should be given to providing adequate lighting so diners can speechread one another easily.

7.11 PLACES OF WORSHIP

7.12 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.13 PROVIDE COPIES OF SERMONS AND ORDER OF SERVICES – Helps parishioners follow along with the spoken communication.

7.14 DIRECTIONAL AND INFORMATIONAL SIGNAGE – Adequate signs and symbols provide persons with hearing loss visual cues about the direction to various rooms and information about the facility and its services. It is recommended that CNIB standards for contrasts and colours be adopted.

7.15 LIBRARIES

7.16 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.17 ONLINE SERVICES – Computer-based services are greatly appreciated by persons with hearing loss who might otherwise struggle through a telephone conversation to find information such as business hours, locations, or an update of their account.

7.18 DIRECTIONAL AND INFORMATIONAL SIGNAGE – See Sec 6.7 and 6.8

7.19 BUSINESS, MERCANTILE AND CIVIC FACILITIES (INCLUDING BANKS AND SHOPS)

7.20 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.21 AUDIO LOOP SYSTEMS (COUNTER AND FLOOR LOOPS) – Portable versions used at customer service counters are recommended and beneficial in high noise areas.

7.22 POLICE STATIONS, COURTS, AND CORRECTIONAL FACILITIES

7.23 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.24 STAFF AWARENESS TRAINING – Due to the special nature of interactions between staff, accused and inmates with hearing loss in correctional facilities, staff awareness and training in the needs and behaviour of persons with hearing loss is especially important.

7.25 PROVIDE SIGN LANGUAGE INTERPRETERS – Accused and inmates who require sign language interpreters to communicate should be accommodated to benefit from rehabilitation programs.

- 7.26 PROVIDE HEARING AIDS AND DEVICES** – The hard of hearing accused or inmate should be provided with an assistive listening device to work with the hearing aid to fully benefit from rehabilitation programs and therapies. Telephones and televisions should likewise be accessible to allow them access to social and recreational opportunities.
- 7.27 PROVIDE PRINT INTERPRETERS (CART)** – See Sec. 6.25
- 7.28 ACCESSIBLE CELLS** – Accessible cells for persons with hearing loss are required in correctional facilities. Cells and public rooms should be equipped with audible emergency warning systems, hearing aid compatible telephones, or text-based telephones and captioned capable televisions.
- 7.29 WASHROOM FACILITIES**
- 7.30 SEE SECTION 6: BEST PRACTICES AND POLICIES**
- 7.31 PUBLIC ADDRESS SYSTEMS** – See Sec. 6.3
- 7.32 NON-ACOUSTIC EMERGENCY ALARMS** – See Sec. 6.11
- 7.33 TRANSPORTATION AND TRAVEL FACILITIES**
- 7.34 SEE SECTION 6: BEST PRACTICES AND POLICIES**
- 7.35 WEB-BASED TRAVEL PLANNERS** – Facilities are encouraged to provide Web-based travel planners and information retrieval.
- 7.36 PROVIDE TEXT MESSAGING** – See Sec. 6.3 and 6.15
- 7.37 PROVIDE CAPTIONED COMMUNICATION DURING AIR TRAVEL** – Captioned safety videos, in-flight movies, in-flight communication and captioning turned on at all airport TVs should be provided as part of the air carrier’s and terminal’s Best Practices policy.
- 7.38 HOTEL, MOTEL AND OTHER ACCOMMODATION**
- 7.39 SEE SECTION 6: BEST PRACTICES AND POLICIES**
- 7.40 ABIDE BY **ACCESS CANADA** GUIDELINES** – *Access Canada* is a program of the Hotel Association of Canada designed to meet the needs of seniors and people with disabilities. Participating establishments will display the *Access Canada* logo with their designated level. The access levels that meet the needs of persons with hearing loss are A-3 and A-4.
<http://tourismmall.victoria.bc.ca/access.htm>
- 7.41 PORTABLE HOTEL ACCESSIBILITY KITS** – A kit should be available when requested by hard of hearing guests. The kit should include a TTY, ALDs (to warn of door bells/knocks, alarm clocks), and a telephone amplifier. Hearing awareness material for hotel staff should also be available to familiarize themselves with the equipment and how to communicate with their guests.
- 7.42 NON-ACOUSTIC FIRE ALARMS** – Alarms that light and flash in conjunction and in unison with audible emergency signals are required and legislated in some provinces. Regardless of their availability, the Best Practices Policy of the hotel should train staff to individually alert hard of hearing persons of fire alarms.
- 7.43 RECEPTION TTY** – Reception areas require a TTY to be able to accept internal calls from guests using a TTY in their rooms.

7.44 PROVIDE TV CAPTIONING – Older televisions in hotel rooms should be phased out and replaced with TVs capable of displaying captions. Remote controls **MUST** allow control of the captioning feature.

7.45 SCHOOLS AND OTHER EDUCATIONAL FACILITIES

7.46 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.47 MAKE USE OF EDUCATIONAL AUDIOLOGISTS – Similarly to section 6.32, the reader is encouraged to consult with Educational Audiologists in the evaluation of classroom spaces and in the design of new indoor and outdoor environments. The use of these consultants is recommended for building acoustically friendly classrooms and recommending the best amplification technology for the selected environment.

7.48 USE “RAMPS” – RAMPS “is an acronym for a method of managing noise, reverberation and speaker-listener distances in the classrooms”.

RAMPS promotes 5 strategies:

- **Reduce Noise** (by using sound absorbing surfaces)
- **Amplify teacher and student voices** (amplification systems and sound-field systems)
- **Manage noise, reverberation and distance** (reducing background noise by closing doors, turning machines off, closing windows and landscaping)
- **Parents and professionals working together** (special education advisory committees and parents advocate for acoustical upgrades and help raise funds)

■ **Student strategies** (appropriate seating, peer help with P.A. announcements, print versions of material provided in an audio format)

(*Source: VOICE for Hearing Impaired Children*
http://www.voicefordeafkids.com/PDFs/Managing_Noise.pdf)

7.49 RECEPTION TTY – Reception areas require a TTY to be able to accept external calls from parents who use TTYs.

7.50 PROVIDE ASSISTIVE LISTENING DEVICE KITS – A kit should be available when requested by hard of hearing students in residence. The kit should include a TTY, ALDs (to warn of door bells/knocks, alarm clocks), and a telephone amplifier). Hearing awareness material should be available to residence staff to familiarize themselves with the equipment and how to communicate with their students.

It is equally important that hearing students are also made aware of the needs of hard of hearing students and the reason why they use assistive listening devices.

7.51 PROVIDE TV CAPTIONING – Older televisions in classrooms should be phased out and replaced with TVs capable of displaying captions. Remote controls should allow control of the captioning feature.

7.52 INTERPRETERS AND COMPUTER NOTE-TAKERS – Lectures should be provided in the alternative format preferred by the student (i.e. CART/ASL/LSQ).

7.53 INTEGRATE ANSI S12.60-2002 *American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools* into the design of all educational facilities. Since there is a major effort under way to align Canadian and US standards, it is appropriate to call attention to this standard.

The ANSI S12.60-2002 standard provides excellent guidelines for acoustical performance and it should be followed in both adapting of classrooms to accommodate hard of hearing students and in new designs generally. The standard was motivated by research that shows that student performance generally is negatively influenced by noise and poor acoustics.

7.54 HEALTH CARE FACILITIES (HOSPITALS, CLINICS, ETC.)

7.55 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.56 RECEPTION AREAS – Staff require hearing awareness training to better communicate with patients. TTY telephones are also required for both incoming calls and guest telephones. Informational signage should be prominently displayed.

7.57 REGISTRATION AND BOOKING ROOMS – These rooms are often a source of noise. Patients with hearing loss should be offered the choice of a quiet room or an Assistive Listening Device.

7.58 IDENTIFICATION – To inform rotating staff about the communication needs of hard of hearing clients, patients should be asked permission to identify their chart indicating they are a person with hearing loss. This can be achieved by displaying a notice or a symbol on their chart and at the end of their beds.

7.59 PROVIDE TV CAPTIONING – Televisions in waiting rooms and patient's rooms should support Open or Closed Captioning. Signage informing patients of this service should be prominent and staff should know how to turn the captioning on and off. See Sec. 6.1

7.60 ACCESSIBILITY KIT – A kit should be available on each floor so the nursing station can provide one as requested. The kit should include a TTY, and an ALD. Hearing awareness material should be included for nursing staff to familiarize themselves with the equipment and how to communicate with their patient.

7.61 SIGN LANGUAGE INTERPRETERS – American Sign Language (ASL) or Langue des signes québécoise (LSQ) interpreters are required when professionals requested by the patient for all registrations, pre-bookings and consultations with doctors and other health care.

7.62 NOTETAKING – Patients who do not know sign language should be provided with alternative communication services. Some health centres have used computer notetaking with laptops, and in some circumstances even CART services have been justified. When all else fails pad and paper is a very effective technology.

7.63 ESTABLISH A BEST PRACTICES POLICY –

7.64 SEE SECTION 6: BEST PRACTICES AND POLICIES

Pre-admission procedures need to take into account:

- a.** Type of hearing loss and special needs
- b.** How to inform doctor, surgeon, anaesthesiologist, nurses and orderlies of the communication needs of the patient
- c.** How to communicate with the patient
- d.** Policy regarding removal of hearing aids prior to surgery
- e.** What devices are available from the hospital and how to request them

7.65 MUSEUMS, GALLERIES, THEATRES AND RESOURCE CENTRES

7.66 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.67 RECEPTION AREAS – Staff require hearing awareness training to better communicate with patients. TTY telephones are also required for both incoming calls and guest telephones. Informational signage should be prominently displayed.

7.68 UPGRADE TV AND VIDEO CONSOLES – Older televisions and video consoles should be phased out and replaced with TVs capable of displaying captions. Open captions are useful to all patrons, especially in noisy environments.

7.69 TOUR GUIDES: Visitors should have a choice of touring the facility using one of these accessibility strategies:

- a.** Acousti-guides (Audio + Hard copy of text)
- b.** Audio + Text Tours (Audio + Video on a hand held PDA) make tour cultural attractions accessible with complete independence
- c.** Sign language interpreters for persons who do not use their residual hearing
- d.** Specially trained guides and docents using Assistive Listening Devices for visitors with hearing loss who prefer to speechread and follow the regular tours.

7.70 OPEN CAPTIONING: All films and videos and clips shown in theatres and computer consoles should have text information (subtitles or Open Captioning) provided along with the audio components.

7.71 PRIVATE, RETIREMENT AND LONG TERM CARE RESIDENCES

7.72 SEE SECTION 6: BEST PRACTICES AND POLICIES

7.73 FRONT ENTRANCES – Certain Assistive Listening Devices can replace the auditory signals that are not being heard. A Hearing Ear Dog will accomplish the same task and offer companionship and protection.

7.74 LIVING ROOM – The living room is a potential source of noise if not designed and furnished properly. Carpeting, uncovered windows, bare walls, high ceilings and background noise (fans, radios, open windows, etc.) require attention.

7.75 KITCHEN – Often a high noise area due to the fan in range hoods, radios, clinking dishes, running water, etc. This area needs to be regarded as the least accessible part of a home. When speaking to a hard of hearing person in the kitchen always:

- a.** Face the person when speaking
- b.** Turn off sources of noise such as fans, dishwashers, radios and water taps
- c.** Use tablecloths to reduce the noise of clinking dishes and flatware

7.76 TELEPHONES – All telephones need to be hearing aid compatible (accessible to a Telecoil) and have volume control. A Text Telephone should also be considered.

7.77 ASSISTIVE LISTENING DEVICES – Necessary in every room if the person is unable to hear the audible signals of telephones, door bells, ovens and fire alarms. ALD's are also helpful to enjoy television and entertainment systems.

7.78 BACKYARDS AND OUTDOOR LIVING – Wireless assistive listening devices can also be used in the backyard to make one aware of audible signals in the home.

7.79 TELEVISION – All new televisions sold today have a built-in closed captioning component. Individuals and retirement home staff are strongly encouraged to make them aware of its functioning.

Persons who prefer to use their residual hearing while watching television are greatly aided by specialty Assistive Listening Devices (FMs, Infrareds, and Audio Loops)

Section 8: Service-Specific Guidelines

8.0 SECTION 8 CANNOT BE USED IN ISOLATION.

SECTION 6 MUST BE READ AND ITS GUIDELINES TAKEN INTO CONSIDERATION WITH THE ADDITIONAL SERVICE-SPECIFIC GUIDELINES PROVIDED BELOW.

8.1 RADIO, TELEVISION AND FILMS

8.2 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.3 RADIO – The speed of delivery and the articulation of radio announcers greatly affect the comprehension and listening pleasure of persons with hearing loss. Frequently, easy listening stations are preferred by hard of hearing persons.

8.4 TELEVISION: Major film and television producers provide Closed Captioning of their films and programs. However, there are still many independent and specialty programs, film producers and educational institutions, etc. who are not providing captioning of their products. CHHA recommends that inaccessible material should not be purchased or broadcasted.

8.5 FILMS AND TELEVISION PROGRAMMING: An increasing phenomenon in our culture is the use of background music and voice-overs. To a person using a hearing aid these production and editing ‘enhancements’ are noise-barriers to their comprehension of the dialogue. Whenever possible, these should be removed and/or the volume reduced.

8.6 WORKPLACE AND JOB INTERVIEWS

8.7 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.8 COMMUNICATION AND SAFETY ISSUES – A workplace assessment will provide an opportunity to raise awareness about working with a person with hearing loss.

8.9 DESKS – Consider moving desks so the person with the hearing loss is facing the door with their backs to a wall. This provides better sight lines and reduces sound distortion.

8.10 QUIET ROOMS – Choose quiet meeting rooms and offer accessible seating.

8.11 TECHNOLOGY – Some employees will benefit from the use of pagers, cell phones, and PDAs. Similarly the use of instant messaging programs such as MSN and Skype enhance personal efficiency and communication. CART is available for conference calls and can be offered remotely (off-site)

8.12 WHERE TO GET HELP – When in doubt, have a list of community resources available for consultation.

8.13 INTERNET – WEBSITES

8.14 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.15 ACCESSIBLE MESSAGES – All audio messages should also be displayed as captions or text.

8.16 ACCESSIBLE VIDEO CLIPS – All video/ audio clips should display synchronized text messages.

8.17 DISPLAY ALTERNATIVE COMMUNICATION COORDINATES – Provide alternative ways of communicating with the organization. Telephone numbers should be accompanied by fax and TTY numbers as well as email coordinates.

8.18 ACCESSIBLE ADS AND DOWNLOADS – Advertisements and downloadable material should be designed or amended to add text to formats that are not accessible to persons with hearing loss.

8.19 INFORMATION, RECEPTION, AND SERVICE COUNTERS

8.20 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.21 REDUCE BACKGROUND NOISE – Eliminating or reducing background noise will enhance and facilitate the comprehension of persons with hearing loss.

8.22 AUDIO LOOP SYSTEMS – Portable versions used at customer service counters are beneficial in high noise areas. See Glossary.

8.23 RECEPTION TTY – Reception areas require a TTY to be able to accept calls from TTY users.

8.24 WALKING AND BUS TOURS

8.25 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.26 TOUR GUIDES – Customers should have a choice of seating and the use of an assistive listening device such as an FM system for use on the transportation vehicle and while walking in a group.

8.27 UP-TO-DATE TOUR INFORMATION IN TEXT-FORMAT – Increases comprehension and maximizes communication between clients and tour staff. Text information should have a font of 12-18 pt. See Sec.7.7

8.28 CONFERENCES, EXHIBITIONS, WORKSHOPS, AND SEMINARS

8.29 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.30 PROVIDE NAME TAGS – Name tags with large fonts and contrasting colors play an important role in successful communication because names are difficult to hear and hard to speechread.

(Source: Canadian National Institute for the Blind. Clear Print Accessibility Guidelines)

8.31 PROVIDE PRINTED RESOURCES – Persons with hearing loss benefit from reading material ahead of any workshop. Having read the material ahead of time they are better prepared to expect certain words when speechreading.

8.32 PROVIDE CAPTIONING – Televisions used in workshop rooms, meeting rooms etc. should be programmed to display open captions. The provision of open-captions is recommended for the benefit of all clients, especially in a noisy area.

8.33 PROVIDE PDFs of POWERPOINT – Presentations should be posted in PDF or PowerPoint formats on the organization's website to help persons with hearing loss who may not have understood everything spoken and be available at the presentation.

8.34 PROVIDE AN ASSISTIVE LISTENING DEVICE (ALD) – Assistive Listening Devices (See Sec. 6.2) are devices that make communication easier in difficult listening environments. The successful use of ALDs depends on the appropriate provision of hearing aid compatible accessories such as headsets, ear-buds, neckloops and silhouettes.

8.35 OFFER ACCESSIBLE SEATING – Accessible seating helps the hard of hearing person's comprehension, reduces visual barriers, and ensures the client's safety in case of an emergency.

8.36 CONFERENCE SITE – Conference organizers should take into consideration the hotel's or conference centre's accessibility including bedrooms, meeting rooms and ball rooms. Hotel staff require pre-conference training, ALDs should be provided and someone on site should be able to troubleshoot them.

8.37 SPEAKERS/FACILITATORS – Should be made aware of the presence of hard of hearing persons in the audience and coached on communication techniques and how to use the ALDs provided and the speed of the audible delivery. Section 6 is applicable to Speakers/Facilitators. Speak clearly at a reasonable rate of speed for CART provider's benefit. (Note: when Speakers read they often speed up in their oration)

8.38 PROVIDE CART – Another type of interpretation, CART will enhance the communication process in all meetings, presentations, conferences, exhibitions, lectures and educational programs. See Sec. 6.25

8.39 MUNICIPAL, PROVINCIAL, FEDERAL AND OTHER ELECTIONS

8.40 SEE SECTION 6: BEST PRACTICES AND POLICIES

8.41 ACCESSIBLE SITES – Have events, constituency and campaign offices in accessible facilities and locations.

8.42 TELEPHONES AND DEVICES – Campaign and party offices should have a TTY, amplified telephones and an assistive listening device (ALD) for use in small group meetings.

- 8.43 ADVERTISE THE ACCESSIBILITY PROVIDED** – Successful attendance of events and meetings depends a great deal on adequate promotion.
- 8.44 ACCESSIBLE MEETINGS** – Make community meetings accessible to persons with hearing loss by providing CART, ALDs and sign language interpreters. To prepare, ask about accessibility requirements on registration forms.
- 8.45 CAPTION COMMERCIALS AND VIDEOS** – Use Open Captioning in campaign commercials/videos.
- 8.46 ACCESSIBLE CAMPAIGN MATERIALS** – Design or amend advertising/campaign materials in captioned formats that are accessible to persons with hearing loss such as videos, DVDs, computer disks and downloadable material from your websites.
- 8.47 ACCESSIBLE WEBSITES** – Make campaign and party web sites fully accessible to persons with hearing loss by including a toll free TTY number and an email address to request further information. Ensure any and all video clips are open captioned.
- 8.48 AWARENESS AND SENSITIVITY TRAINING** – Encourage all party staff and campaign workers take part in disability awareness training prior to starting the job.
- 8.49 RECRUIT HEARING LOSS EXPERTS** – Recruit/encourage persons with hearing loss to join and become active in the party and campaign (equal opportunity).
- 8.50 DISABILITY ADVISORY COMMITTEE** – Establish an ongoing disability advisory committee to consult with staff and party members on matters relating to the above.
- 8.51 COMMUNICATION ACCESSIBILITY CHECKLIST** – Download CHHA’s Communication Accessibility Checklist to ensure access to your offices.
<http://www.chha.ca/chha/projects-communication.php>
- 8.52 EMERGENCY SERVICES (FIRE, AMBULANCE, 911, SECURITY)**
- 8.53 SEE SECTION 6: BEST PRACTICES AND POLICIES**
- 8.54 INVESTIGATE** – Investigate to determine what emergencies might disproportionately affect persons with hearing loss and what strategies could be used to address their needs.

Section 9: Resources

ASSISTIVE LISTENING DEVICES AND SYSTEMS FOR THE HARD OF HEARING

* Information on devices can be obtained from the following distributors and retailers, your local hearing aid dispenser or deaf and hard of hearing service agency.

WESTERN CANADA

Western Institute for the Deaf and Hard of Hearing

2125 West 7th Avenue
Vancouver, BC V6K 1X9
T: (604) 736-7391
TTY: (604) 736-2527
Fax: (604) 736-4381
Email: info@widhh.com
Web: <https://www.virtual-vendor.com/ecom1/100020/www/>

ALDS – Distributing Inc.

PO Box 12118
Murrayville RPO
Langley, BC V3A 9J5
T: (604) 514-0053 (Voice / TTY)
Toll Free: 1-866-845-ALDS (2537)
Fax: (604) 514-0037
Email: kstead@alds.com
Web: <http://www.alds.com/index.php>

Calgary Deaf and Hard of Hearing Services

63 Cornell Road, NW
Calgary, AB T2L 0L4
T: (403) 284-6214
TTY: (403) 284-6201
Fax: (403) 282-7006
Toll Free: 1-877-711-3447
Email: equipment@dhhs.org
Web: <http://www.dhhs.org/index.php>

Saskatchewan Deaf and Hard of Hearing Services

Regina Office
2341 Broad Street
Regina, SK S4P 1Y9
T: (306) 352-3323
Toll Free: 1-800-565-3323
TTY: (306) 522-0750
Toll Free TTY: 1-888-272-9116
Fax: (306) 757-3252
Email: regina@sdhhs.com
Web: <http://www.sdhhs.com/index.html>

Society for Manitobans with Disabilities

Head Office – Winnipeg
825 Sherbrooke Street
Winnipeg, MB R3A 1M5
Telephone: (204) 975-3010
Toll Free: 1-866-282-8041
TTY: (204) 975-3012
Toll Free TTY: 1-800-225-9108
Fax: (204) 975-3073
Email: info@smd.mb.ca
Web: <http://www.smd.mb.ca/>

CENTRAL CANADA

Canadian Hearing Society

271 Spadina Road
Toronto, ON M5R 2V3
T: (416) 928-2500
TTY: (416) 964-0023
Fax: (416) 928-2523
Email: office@toronto.chs.ca
Web: <http://www.chs.ca/offices/toronto/index.html>

L'Institut Raymond-Dewar

3600, rue Berri, Local A-464
Montréal (Qc) H2L 4G9
Voix: (514) 284-2214 poste 3608
ATS: (514) 284-3747 poste 3608
Télécop: (514) 844-6575
Courriel: magasin@surdite.org
Site web:
<http://www.surdite.org/magasin/>

EASTERN CANADA

South-East Deaf and Hard of Hearing Services, Inc.

1690 West Main Street
Moncton, NB E1E 1G9
T: (506) 859-2979
TTY: (506) 859-6101
Email: seds@nb.aibn.com
Web: [http://www.south-](http://www.south-eastdeaf.nb.ca/equip.htm)

[eastdeaf.nb.ca/equip.htm](http://www.south-eastdeaf.nb.ca/equip.htm)

St. John Deaf and Hard of Hearing Services Inc.

02-646 Fairville Blvd.
Saint John, NB E2M 4Y7
T: (506) 633-0599
TTY: (506) 634-8037 ATS
Fax: (506) 652-3382 Fax
Email: sjdhhs@nb.sympatico.ca
Web: <http://www.sjdhhs.com/>

Society of Deaf and Hard of Hearing Nova Scotians

117-1657 Barrington Street
Halifax, NS B3J 2A1
T: (902) 422-7130
Fax: (902) 492-3864
Email: sdhhs@ns.sympatico.ca
Web: <http://www3.ns.sympatico.ca/sdhhs/>

Canadian Hard of Hearing Association-Newfoundland and Labrador

103-136 Crosbie Road
St. John's, NF A1B 3K3
T: (709) 753-3224
Toll Free: 1-888-753-3224
Fax: (709) 753-5640
Email: chhanl@nfld.net
Web: <http://www.chha-nl.nl.ca/>

NORTHERN CANADA

Yukon Health and Social Services – Hearing Services

204 - 4114 - 4th Ave.
Whitehorse, YK Y1A 4N7
T: (867) 667-5913
Fax : (867) 667-5922
Web: http://www.hss.gov.yk.ca/programs/social_services/disabilities/health_services/

NORTH WEST TERRITORIES AND NUNAVUT

Rely on Deaf & Hard of Hearing Services (DHHS) in Calgary for technical devices and equipment.

SPECIALIZED SYSTEMS FOR PUBLIC FACILITIES AND BUSINESSES

Public accessibility systems for Houses of Worship, Sporting Facilities, Theatre, Performing Arts, Cinema, Tour Providers, Boardrooms,, Courtrooms and Government facilities, Auditoriums.

EdB Sound Acoustics Inc.

Toronto, ON
T: (416) 248-9007
Web: <http://home.eol.ca/~jdbssound/index.html>

Phonic Ear Ltd.

10-7475 Kimbel Street
Mississauga, ON L5S 1E7
Email: general@phonicear.ca
Web: <http://www.phonicear.ca/>

Sennheiser (Canada) Inc.

221 Avenue Labrosse
Pointe-Claire (Qc) H9R 1A3
Toll Free: 1-800-463-1006
Toll free Fax: 1-800-463-3013
T: (514) 426-3013
Fax: (514) 426-3953
Web: <http://www.sennheiser.ca/>

SNA Consulting

(Server-based TTYs)
377 Pickford Drive
Kanata, ON K2L 3P3
T: (613) 599-1284
Email: info@snaconsulting.ca
Web: <http://www.snaconsulting.ca/contact.htm>

CONSULTING ENGINEERS

Association of Consulting Engineers of Canada

130 Albert Street, Suite 616
Ottawa, ON K1P 5G4
T: (613) 236-0569
Toll Free: 1-800-565-0569
Fax: (613) 236-6193
Email: info@acec.ca
Web: <http://www.acec.ca>

Canadian Acoustical Association

P.O. Box 74068
Ottawa, ON K1M 2H9
T: (613) 993-9746
Fax: (613) 954-1495
Email: secretary@caa-aca.ca
Web: <http://www.caa-aca.ca/MainFrame.htm>

Canadian Council of Professional Engineers (CCPE)

180 Elgin St., Suite 1100
Ottawa, ON K2P 2K3
T: (613) 232-2474
Fax: (613) 230-5759
Email: info@engineerscanada.ca
Web: <http://www.engineerscanada.ca/e/index.cfm>

Canadian Consulting Engineer

12 Concorde Place, Suite 800
Toronto, ON M3C 4J2
T: 1-800-268-7742
(Press 1, Dial 5111)
Fax: (416) 510-5134
Web: <http://www.canadianconsultingengineer.com>

CHHA RESOURCES:

- Hearing Awareness from A to Z (accessibility checklists, communication tips, training, etc.)
<http://www.chha.ca/chha/projects-atoz.php>
- Consumer Consultations: CHHA Branches and Chapters
<http://www.chha.ca/chha/about-branches.php>

Disclaimer: The above lists are not all-inclusive and we advise everyone to first speak to their local audiologist, hearing aid dispenser or deaf and hard of hearing service agency about devices, systems and consultants available.

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Section 11: Glossary

Assistive Listening Systems



These systems transmit amplified sound via hearing aids, headsets or other devices. They include infrared, loop and FM systems. Portable systems may be available from the same audiovisual equipment suppliers that service conferences and meetings.

Assistive Listening Devices (ALD's)

ALDs are technical devices that make communication easier in difficult listening environments. They are used to minimize the effects of noise, echoes, and distortion when a hard of hearing person shall listen to speakers at a distance or a noisy place, ex. IR Systems, FM Systems.

Audio Loop (AL) Systems

Audio loop systems consist of a wire (or thin loop pad) that is placed around the listening area, a special amplifier, and microphone(s). Speech signals are amplified and circulated through the loop wire. The resulting magnetic energy field is detected and amplified by the "telecoil" or telephone switch circuitry common to many hearing aids, cochlear implants, and induction loop receivers. The end result is a high quality amplified reproduction of the original speech signal. Intelligibility is greatly increased because the distance between the speaker and the listener(s) is bridged and background environmental noise is reduced. The loop is available in three formats
1) A hard-wired system built into the walls of a meeting room
2) A portable system that can be moved from room to room as required and
3) A smaller portable version used at customer service counters.

Captioning

Captioning is text interpretation of the audio (sounds, voices) on a video or television program. Captioning may be Closed (appears when activated by a remote or other device), Open (present on screen without requiring a device to make it so), or Realtime (present on the screen with the aid of computer assisted technology)

Closed Captioning (CC)

CC This symbol indicates a choice for whether or not to display captions for a television program or videotape. TV sets that have a built-in or a separate decoder are equipped to display dialogue for programs that are captioned when selected by the viewer. Also, videos that are part of exhibitions may be closed captioned using the symbol with instruction to press a button for captioning.

Opened Captioning (OC)

OC This symbol indicates that captions, which translates dialogue and other sounds in print, are always displayed on the videotape, movie or television program. Open Captioning is preferred by many including hard of hearing individuals and people whose second language is English. In addition, it helps everyone in noisy environments.

CART

Computer Assisted Realtime Translation (CART) provides visual text with nearly instantaneous translation of the spoken word. The CART provider types the speaker's words on a stenographic machine which is connected to a computer with software to translate the stenographic code into English. The translation can then be read on the computer screen; for larger group events the CART text can be displayed on a large video screen or projected onto the wall. CART can be provided remotely through an Internet and telephone link.

Deaf (uppercase D)

Term used to denote members of a sociolinguistic and cultural group whose preferred mode of communication is sign language.

deaf (lowercase d)

A term used to describe persons with early onset hearing loss who have little or no residual hearing. Their preferred mode of communication is speech and speechreading.

Frequency Modulation (FM) Systems

FMs are assistive listening devices (ALD) that functions as a mini-radio station on a broadcast frequency that brings a speakers voice directly into the user's headset.

Hard of Hearing

A person is hard of hearing if they have a hearing loss and whose usual means of communication is spoken language. This definition includes a broad spectrum of hearing loss, including those who are late-deafened and those deaf in childhood and educated orally.

Hearing Aids

Hearing aids include:

- a. **Behind-The-Ear (BTE) Hearing Aid:** Arc shaped hearing aids that fit behind the ear. They vary in size, style and features.
- b. **Body Hearing Aid (BHA):** Powerful aid that resembles a miniature tape recorder or radio, often clipped to a breast pocket or belt.
- c. **Bone-anchored-hearing-aids:** Work by conducting – or carrying – sound through the bone in your skull. Sounds are heard when the vibrations of the sound are transmitted directly from the vibrating part of the bone conduction hearing aid through your skull to the cochlea, omitting out the outer and middle ears. Bone conduction hearing aids are an option for people who cannot use a conventional hearing aid.
- d. **Cochlear Implant (CI):** A surgical device for people who would receive little or no benefit from hearing aids. The internal parts are surgically implanted into the cochlear. The external part consists of a microphone, programmable speech processor, and transmitting coil.
- e. **Completely-In-The-Canal (CIC) Hearing Aids:** Small aids that fits inside the ear canal.
- f. **In-The-Canal (ITC) Hearing Aids:** Larger than the CIC; custom fitted for the hearing aid wearer.
- g. **In-The-Ear (ITE) In-the-Ear (ITE) hearing aids** house all the components in a custom made shell that fits completely within the outer portion of the ear. Its size, larger battery, and easy-to-use controls may also be helpful for those with limited manual dexterity or for those with a moderate to severe hearing loss.
(Source: Canadian Hearing Instrument Practitioners Society)
- h. **Open-fit or Over-the-Ear (OTE) or Receiver-in-the-Canal (RIC) hearing aids** are very discreet, light-on-the ear devices suitable for mild to moderate high frequency hearing losses (and normal or borderline normal hearing in low frequencies.) A thin, transparent tube rests in front of the ear, then into the ear canal. Soft pliable earbuds, or custom molded open acrylic earmold holds the tube in place, while keeping the canal open. In some designs, the receiver is housed in the tip of the tubing and inserted directly into the ear canal. (Source: Canadian Hearing Instrument Practitioners Society)
- i. **Receiver-in-the-Canal (RIC).** “These devices are similar to the BTE aid. There is however one crucial difference: The receiver of the hearing aid is placed inside the ear canal of the user and thin electrical wires replaces the acoustic tube of the BTE aid. There are some advantages with this approach: First, the hearing aid receiver is placed further from the hearing aid microphone. This reduces the risk of acoustic feedback (commonly denoted “howl”.) Second, the tube connecting the hearing aid and the ear-plug (also commonly referred to as “dome” or ear-mould) can be made extremely thin. This makes it possible to design an even smaller hearing aid that is even more inconspicuous”.
(Source: Wikipedia)

Hearing Ear Dogs

Hearing Ear Dogs are specially trained dogs that alert persons with hearing loss about sounds in their environments such as door bells, smoke alarms, telephones etc.

Information Symbol



The most valuable commodity of today’s society is information; to a person with a disability it is essential. For example, the symbol may be used on signage or on a floor plan to indicate the location of the information or security desk, where there is more specific information or materials concerning access accommodations and services such as “LARGE PRINT” materials, audio cassette recordings of materials, or sign interpreted tours.

Infrared (IR) Systems

Similar to the FM System, but instead of radio frequency, IR uses a spectrum of light that is invisible to the naked eye to transmit sounds. It requires an unobstructed path between the source and the receiver.

Late-Deafened

Late-deafened individuals are those who may have grown up hearing or hard of hearing but, have lost all usable hearing at some point, usually as adults and after acquiring speech. They may also self-identify as deafened or oral deaf.

Signalling (Alerting) Devices

Devices used to indicate the telephone, doorbell, or other loud sounds in the home or office by changing the auditory signal to visual or vibratory signals e.g. a door bell alarm, baby sound monitor.

Sign Language Interpreting



Sign Language interpreters facilitate communication between Deaf and hearing people through their knowledge of Sign Language and Deaf Culture.

Soundfield Amplification Systems

“Soundfield amplification systems amplify and broadcast the instructor’s voice through wall or ceiling-mounted loudspeakers. The system consists of a microphone/FM transmitter, amplifier, and one or more loudspeakers. A loudspeaker can also be placed next to the student. The soundfield speakers should be strategically placed in order for the student to achieve the most benefit from the system. The system should be installed under the guidance of an audiologist or someone who understands room acoustics.”

(Source: Northeast Technical Assistance Center, Rochester Institute of Technology: <http://www.netac.rit.edu/publication/tipsheet/alds.html>)

Speechreading

Speechreading (often called lip-reading) is the ability to perceive speech by: (1) watching the movements of a speaker’s mouth, (2) by observing all other visible clues including facial expressions and gestures, and (3) using the context of the message and the situation.

T-switch

A T-Switch is found on a hearing aid. It activates a “telecoil or T-coil” which emits an electromagnetic field making it compatible to some telephones and a variety of assistive listening devices.

TTY (Teletypewriter) aka Text Telephone



TTY is a generic term that is applied to Text Telephones of any kind. A TTY or TTY compatible device allows users to communicate over a telephone line, using text. The TTY symbol indicates the availability of a device used with the telephone for communication with and between persons who are hard of hearing/Deaf and persons who can hear. A special telephone operator may assist with communication with hearing persons who do not have a TTY.

Telephone Devices

Devices used to assist telephone communication such as volume amplifiers, ringer amplifiers, call display, and TTYs.

Volume Control Telephone



This symbol indicates the location of telephones that have handsets with amplified sound and/or adjustable volume controls.

UD – See Universal Design

Universal Design (Wikipedia Encyclopedia)

Universal design, which is related to “inclusive design” and “design for all,” is an approach to the design of products, services and environments to be usable by as many people as possible regardless of age, ability or circumstance. It links directly to the political concept of an inclusive society and its importance has been recognized by governments, business and industry. Universal design is a relatively new paradigm that emerged from “barrier-free” or “accessible design” and “assistive technology.” Universal design strives to be a broad-spectrum solution that helps everyone, not just people with disabilities and is a part of everyday living and is all around us.

Courtesy of Graphic Artists Guide

(<http://www.gag.org/resources/das.php>)

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