

ACCESS

ABILITY

A Practical Handbook on Accessible Graphic Design

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96 Spadina Avenue, Suite 210, Toronto, ON M5V 2J6 Canada

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INTRODUCTION

Designing for Accessibility

All design by definition promotes accessibility. Graphic designers try to make printed messages clearer, websites more navigable, physical environments easier to negotiate. As a profession, we're committed to providing easier access – to information, to ideas, to public spaces – through smarter, more effective communications engaging the widest possible audience. Or at least everyone we're hoping to reach.

And that's the catch. Who do we mean by everyone? Even when we have a narrower group in mind, are we stopping to think about what distinguishes them as individuals? What differences in ability or background might impede their understanding or compromise the benefit they gain from what we create?

Tackling such questions is the mandate of this handbook. Our goal is not to prescribe a set of rules for accessible design. Practical guides that try to be categorical end up being, at best, targets for rebuttal – or simply doorstops. So our aim is not to tell professional designers what to do, but rather to remind all of us how we could be doing better.

What issues do we need to take into consideration before beginning a graphic design project, instead of just assuming it will be universally accessible? And how does the desire to communicate with all audiences, regardless of varying abilities and potential impairments, translate into specific design decisions – the point size of a subhead, the hierarchy in a dropdown menu, the colour coding of a wayfinding system?

In answering these very precise questions – or at least pointing graphic designers toward answers they’ll have to work out for themselves – we highlight the larger rhetorical question that frames all discussions of accessibility: If you focus conscientiously on the needs of certain kinds of people, aren’t you in fact learning how to design better for everyone?

MORE THAN COMPLIANCE

This handbook is part of a broader initiative devoted to fostering accessibility across the province of Ontario. Through the EnAbling Change Partnership Program, RGD Ontario is partnering with the Government of Ontario to raise awareness in the professional graphic design community and to help graphic designers and their clients meet the requirements of the Accessibility for Ontarians with Disabilities Act, which aims to make Ontario accessible to people with disabilities in key areas of daily living by 2025.

Today more than 15% of Ontario residents have some form of disability. As the population ages, the number of people who have a disability or require a degree of specialized access in some area of their lives will only increase. Based on the current rate of growth, by 2036 the number of seniors aged 65 and over will double from what it was in 2008. By 2017, for the first time, seniors will account for a larger share of the population than children aged 0 to 14.

So far accessibility has not been adopted by Ontario’s graphic design industry as an essential criterion in practice. Neither is it part of the curriculum requirements in postsecondary design programs. As the provincial government moves to establish formal standards of accessibility in information and communications, there is an urgent need to provide Ontario’s design sector – the largest in Canada – with the information, guidelines, education and tools required to make accessibility a key measure of success for every project.

In the following pages, we hope to bring focus to the conversation on accessibility among print, web and environmental graphic designers. But this is only one step in a multi-year, multi-faceted process. To learn more about the work that RGD is doing to educate, advise and inspire the professional graphic design community – in Ontario and globally – we invite you to visit rgd-accessible.design.com and join the discussion.

Ensuring accessibility is not just a matter of legal compliance. Nor is it simply an issue on which clients will demand that designers toe the line; indeed, the reverse may prove to be true. Because, again, making information and ideas available to everyone is the defining goal of all design – and has been from the beginning.

Accessible design improves people’s quality of life. It helps organizations deliver superior services and be more competitive. And it helps designers pursue the ideals that likely prompted them to choose their careers in the first place. We hope this handbook will move our profession closer to that day when the concern for accessibility is second nature, an automatic calculation in everything we do.

SECTION **A**

Print Design

“Universal design systems can no longer be dismissed as the irrelevant musings of a small, localized design community. A second modernism has emerged, reinvigorating the utopian search for universal forms that marked the birth of design as a discourse and a discipline nearly a century earlier.”

- Ellen Lupton, *Thinking with Type: A Critical Guide for Designers, Writers, Editors & Students*

Accessible Pages

Printed communications have embraced the spirit of inclusiveness since Gutenberg set his first page of moveable type. So it's only fitting that a medium inevitably associated with universal access – in education, in culture, in politics – should be reexamined by contemporary graphic designers in light of our evolved understanding of accessibility.

As the introduction to this handbook acknowledges, all design aspires to be accessible. But if we're going to produce print communications that are truly inclusive, we have to look more closely at specific impediments to reading and understanding – including fundamental differences in ability that graphic designers have traditionally overlooked.

Much of our focus here will be on the most obvious interface between readers and the printed page: typography. No other design element is as critical in making text-based communications welcoming and easy to grasp. But ahead of that, we should briefly review some other aspects of print design that play a role in shaping accessibility.

The Accessible Designer's Toolbox

GRID

The clear divisions of a classic design grid ensure a consistent structure on single pages and across entire chapters and books. That consistency is especially vital for readers with visual disabilities, who appreciate having signposts to help identify content and quickly process meaning.

HIERARCHY

The graphic and informational hierarchy should be apparent in all design but is particularly important in complex pieces, where an explicit logical order benefits readers of varying abilities.

PRINTING SURFACE

To accommodate varying vision abilities, it's important to choose paper or printing materials that minimize glare, especially for text-heavy documents. An obvious remedy is to use papers with a matte or uncoated finish, rather than glossy stock. Glare can also be reduced with stock colour – for instance, by selecting a warm white over a bright white.

COLOUR

Readers' perception of colour can be affected by congenital vision problems or the effects of age, injury or the environment. About 5% of people, more men than women, exhibit actual colour blindness (see Web Design, page 12). However, the contrast between colour values and between hues affects how all viewers experience print design.

- A good rule of thumb is to ensure at least a **70% difference in colour value** between, say, type and a background tone. You can do a quick check by turning your monitor to grayscale or printing to a grayscale printer: If type and other graphic elements appear to blend together, adjust values accordingly to improve the contrast ratio.
- Designers achieve **optimum contrast between hues** by pairing complementary colours (i.e., opposites on the colour wheel). However, if the paired colours' saturation, value and intensity are too similar, the phenomenon of simultaneous contrast creates vibration. This optical illusion causes eyestrain in many readers and can compromise legibility.

Beyond Big Type

When designers are asked to create print materials for people with visual impairments or whose eyesight has deteriorated with age, the first suggestion on the table is usually to make the type larger. Organizations advocating for the visually impaired recommend anywhere from 16- to 24-point body copy. But while big type may seem like the best way to address accessibility concerns, a range of issues make this approach difficult. First and foremost is the extra real estate needed to accommodate larger type, which usually means added pages and therefore expense (not to mention the compromise to green principles).

In fact, there are many typographic features beyond point size that a designer can adjust to make printed documents more accessible for people with vision problems – and indeed for everyone. The process begins with a consideration of two interrelated yet distinct factors driving accessible type design: legibility and readability.

Legibility is determined by the specific typographic traits affecting recognition of letters and words. As we read, we identify the overall shapes of familiar words rather than processing individual letters and assembling them into phonetic groups. This allows us to process content much faster. The key typographic factors are shape, scale, and style.

Readability refers to the clarity and speed with which content can be digested over an expanse of text such as a paragraph or a page. Readability is related to a font's legibility but is also influenced by design and layout decisions. The chief factors determining whether text is readable are dimension, spacing and alignment.

Typographic Legibility

SHAPE/WEIGHT

Letterforms are created with positive and negative shapes. The positive shape is referred to as the form or stroke; the negative shape is called the counterform or counter. It is **the relationship between stroke and counter** that determines letter recognition. If a letter has extremely thick strokes with small counters, it takes longer for the eye to decode. The same is true if it has thin strokes with large counters. The most legible fonts have a well-balanced proportion of form and counterform. So a regular or medium font weight will generally be preferable to an extra bold or ultra light.

SCALE

A letterform's scale is defined by a number of proportional factors. We describe the relative size of a typeface in terms of its **x-height**, taking the lowercase "x" as a measure of all lowercase letters, excluding ascenders and descenders.

- The height ratio between capital and lowercase letters is critical in determining overall legibility. **Typefaces with tall x-heights** are thought to be easier to read because they appear larger, when viewed at the same point size, than those with short x-heights.
- This doesn't necessarily mean that designers should only choose typefaces that have larger x-heights for optimum readability. But **we should be aware of this factor** when deciding on the point size of text.
- The other proportional factor defining typographic scale is a font's **width-to-height ratio**. Letters that are too wide (as in fat or extended fonts) or too narrow (skinny or condensed fonts) impede legibility. The most legible typefaces have relatively equal width-to-height ratios.

The x-height of a typeface plays a key role in its legibility. For example, this is 13 pt Baskerville.

This is 13 pt Helvetica Neue 55. Looks bigger, doesn't it? That's because it has a taller x-height.

13 pt Mrs. Eaves!
Now that's a small x-height!

➤ X-height is determined by the height of the lowercase "x" in a typeface. Larger x-heights appear more legible, especially at smaller sizes.

STYLE

Most typefaces fall into one of two categories: **display fonts**, which are more decorative, and **text fonts**, which are designed for readability and versatility.

- When designing for accessibility, it makes sense to choose typefaces that have **easily recognizable letterforms**.
- If the design uses display fonts to establish a visual style, it may be advisable to **repeat salient content in text fonts** elsewhere in the document.
- Some typefaces are specifically designed for legibility on screen rather than in print, so **consider the medium of delivery as well** (see Web Design, page 12).

ROSEWOOD

Ziggurat

Gotham

➤ Rosewood and Ziggurat may be emotive but are designed as display faces. Gotham was designed to be legible at smaller sizes when set as text.

Typographic Readability

DIMENSION

The readability of type can be improved by manipulating two key variables: point size and column width or line length.

- Dictating a specific point size as the standard for accessibility is difficult, if not impossible. Each typeface is unique and, as discussed in the previous section, many factors affect the legibility of type. The key is to be sensitive to these optical characteristics in making design decisions.
- Readers' ability to take in information quickly is also affected by column width – or by line length generally, whether or not text appears to be set in columns.
- If columns are too narrow, many words have to be awkwardly hyphenated and readers are unable to take in a significant amount of content in a typical scan path along the page.
- If columns are too wide, the eyes have difficulty finding the starting point for each new line of text.
- In both cases, the result is likely to be eyestrain and increased reading time. For those with impaired vision, an inappropriate line length can make reading extremely difficult.

SPACING

Various spatial considerations, from the minutely adjusted intervals between letterforms to the density of entire paragraphs, affect the ease and speed with which readers process text.

- Improper **Kerning** – fine adjustments to the horizontal space between individual letters – can create awkward gaps or areas of visual tension between letter pairs, making reading more difficult.
- More generally, any **tracking** adjustments – i.e., to the horizontal spaces in a word, line or paragraph – will affect readability.
- When **tracking is too tight**, letters bump together or blend optically, so words are more difficult to distinguish.
- If **tracking is too loose**, letters appear to be floating, and it can be difficult to recognize words quickly by their shape.
- The other important spatial consideration for print designers is **leading or line spacing**, the vertical distance between lines (i.e., from baseline to baseline) within a block of uniformly set type.
- When the **leading is too tight**, ascenders and descenders collide, which can seriously hinder readability.
- When the **leading is too loose**, readers have trouble locating the start of each line – particularly if the column is too wide (as discussed above).
- Most page layout applications set an **optimum default leading** of 120% of the type size (e.g., 10-point type on 12-point leading). However, this variable may need to be adjusted depending on the abilities of the target audience and other typographic factors affecting readability.

ALIGNMENT

In Western cultures, **left-aligned type is easiest** for people to read quickly – for the obvious reason that we read from left to right. The straight left axis creates a common starting point from which the eye can quickly scan each line of text.

- When large blocks of copy are **aligned to the right or center**, the inconsistency of the ragged edge makes it more difficult for readers to find starting points.
- **Justified text** also provides the straight left line that Western readers favour. But because both sides of the column are aligned, the spacing of the text within becomes inconsistent, creating noticeable blank spots between words. This in turn can create distracting “rivers” through an entire text block, again negatively affecting readability.

Flush Left/Rag Right

Paragraphs of type can be aligned in several different ways. The axis can be central, left or right. Text can also be set so that both sides of the column are aligned or justified. The unaligned side of the paragraph that creates a more jagged shape is called the “rag.”

Justified

Paragraphs of type can be aligned in several different ways. The axis can be central, left or right. Text can also be set so that both sides of the column are aligned or justified. The unaligned side of the paragraph that creates a more jagged shape is called the “rag.”

➤ Text alignment can affect readability, especially in lengthy copy. Flush left text is easier to read for long periods, as the axis provides an easily located starting point for each line, and the “rivers of white” (spots of negative space between words) found in justified text are eliminated.

Other Typographic Considerations

While the technical factors highlighted above are most critical to ensuring legibility and readability, designers should consider a few other important issues affecting the accessibility of typography:

- Setting type in **capital letters** can make a word or line stand out. But setting entire paragraphs in caps negatively affects readability, not to mention tone.
- Similarly, typographic formatting such as **italics or underlining** should be used sparingly and only when they genuinely enhance communication with all readers. Otherwise they create a visual distraction.
- Increase the clarity of text by maintaining an optimum **signal-to-noise ratio**. The use of screened-back images and other graphic elements behind body copy can seriously detract from the reading experience.

People read the
shapes of whole words

➤ When type is set in upper and lowercase, readers recognize the shapes of familiar words, rather than reading each individual letter.

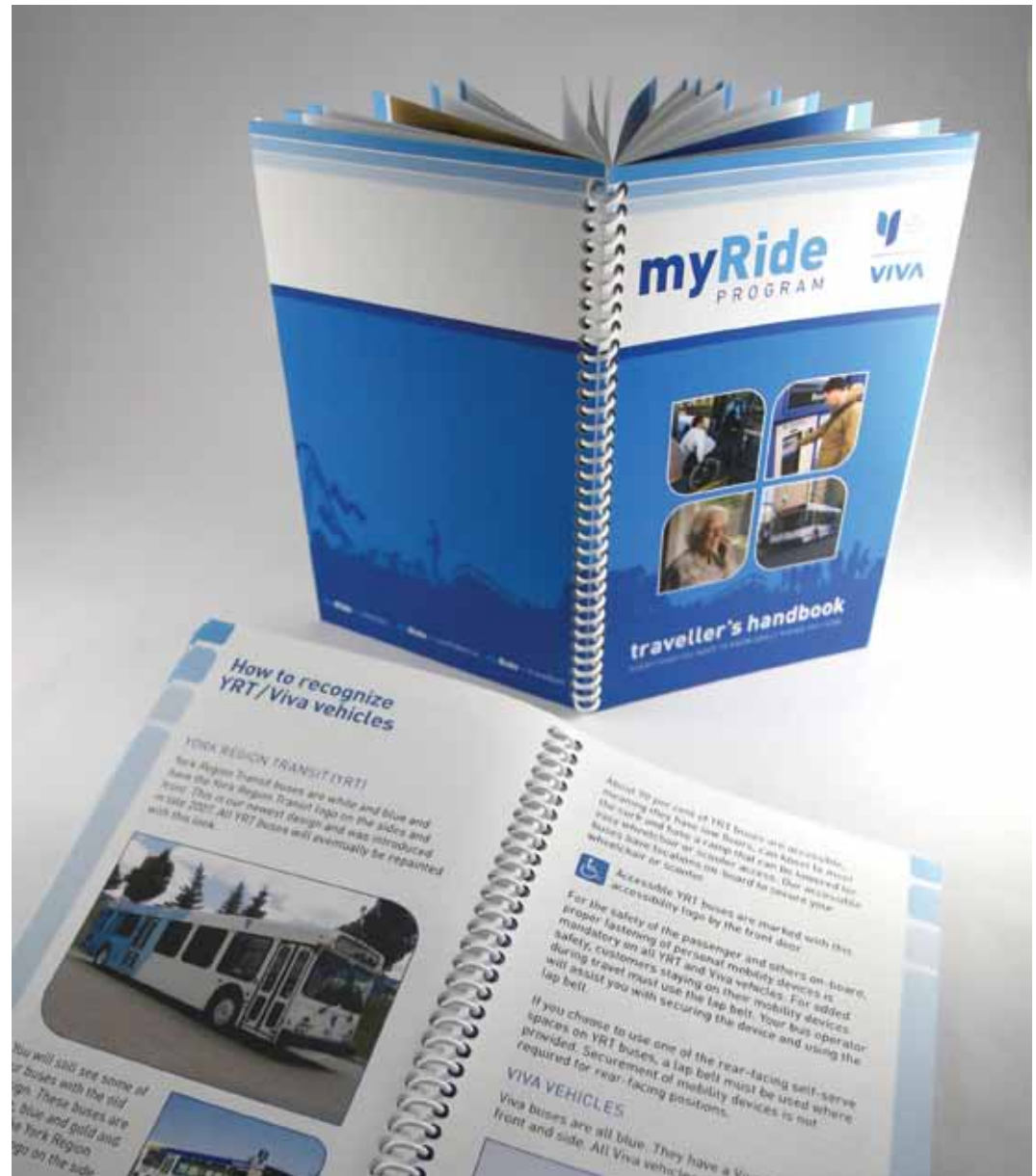
myRide Traveller's Handbook

DESIGN REQUIREMENTS

The myRide handbook is a valuable educational and reference tool for those who are new to public transit. It is targeted towards customers with cognitive/learning disabilities, new immigrants and for whom English is a second language. MyRide was developed as part of The Regional Municipality of York's accessibility mandate to improve inclusivity, build awareness and promote understanding of YRT/Viva services.

DESIGN SOLUTION

Designed for travel in mind, the handbook is coil-bound, allowing the reader to comfortably focus on one page at a time or by spread. It is divided into four sections for ease of navigation and features photos accompanying larger-sized print. It is written in "plain" language style for ease of understanding and is used on-bus as part of YRT/Viva's Traveller Training Program. Trainers have their own manual to teach various aspects of the public transit system, from fare purchasing and trip planning to safety tips and traveller resources.



Design Firm
York Region Transit,
Marketing

Design Team
Richard Long R.G.D.
Sabrina Botham

Editors
Cheryl Ng
Kim MacGillivray

Client
York Region Transit
Viva

Art for All

DESIGN REQUIREMENTS

The National Gallery of Canada and the Canadian Museum of Contemporary Photography, with support from the J.W. McConnell Family Foundation Art Program for People with Disabilities, had introduced innovative programs that were developed specifically for individuals with special needs. The objective was to make the visual arts experience inclusive, accessible, beneficial and enjoyable for all. Mario Godbout Design was given the mandate to design a user-friendly brochure for people with disabilities. It would highlight special programs created and adapted for schools, groups, families, children, teens and adults.

DESIGN SOLUTION

The project integrates several design strategies. The over-sized coil-bound booklet lies flat and improves legibility through the use of large type. Universal symbols are included for various disabilities, and colour blocks under the body text highlight special instructions, appearing as light grey for colour-impaired visitors. Detailed group reservation request forms are also included to give the gallery advanced notice of special needs. Printing on non-glare, satin finish paper stock helps make the publication even more reader-friendly.



➤ Coil-bound booklet lies flat for easy reading of large type. The text integrates disability symbols and connecting links/info for events and programs.

➤ Information-rich, viewer-friendly design stimulates interest and encourages visits and participation in the National Gallery's special programs.

Design Firm

Mario Godbout Design (MGD)

Designer

Mario Godbout R.G.D.

Client

The National Gallery of Canada and the Canadian Museum of Contemporary Photography

SECTION **B**

Web Design

“The power of the web is in its universality. Access by everyone regardless of disability is an essential aspect.”

Tim Berners-Lee, creator of the World Wide Web

Online Accessibility

The mandate of web designers is not simply to adopt and extend established creative principles for online communications.

We have a moral obligation to create sites whose content is accessible to all users, regardless of their physical or cognitive abilities, their technological requirements or their cultural background, education and experience.

When websites are properly designed, written and programmed, they offer universal access to information and functionality. Of course, the possibilities for communicating online are changing constantly – ideally for the better. But we can establish some fundamental principles defining what accessible web design should be.

PRINCIPLE #1: PERCEIVABLE

Web-based content and interface components must be presented in ways that all users can perceive, even if they have impaired vision or hearing. Here are some general guidelines to keep in mind:

- No information should be conveyed through non-text content alone. People who can't see images and other visual elements must have **text alternatives** (“alt text”) that can be converted via software into speech, large print, Braille, symbols or simpler language.
- A website visitor with a significant visual impairment may use a **screen reader**. This is software that interprets what is on the computer screen and converts it into audible text; essentially, it reads content out loud to the user.
- Users who are both blind and deaf may send the screen reader's output to a **Braille display**. This enables them to read constantly updated content with their fingers, one line at a time.
- Users with **low vision** express widely varying preferences when it comes to the presentation of text. The key to ensuring readability is contrast, which is determined by text size and how easily letterforms can be distinguished in a particular font.
- Many low-vision users have software-based **screen magnifiers**. Sometimes they augment the magnifier with text-to-speech software when reading longer passages of text.
- For users with low vision, **colour can be another important factor**. Many find that black text on a tan background is best; others favour off-white text reversed out of black.
- Web designers should also be sensitive to the challenges of **colour blindness**. Some users have difficulty distinguishing between red and green, others between yellow and blue – and some will not see the colours we've chosen at all. So critical navigation choices should not depend on distinguishing colour alone.

- Make it easy for all users to distinguish foreground from background. **Use a contrast analyzer** to ensure there is enough differentiation between your text and background colours.
- To be truly accessible, a website must **allow individual preferences** in colour, size and typeface to override the author's suggested design.
- Consider creating **content that can be presented in different ways** – for example, in a simpler layout – without losing information or its organizing structure. Use semantic HTML, CSS and JavaScript to ensure content doesn't rely on any particular presentation.
- People who are **deaf, deafened or hard of hearing** will obviously have great difficulty using sites that provide content in audio format or through video clips with soundtracks. Even users with only partial hearing loss may find it hard to understand audio content, particularly in noisy environments.
- Provide an **alternative text-based format for audio and video content**. Transcripts, captions and descriptive video all ensure a more accessible experience.



Original image



Dueteranope Simulation



Protanope Simulation



Trianope Simulation

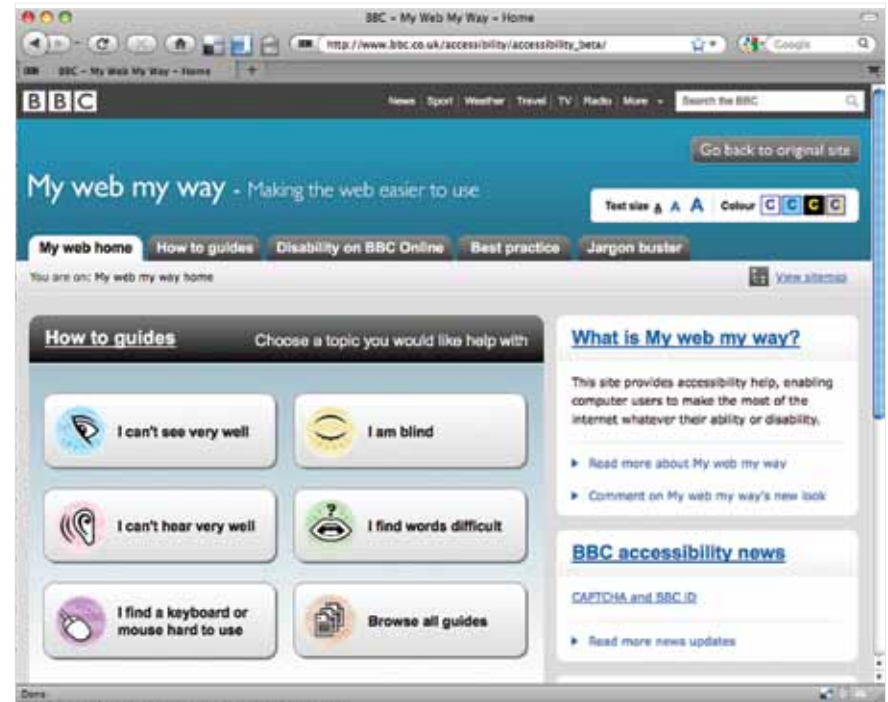
.....
 ← Websites like vischeck.com allow designers to upload images or web designs to determine how the work may appear to the visually impaired. Here, three common types of colour blindness have been simulated. There is also a Photoshop plug-in available for download.

PRINCIPLE #2: OPERABLE

All users accessing a website or online application, regardless of how they operate their computers – by mouse, keyboard, voice recognition, switches or any other input device – must be able to simply and accurately manipulate all interface and navigation components. A few important points to keep in mind:

- Some **website visitors' mobility or dexterity** may be affected by paraplegia/quadruplegia or conditions such as cerebral palsy and multiple sclerosis. Others may have difficulty with fine motor control due to arthritis, Parkinson's disease or simply old age.
- As designers we must **assume a wide variance in users' ability** to operate a mouse, keyboard or other input device. Some people may use voice-recognition programs to direct their computers with spoken commands, or word-prediction software to enhance their typing speed. Others may use hardware devices such as a single-handed keyboard, or they may replace the mouse with large switches, a trackball or a touchpad.
- Make **all functionality fully accessible from a keyboard** – including, by default, all links, buttons and form fields. Avoid creating custom interface components such as clickable spans that use JavaScript.
- A fully accessible site should have **no applications that depend on the mouse**. Remember that users who are blind may rely on the keyboard exclusively. Those with low vision will typically make extensive use of the keyboard but may use the mouse as well.
- People with **limited fine motor control** may face challenges in filling out forms, selecting radio buttons or even navigating from page to page. Again, we must ensure full keyboard functionality and create large, clickable targets for those using a mouse.

- Provide ways to **help all users navigate**, find content and understand where they are. Use clear titles, consistent mechanisms and orientation clues (e.g., “Step 3 of 4”).
- Give users enough **time to digest and respond** to content. Some of us read and type less quickly than others. Account for this by flagging timed actions (e.g., “You can take up to 20 minutes to complete this form”).
- Be sure to **avoid content that flashes** more than three times per second; it may provoke seizures in some users.



➤ BBC's *My Web My Way* site is an excellent example of a website that is both robust and accessible. It can be navigated independently of a mouse, uses clear language and offers multiple ways of viewing the page.

PRINCIPLE #3: UNDERSTANDABLE

We must create the clearest possible content and interfaces so that all people, including those with cognitive disabilities, understand our websites. Cognitive limitations can range from learning disabilities such as dyslexia, to low literacy or numeracy skills, to cultural and language differences. Indeed, the sheer breadth of users' relative abilities makes this issue extremely difficult to factor into website design.

- Ensure that web pages and interface elements are **intuitively predictable** in how they appear and operate.
- Design **consistent interfaces** that immediately indicate where users are on the site, what they can do there and what comes next.
- Present verbal content in the **plainest possible language**, even – indeed especially – when tackling complex topics.
- Copy should **integrate definitions** of potentially unfamiliar terms and expand all abbreviations and acronyms.
- Avoid large text blocks. **Break up long passages** into smaller sections with meaningful subheadings.
- Help users avoid mistakes. **Spell out requirements** ahead of time (e.g., “password must be at least 6 characters with no spaces”) and write clear error messages.
- Bear in mind that users who were born deaf may have **a different understanding of language** than those who lost their hearing later in life. A standard signing system may have an identifiable “grammar” – but linguists emphasize that it is distinct from the grammar of spoken language. This insight points to some broader challenges when it comes to ensuring comprehension on the web. For designers, though, it's simply one more reason to keep verbal content clear and simple.

PRINCIPLE #4: ROBUST

When accessibility experts stress that web content must be robust, they mean we have to ensure it can be interpreted reliably by the widest variety of browsers, devices and assistive technologies. Here are some important considerations:

- The easiest way to ensure compatibility for current and future users is to base any design approach on the **internationally recognized standards** established by the World Wide Web Consortium (W3C).
- The foundation for any website should be **semantic HTML**, with CSS recommended for the presentation layer and JavaScript deployed to guide and support user behaviour.
- With functional HTML as a base, website content should be **accessible through all browsers**, regardless of what tools are deployed by individual users.
- The most thoughtfully designed sites are those that accommodate **past, present and future needs**. That is, they are compatible not only with current standards, but also outmoded platforms (which many users may still rely on) and new solutions that are on the horizon.

Please note: The four principles that provide the basis for this section were adapted from Web Content Accessibility Guidelines 2.0 (www.w3.org/TR/WCAG20).

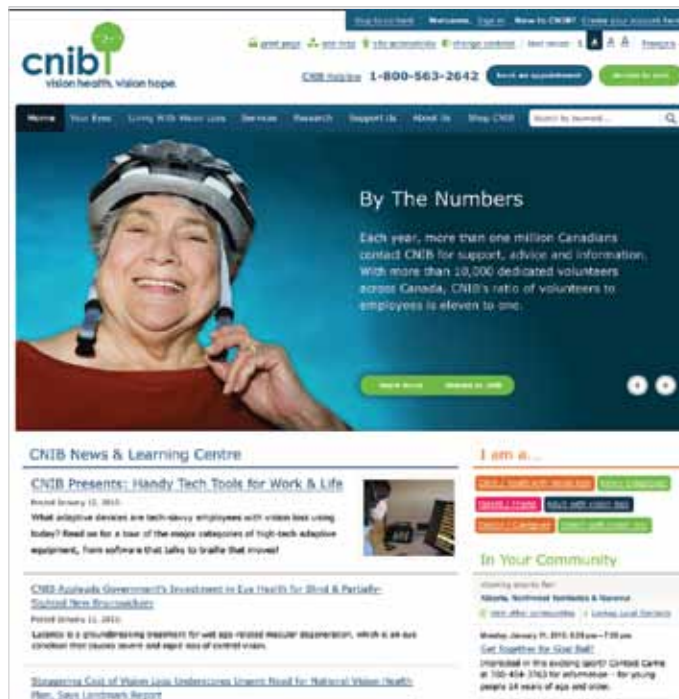
CNIB Public Website Redesign

DESIGN REQUIREMENTS

CNIB wanted to change the preconceptions surrounding accessible design. The CNIB.ca website provided an opportunity to engage key audiences with full sight, partial and complete vision loss in a new way. The guiding principle for CNIB was to have the site push the limits of what accessible design could deliver to all audiences.

DESIGN SOLUTION

The new site addresses the misconception that an accessible design must be a plain one. CNIB now engages audiences throughout Canada and worldwide with a web presence that delivers on the promise for all audience needs – regardless of the accessibility requirements of each reader. Content is rich, the design is impactful, and for many visitors the expectations surrounding accessible web content have changed forever. Key design accomplishments include optimization for screen readers, simplified navigation and information retrieval, and accessibility for those with partial vision loss.



← The design treatment allows for text scaling and high-contrast modes to support greater accessibility. Tools such as “skip to content” and “change contrast” enhance the user experience for all audiences.

✓ High-contrast design supports those with partial vision loss and reinforces the brand values of CNIB. The quick-launch navigation allows users to access information throughout the site quickly, in a single click, from any location.



Design Firm
Concept Interactive

Designer
Richard Plantt R.G.D.

Client
Canadian National Institute for the Blind

SpeakingOfKidsMentalHealth.ca

DESIGN REQUIREMENTS

Kinark needed a communications partner to help develop innovative content for its supplementary website, speakingofkidsmentalhealth.com, which encouraged people to learn, ask questions and join the dialogue surrounding children's mental health. Accessibility was key, as the user group is incredibly diverse; children, adults and seniors with a variety of needs must be accommodated. One of the project's main goals was to ensure accessibility and usability of all web content for all users.

DESIGN SOLUTION

Taking into account the needs of Kinark and the diverse needs of the site's anticipated users, and keeping in mind Ontario's proposed accessibility standards, Nyman Ink created a dramatic website with clean, well-organized navigational strategies. Based on the standards of the World Wide Web Consortium (W3C), the site is highly accessible and promotes positivity, open communications and equal access. The many accessibility features include keyboard-option navigation and accommodation for colour blindness, visual impairment, learning or cognitive disabilities and seniors' needs.



← The home page of speakingofkidsmentalhealth.ca highlights communications tools. The photographed individual speaks through handwritten text, inviting users to join the discussion.

↙ The lower example displays multiple search options designed to accommodate users who learn or perceive information in different ways.



Design Firm
Nyman Ink

Designer
Lisa Joy Trick R.G.D.

Client
Kinark Child and Family Services

Climate Change Action Plan – Annual Report

DESIGN REQUIREMENTS

Context Creative was commissioned by the Ontario government to create an annual report for Ontario's Climate Change Action Plan that would primarily be viewed on the web. It was important for the piece to function well in a PDF format, as this would be the main distribution medium. In partnership with the Climate Change Secretariat, Context adopted best practices for clarity, accountability and making information accessible, demonstrating the kind of leadership and meaningful action that Ontarians expect.

DESIGN SOLUTION

Designed in a landscape format, the report adheres to computer monitor proportions for superior online viewing. A consistent hierarchy of font styles and typographic formats allows for intuitive scanning. To facilitate accurate text searches, easy-to-read fonts with recognizable Unicode were selected for the report. All graphs and charts have likewise been converted for optimal character recognition. Navigation aids, such as a clickable table of contents and bookmarks, help users quickly access desired content without having to read the document in its entirety.



← The PDF-based report's landscape format is preferred for online viewing.

✓ Converted graphs use a recognizable Unicode font for accurate text search.



Design Firm
Context Creative

Design Team
Lionel Gadoury R.G.D.
Terry Popik

Client
Ontario Ministry of Environment

SECTION **C**

Environmental Design

“Invariably, a well-designed space or sign system will meet the needs of the entire population, not just the needs of a special interest group.”

Craig M. Berger, Wayfinding: Designing and Implementing Graphic Navigational Systems



Accessible Spaces

As people make their way through public buildings and other designed spaces, they have to navigate a complex series of paths and decision points. They should be able to do so easily, getting to and from their destinations without frustration, disorientation or anxiety. And they should be able to complete their journeys successfully regardless of any differences in physical or cognitive ability, education or experience.

Designing environments to make all of this possible is not a simple challenge.

WAYFINDING SYSTEMS

Wayfinding was a term originally associated with travellers seeking routes through uncharted landscapes. Over the past 50 years, it has evolved to become a very specific concept in the realm of architecture and environmental design.

The wayfinding process involves a series of decisions by which people moving through an environment can reach their desired destination. Those decisions are guided by architectural features and space planning elements, as well as by recognizable landmarks. They're also supported by signage and other graphic communications and, increasingly, by audible and tactile innovations that assist people with special needs.

To create an effective wayfinding plan, environmental designers begin by conducting a thorough analysis of the existing or

proposed physical environment. We identify and assess the full range of anticipated needs, problems and opportunities. And then we create a comprehensive plan detailing all the specialized techniques and tools – including graphic communications – that can be deployed to orient and direct people.

Spatial wayfinding is a method by which people make route decisions without the assistance of directional signs. This is how we typically travel through our own communities, using familiar landmarks such as gas stations, shopping plazas and other notable buildings to orient ourselves.

Spatial wayfinding relies on our ability to create vivid mental maps of an environment. However, in large institutional facilities – which are often sprawling, typically after a long history of incremental growth – it can be difficult for users, especially infrequent ones, to develop a strong spatial orientation. So architects and environmental designers create distinctive landmarks: building façades, lighting systems, landscaping, pathway patterns and materials, portals and gateways, public sculpture, and images and icons. We also establish defined routes through a facility, supporting them with directory maps. All of these elements and features, deployed individually and in various combinations, help orient people to their environment.

Linear wayfinding goes beyond orientation to actually guide people. As the name suggests, it is a design system that unfolds in a linear way, with each message dependent on what



↑ A good example of linear wayfinding is airport signage. Visitors must be able to quickly find the information they need and then easily follow it.

came before. It's analogous to a user's manual in which each instruction leads to the next – with the difference, of course, that wayfinding directions are not grouped together but spaced out along a route on strategically placed signs.

To be effective, a linear wayfinding system must be complete, accurate, unambiguous and consistently applied. Signage must use commonly understood terminology, and all information must be kept current as building changes are introduced. As for the number of signs deployed, while too many can create unwanted clutter, it's vital that any linear pathway should err on the side of thoroughness – or risk losing people en route.

A key design requirement in any linear wayfinding system is to avoid creating signage that tries to say too much. Placing a sign at a junction with 20 possible destinations and arrows pointing in all directions is a clear case of information overload. For environmental designers, being intelligently selective in the type and amount of information displayed is just as critical as creating the right graphical elements to make that information accessible.

A comprehensive wayfinding plan does more than help people find their way. It builds confidence and trust, reinforcing the public's positive assessment of a facility and the organization behind it. People are all too familiar with large complexes that have unidentified entrances and impossible-to-find destinations. Everyone knows the frustration of trying to follow signs that are confusingly designed, poorly placed, badly illuminated and – as the crowning touch – hopelessly out of date. A smart, user-friendly and reliable wayfinding system is not only more effective; it reassures people that they're dealing with an organization that cares.

SIGNAGE DESIGN

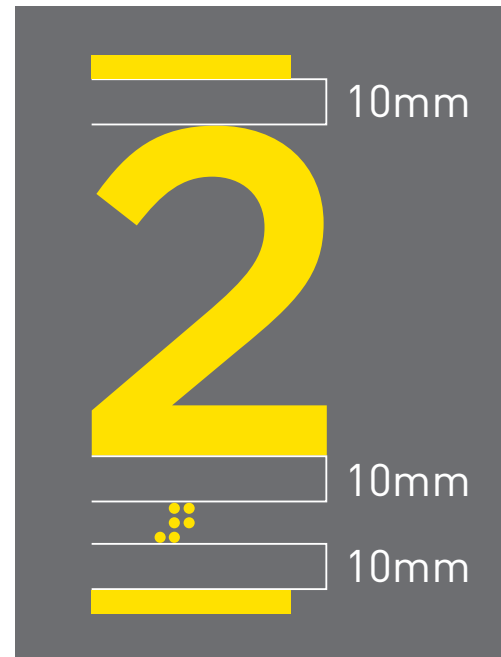
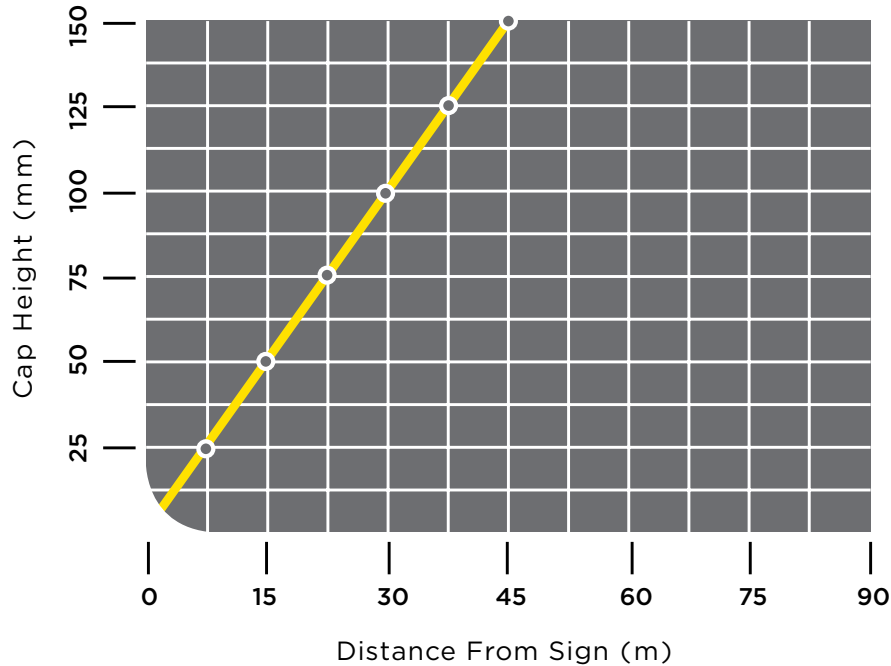
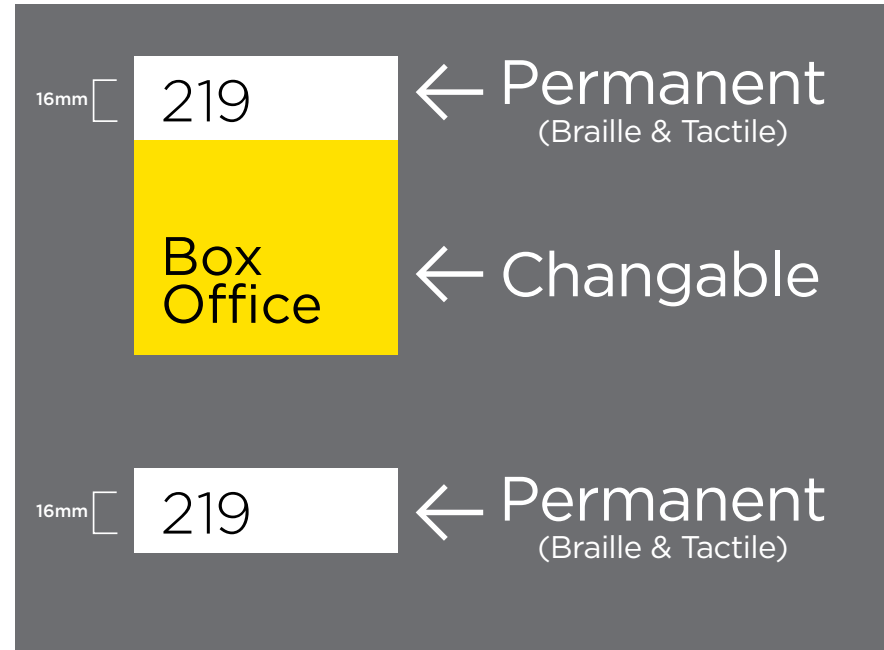
Signage systems must be designed to accommodate a wide range of potential users. People who depend on signs for orientation and guidance include individuals with mobility disabilities who might need to use walking aids or wheelchairs; people who have vision or hearing difficulties; and those who have some form of cognitive disability. A whole array of design variables – including contrast, colour, typography, size, materials, placement, viewing distance and technological enhancements – must all be factored into the process.

Standards for accessibility in public signage vary widely by jurisdiction and with the priorities of diverse government, professional and advocacy groups. In the following summary we've tried to choose those guidelines – both general and highly specific – on which there is universal agreement, or at least something approaching consensus. As with all sections of this handbook, our aim is not to prescribe rules but simply to heighten awareness among designers of issues and recommended approaches that we all should take into consideration.

- As a general readability standard, a **minimum 70% contrast ratio** of foreground to background is recommended for all signage. Slight discrepancies, however, are not considered critical; reflectance values, materials and lighting can all affect contrast.
- Background and lettering surfaces should have a **matte or non-glare finish**.
- All permanent room signs should use **tactile lettering and Braille**.
- Font choice is naturally critical to ensuring legibility and readability. It is even more critical in tactile signs. **All tactile lettering should be sans serif**.
- Although the U.S. and several other countries have mandated the use of all caps for tactile signs, in Canada **uppercase and lowercase (mixed case) lettering** is recommended for both tactile and non-tactile messaging.
- All signage fonts should have **optimum width/stroke ratios**: The width of an uppercase letter O must be within 55% and 120% of the height of an uppercase I. The stroke may only be 15% of the height of an uppercase I.
- A tactile letter should be between 16 mm and 55 mm in **overall height**, based on an uppercase X.
- **Character spacing** should be no less than 3mm and no greater than four times the stroke width.
- To calculate the **relationship between type size and viewing distance**, a suggested guideline is 25 mm cap height for every 7.5 m of distance.
- Tactile lettering and Braille should be **raised .8 mm above the sign surface**.
- There should be **at least 10 mm clearance** between Braille, tactile and any graphic elements to ensure readability.
- Braille standards vary. **In Canada the widely accepted standard is Grade 1 Braille**, while the U.S. and several other countries have adopted Grade 2 Braille (contracted).

→ Characters and symbols are recommended to have a minimum 70% Light Reflectance Value (LRV) contrast with their background. Contrast is extremely important in determining legibility.

↓ Type size and viewing distance are directly related. A standard guideline is to have 25 mm in cap height for every 7.5 m of distance from which the message will be viewed.

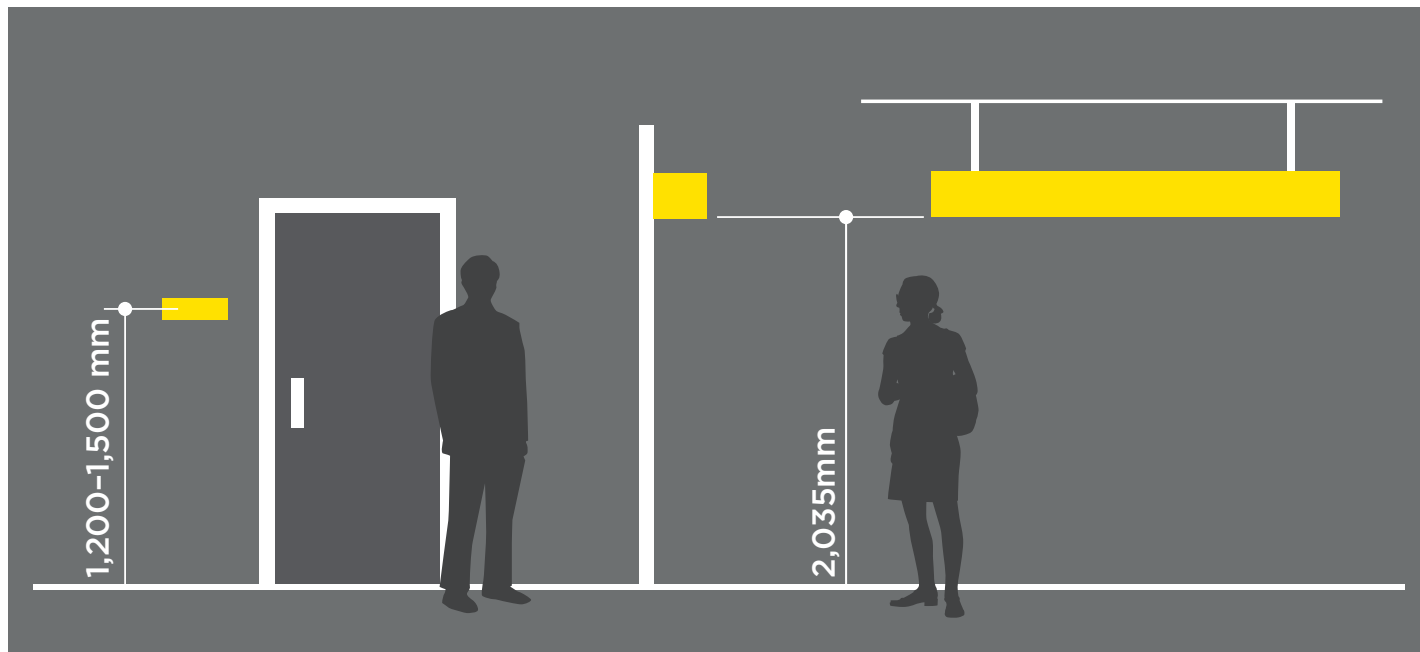


↑ Room signs are typically comprised of both permanent and changeable information. Permanent information should have a minimum 16 mm cap height and contain a tactile/Braille element. Changeable information is not required to be tactile or Braille but should still comply with proportion, size and contrast recommendations.

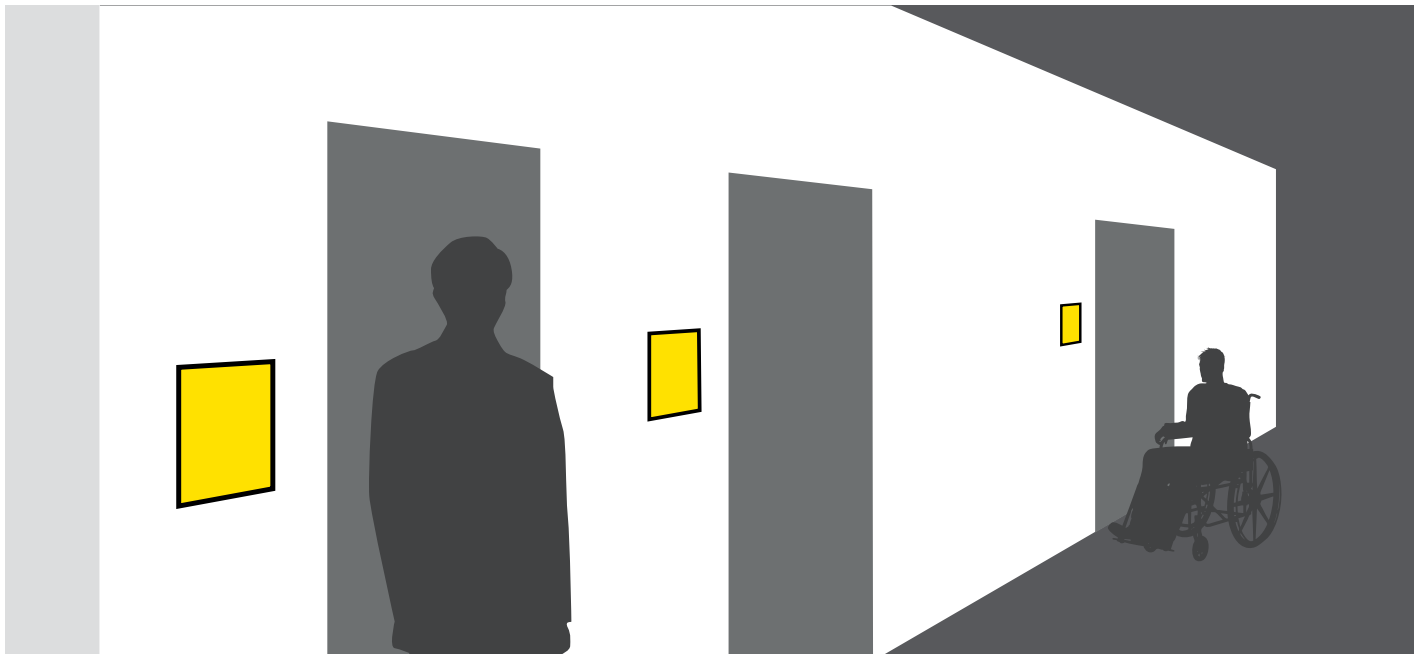
↖ There should be at least 10 mm clearance between Braille, tactile and any other elements for optimum legibility.

TYPES OF SIGNS

- **Room signs** must be affixed to the wall adjacent to the latch side of doors.
- All **permanent room information must be in tactile lettering and Braille**. The minimum recommended height for lettering is 16 mm. Non-permanent information (e.g., the name of the person occupying an office) may be applied using non-tactile methods but still should comply with proportion, size and contrast recommendations.
- To accommodate people with impaired vision or mobility, **room signs should be mounted at a height** that ensures text is positioned between 1.2 m and 1.5 m above the finished floor.
- Because someone reading a tactile sign by touch typically takes longer than a sighted person reading graphic signage – and also because numerical sequences are readily understood – it is recommended that **numbers and letters should be used for room identification**, with any other descriptive labels playing a supplementary role.
- Signs using **pictograms or symbols** should comply with international standards, including the recommended contrast ratio. The field around a pictogram should be at least of 150 mm in height. Where appropriate, pictograms should be tactile.
- Text height on **overhead signs** should be a minimum of 75 mm in settings where the baseline of the characters is more than 3 m above the finished floor. In areas where signs are mounted lower,



.....
← Flag-mounted and overhead signs shouldn't be lower than 2 m (80 inches).



← The height of wall-mounted signs should be consistent throughout a space, meeting the placement expectations that are especially important for vision-impaired individuals and those in wheelchairs.

a minimum text size of 50 mm is recommended. Overhead and flag-mounted signs should not be lower than 2 m.

- **Wall-mounted directional signs** are generally not required to use Braille or tactile lettering. However, recommended standards for text size and contrast ratios should still be followed. The ideal mounting height places the centre line at 1.5 m. Consistent placement is essential to meet the expectations of vision-impaired users.
- **Maps and directories** are generally not required to use tactile graphics or Braille. However, these elements should follow the recommended contrast ratio. There is no minimum text size requirement, but wherever possible messaging should be at least 16 mm high. The ideal mounting height is between 1.2 m and 1.5 m above the finished floor.

- **Tactile maps** have raised graphic elements and symbols to help users with visual impairments gain a spatial understanding of the environment. These specialized maps are typically displayed separately from traditional maps.
- A range of **technology-based solutions** can also be used to supplement or replace signage. For example, audio wayfinding can provide multilingual content for users with visual impairments and those whose first language is not displayed in text-based signage. Environmental designers should be constantly exploring and testing new technologies, from text-to-speech software to location-based mobile applications, as we work to extend the horizons of accessibility.

Pearson Terminal 1

DESIGN REQUIREMENTS

The Greater Toronto Airports Authority wanted to integrate accessibility standards into the earliest stages of the design process at Terminal 1 of Toronto Pearson International Airport. In partnership with CNIB, Entro's mandate was to create clear and comprehensive navigational paths, ensuring people would choose their routes with confidence while not being overloaded with extraneous visual information. The objective was to use standardized terms and very specific orientation, so that when people arrived at decision points, the correct path would be clear. The program needed to be user-friendly across all languages and also assist infrequent travellers.

DESIGN SOLUTION

The team of Entro and Pentagram designed and implemented a comprehensive signage and wayfinding program for the new Terminal 1. The program created a new culture for the airport, utilizing iconic graphic elements and forms that directly link to the bold architecture of the terminal. The program has been recognized worldwide with numerous awards.



← In the check-in area, the main pylons serve as landmarks and are designed for maximum visibility; each is topped with a distinctive graphic treatment.

↙ Overhead signs feature English on the convex surface and French on the flat, with standardized colour coding – yellow for outbound and green for inbound.



Design Firm
Entro Communications
(with Pentagram)

Designer
Wayne McCutcheon R.G.D.

Client
The Greater Toronto
Airports Authority

Out From Under: Disability, History and Things to Remember

DESIGN REQUIREMENTS

Adams + Associates was approached by a co-curator and associate professor at Ryerson University's School of Disability Studies to consult on turning students projects into a professionally designed travelling exhibition. The 13-project installation on the subject of disability was an opportunity to set an example for future accessibility projects. Factors such as traffic flow, artifact display heights, table heights, language and legibility were all considered.

DESIGN SOLUTION

Adams + Associates worked to overcome the challenges of making this exhibit as accessible as possible. The writing style was succinct and used plain language. Legibility for sight-impaired viewers was addressed with a clean, humanist font laid out in high-contrast dark gray on a white background. Special attention was paid to font size, leading and spacing. Traffic flow was also key. The rotation radius of a wheelchair was accounted for, as well as the accessibility of artifact display heights. When shown at the Royal Ontario Museum, the exhibit included special features such as a video podcast of all text in American Sign Language, audio podcasts with detailed visual descriptions and touch stations profiling selected objects.



Design Firm

Adams + Associates

Designer

Debbie Adams R.G.D.

Client

Ryerson University –
School of Disability Studies

ADDITIONAL RESOURCES

In Print

Barker, Peter and June Fraser

Sign Design Guide: A Guide to Inclusive Signage

Carter, Rob and Ben Day and Philip Meggs

Typographic Design: Form and Communication

CNIB Research and VREBR Project Team

Clear Print: An evidence-based review of the research on typeface legibility for readers with low vision

Gibson, David.

The Wayfinding Handbook: Information Design for Public Places

Lidwell, William and Kristina Holden and Jill Butler

Universal Principles of Design

Lupton, Ellen

Thinking with Type: A Critical Guide for Designers, Writers, Editors & Students

Visocky O'Grady, Jenn & Ken

The Information Design Handbook

Arthur, Paul & Romedi Passini

People, Signs, and Architecture

Calori, Chris

Signage and Wayfinding Design: A Complete Guide to Creating Environmental Graphic Design Systems

Online

Adobe Accessibility Centre

www.adobe.com/accessibility

Canadian Abilities Foundation

www.abilities.ca

Canadian National Institute for the Blind (CNIB)

www.cnib.ca

Center for Universal Design

www.ncsu.edu/www/ncsu/design/sod5/cud

International Institute for Information Design (IIID)

www.iiid.net

Learning Disabilities Association of Canada

www.ldac-taac.ca

Ministry of Community and Social Services

Access On: Breaking Barriers Together

www.ontario.ca/accesson

Society for Environmental Graphic Design (SEGD)

www.segd.org

World Wide Web Consortium Web Accessibility Initiative

www.w3.org/WAI

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Next, special appreciation goes to the authors who provided expert content for this handbook:

Jenn and Ken Visocky O'Grady drafted the material for the Print Design section. Jenn and Ken co-founded Enspace, a creative think tank where collaboration enhances communication. The two also promote the value of design in the classroom - Jenn as an Associate Professor at Cleveland State University and Ken as an Associate Professor at Kent State University.

Derek Featherstone drafted the material for the Web Design section. Derek is founder of Further Ahead, a firm that delivers insightful and creative accessibility consulting to Fortune

500 corporations and other private sector clients, as well as to educational institutions, public utilities and government agencies.

Gregory Neely R.G.D. drafted the material for the Environmental Design section. Gregory is co-founder of Forge Media + Design, a multidisciplinary firm focused on experiential branding and design for the built environment, including digital media, environmental graphics and wayfinding.

We also wish to thank the **Steering and Advisory Committees** for this project (listed to the right) - in particular **Lionel Gadoury** R.G.D., who as President of RGD provides direction for all our activities, and **Wayne McCutcheon** R.G.D., a past President of our organization, who contributed invaluable input to the Environmental Design section.

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STEERING COMMITTEE MEMBERS

Hilary Ashworth, Executive Director, The Association of Graphic Designers of Ontario

Nancy Calabro, Program Advisor, Public Education and Partnerships Unit, Accessibility Directorate of Ontario

Eleanor Hill, Co-lead Program Advisor, Public Education and Partnerships Unit, Accessibility Directorate of Ontario

Jim Dixon, Senior Program Advisor, Public Education and Partnerships Unit, Accessibility Directorate of Ontario

Christina Mastruzzo, Communications Coordinator, The Association of Registered Graphic Designers of Ontario

ADVISORY COMMITTEE MEMBERS

Tim Au-Yeung, President, GTA ARIDO Chapter, The Association of Registered Interior Designers of Ontario; Architectural and Design Representative, Humanscale Toronto

Lionel Gadoury R.G.D., President, The Association of Registered Graphic Designers of Ontario; Principal and Creative Director, Context Creative

Naveesha Maharaj, Accessibility Consultant, CNIB

Mark McAllister Prov. R.G.D., Freelance Designer

Wayne McCutcheon R.G.D., Principal and Founding Partner, Entro Communications

Colin O'Brien R.G.D. Senior Graphic Designer, Hunter Amenities



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RGD 2010 PARTNERS



ABOUT RGD ONTARIO

The Association of Registered Graphic Designers of Ontario (RGD) represents more than 3,000 members, including graphic design practitioners who help clients produce corporate and marketing communications; designers and managers who work within Canadian companies, government agencies, educational institutions and not-for-profit organizations; educators who oversee the training of the next generation of design professionals; and students who are the future of our industry.

Created by an act of the Ontario legislature in 1996, RGD is empowered to grant the designation Registered Graphic Designer (R.G.D.) to qualified designers. We are the only graphic design association in North America supported by this kind of legislation.

The mission of RGD is to be the hub for the province's graphic design community by promoting knowledge sharing, continuous learning, research, advocacy and mentorship. We work constantly to establish and promote professional standards, best practices and technical expertise throughout our industry. We also direct collective efforts in support of design thinking, the creative resolution of practical challenges in ways that envision an improved future result. Design thinkers apply their imagination, empathy and problem solving skills to drive the success of organizations and meet the needs of individuals - including all those who understand the vital importance of accessibility.

RGD-AccessibleDesign.com

The conversation on accessible design does not end here. For more information on best practices, additional case studies and further resources, please visit RGD's Access Ability website. Created to serve as a meeting point, the site invites users to visit, learn, engage in dialogue and share their own stories, examples and helpful tips.

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