OPUS

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Universal Accessibility: Designing Environments for All

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And answers to the following questions:

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+ What tools can be used to integrate accessibility issues into planning practices?

+ Which places should be prioritized for intervention?

The OPUS* collection is one of the means used by the Centre de référence sur l'environnement bâti et la santé (CREBS) to make expertise on health and the built environment accessible to the Québec healthcare network and other key partners. The aim of this knowledge transfer initiative is to inform the choices of practitioners and decision makers in this field, and thus encourage the adoption of best practices for the development of safe and healthy built environments.

The OPUS collection is available at
https://www.inspq.qc.ca/crebs/OPUS.

*   *Opus* is the Latin word signifying "a work." In architecture, construction and archaeology, Opus refers to the way masonry materials are arranged.

Key points

+ Universal accessibility refers to an inclusive approach that takes into account the differing needs and living conditions of individuals. It aims, in particular, to promote equitable use of the built environment. This would allow any person to engage in activities independently and achieve equivalent results.

+ Land use planning and the built environment influence access to resources, social participation and life habits, all of which contribute to maintaining good physical and mental health.

+ The design of universally accessible environments helps to reduce social inequalities in health and promote healthy aging, by making facilities inclusive, safe and comfortable for the whole population.

+ Over the course of a lifetime, every person runs the risk of experiencing temporary or permanent disabilities, exclusion or a disabling situation.

+ If poorly designed, the built environment can hinder the ability of a person with disabilities or limitations to perform life habits and activities. It thus contributes to placing such a person in a disabling situation.

Québec 🏛️🏛️

The built environment is defined as any element of the physical environment built or developed by human beings. A healthy built environment fosters community development, individual fulfillment and sustainable development, and has the potential to reduce social inequalities in health.

Introduction

"A disabled person in an accessible environment is a fully abled person. A fully abled person in a non-accessible environment is a disabled person" [translation] (1).

Universal accessibility is defined as "the character of a product, process, service, informational element or environment that, with equity and inclusiveness in mind, enables any person to perform activities independently and achieve equivalent results" (2). Indeed, getting to work, the park or the grocery store is only possible if the built environment is accessible. Accessibility is therefore a determinant condition for participation in economic, social and community life, and thus for the health and well-being for all.

This OPUS issue focuses on the design of universally accessible environments. It is intended primarily for municipal agencies, but may also be of interest to decision makers in the public, private and community spheres. Given their skills and responsibilities in the areas of development, urban planning, housing and road networks, municipalities have much to contribute to the creation of inclusive environments. The following pages examine the process through which disability is created, the impact of accessible design on population health, inclusive design approaches and principles, tools for integrating universal accessibility, places to prioritize for intervention, and numerous examples inspired by universal design.

# Why prioritize accessibility of the built environment?

The built environment influences people's health and quality of life in multiple ways, including in relation to life habits, social cohesion and access to goods and services (3). Thus, an environment that promotes accessibility is one that guarantees everyone has the basic conditions needed to thrive.

The disability creation process and the role of the built environment

The *Human Development Model - Disability Creation Process* (HDM-DCP) provides a framework for understanding how the environment plays a significant role in the creation of a disability (4). According to this model, a disability results from the interaction between personal factors (incapacity, illness, age, etc.) and environmental factors (duration of pedestrian traffic lights, access ramps, signage, etc.) that act as facilitators or obstacles for engaging in activities and life habits (Figure 1). For example, a blind person may be able to navigate obstacles in the home (furniture, stairs, etc.), but have difficulty getting around in unfamiliar places.

Figure 1   **Human development model – Disability creation process**
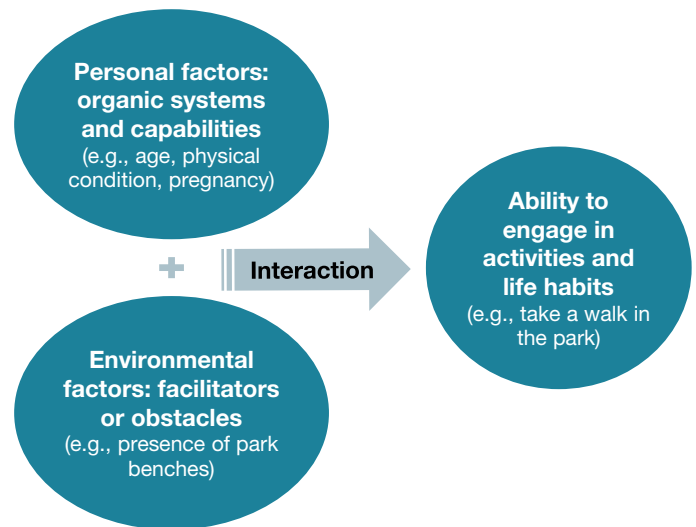
Adapted from: Fougeyrollas (4).

Incapacity, limitation and disability

The words *limitation*, *incapacity* and *disability* are often mistakenly used as synonyms (Table 1). While an incapacity may entail one or more limitations, it is the relationship with the environment that results in a disabling situation, at a given time and place. Indeed, in a well-designed built environment, a person with incapacities or limitations will not find themselves in a

disabling situation and will be able to engage in their activities.

Table 1   Examples of limitation, incapacity and disabling situations

Incapacity	Limitation	Disabling situation (environmental cause)
Vision (e.g., blindness)	Moving around in an unfamiliar environment	Crossing an intersection not equipped with an audible signal
Agility (e.g., arthritis)	Handling an object	Opening a door with a round handle
Mobility (e.g., women nearing the end of pregnancy)	Walking long distances	Ending a walk if there is no place to rest along the way

Prevalence of age-related disabilities

Quebec's population is aging. Demographic projections predict that 1 in 4 persons will be aged 65 or over by 2031 (5). Moreover, as we age, physical and cognitive functions are more likely to deteriorate. In fact, the proportion of people aged 65 and over living with one or more disabilities is calculated to be 57.2%. This percentage rises to 84% for those aged 85 and over, as compared with 28% for those aged 15-64 (6). Furthermore, in 2019, 27% of the Québec population aged 65 and over did not have a driver's licence (7.8). As a result, these seniors may make greater use of active and public transportation to get around. At the same time, these seniors are more likely to be the victim of a road accident when walking, due, in particular, to age-related disabilities (9,10).

PERMANENT AND TEMPORARY DISABILITIES

Permanent disability is defined as "an activity limitation that results from a long-term physical or mental health status, condition or problem [...] Disabilities may be related to: hearing, vision, speech, mobility, agility, learning, memory, intellectual disability/autism spectrum disorder (e.g., Asperger's syndrome), psychology or be indeterminate" [translation] (6). The proportion of the Québec population living with one or more disabilities is estimated at 33%. The most common disabilities are those related to agility (e.g., difficulty bending over), mobility and hearing (6). As regards the built environment, these disabilities can, for example, prevent

one from seeing or hearing an oncoming vehicle, make it difficult to climb stairs or prevent the use of playground equipment.

A temporary disability or incapacity may be caused by an accident (e.g., a broken leg), an illness or a temporary condition (e.g., pushing a baby in a stroller) that limits an ability (e.g., climbing stairs). Thus, everyone risks living with a disability at some point in their lives.

What are the health benefits of universal accessibility?

Universally accessible facilities have a number of tangible benefits for the health and well-being not only of people living with disabilities, but of the community as a whole.

Making it safe to get around

Every route comprises a sequence of movements leading from a point A to a point B. Regardless of its length or duration, each step in this sequence is important because it can compromise all the others. Thus, the accessibility of each step determines whether it is possible to carry out an activity. A sequence of movements generally involves a minimum amount of pedestrian travel, both at the beginning and end of the route.

However, lack of access to good quality, well-maintained pedestrian infrastructure can compromise everyone's safety (11). In addition, the fear associated with the risk of falling on damaged, uneven, snow-covered, icy or wet sidewalks can limit travel, particularly for the elderly (12). In fact, snow and ice are the cause of 45% of outdoor falls among seniors (13).

Similarly, the absence of sidewalks, sidewalks too narrow for people to pass by each other, or poorly positioned street furniture can force pedestrians to step onto the road to continue on their way. The risk of becoming the victim of a road accident increases in such situations, and the faster traffic is moving, the greater the danger (11). As an example, parking lots, which are often poorly equipped with pedestrian infrastructure, are the third most accident-prone area for pedestrian injuries (9).

In addition, many people living with a disability find it difficult to use public transit. Their difficulties may be

linked to the design of public transit infrastructure. For example, 38% of such persons indicate that getting to or finding the stops is one of the main difficulties of using public transit. Fifteen percent of the same group also have difficulty seeing posters, notices, or stops, or hearing announcements of upcoming stops (14).

Thus, lack of access to the various transport networks can be a barrier to mobility. For some, these obstacles would act as a deterrent to travel, especially if some amount of walking were required. They would be forced to pay more to get around (e.g., by taxi rather than by active or public transportation), be more dependent, or be more isolated.

Improving health and well-being conditions and targeting health equity

Persons with disabilities and their loved ones are more likely to experience social inequalities in health (15,16). In 2017, 28% of the Québec population living with a disability did not have a high school diploma, 33% had annual incomes below $15,000 and only just over half were employed, as compared to 18%, 22% and 75% respectively, for persons without disabilities (17). Moreover, it is recognized that disadvantage increases the risk of illness and premature death (18).

Disadvantaged persons with disabilities also have less access to the care they need to ensure their well-being, because of the costs involved (15,19). Over 26% of Canadians with a disability cannot afford help, support equipment or medication (19). They are also more prone to chronic diseases (e.g., diabetes, arthritis) (15,16,19-21). The proportion of smokers is also higher in this population (16).

The accessibility of the built environment promotes access to education, the job market, quality food, sports facilities and infrastructure, and health services. It is a key element in preventing and limiting disadvantage, and in promoting individual health and well-being.

Promoting a physically active lifestyle

People living with limitations are more likely to be physically inactive and to suffer from obesity (13,14). For the elderly, physical activity is all the more important as it could improve cognitive function and helps reduce the risk of falls (22).

The accessibility of sports, leisure and active transportation infrastructures, as well as the high pedestrian potential of the neighbourhood in which people live, are determinant factors for engaging in physical activity, particularly for the elderly and those living with a disability (10,20). Thus, the built environment influences the adoption of an active lifestyle (23). Simple solutions can be adopted by municipalities to encourage physical activity (e.g., the installation of sidewalks, footpaths and bike paths linking residential neighbourhoods to frequent destinations such as shops, schools, parks and green spaces, etc.).

Breaking social isolation

The relationship between social participation and health is well established. Isolation and loneliness can influence life habits (sleep, nutrition, physical activity) and impact cardiovascular, cognitive and mental health, as well as autonomy, well-being and quality of life (24). The risk of social isolation is greater among the elderly and those living with a disability (21,25). The latter are proportionately more likely to live alone, have limited Internet access, and be unemployed (16,17,21). The prevalence of loneliness is also linked to the accessibility of public spaces such as parks, green spaces and streets (24,26). Winter weather conditions can also limit outings and contribute to isolation (27-29).

Thus, accessibility and maintenance (e.g., snow removal) of active transportation infrastructure (e.g., sidewalks, crosswalks, park paths) and that of public transit (e.g., bus stops), as well as access to buildings, are basic elements that encourage outings and help people maintain a social life.

How can we create inclusive environments?

Design elements can either encourage or exclude individuals from full participation in community life. The key concepts presented in this section, namely adaptation, accessibility and universality, are intended to guide thinking about accessible and inclusive design. Figure 1 illustrates the differences stemming from the design approach adopted and the constraints that can be associated with different approaches to the same situation: accessing a building in a wheelchair.

Figure 1   **Accessing a building in a wheelchair: Accessibility approaches and associated constraints**

Approaches	Adaptation	Accessibility	Universal accessibility
Description	This approach attempts to adapt infrastructure based on the existing built environment.	This approach considers accessibility needs upstream of the design stage.	This approach embraces all users, regardless of their abilities, skills, gender or size.
Intervention	Add an access ramp at the entrance to a building.	Include an access ramp and self-opening door in the building's construction plans.	Design a single-storey building with automatic sliding doors.
Constraints	There is limited available space around the building, and it is not possible to install the access ramp at the main entrance. Once in front of the entrance, the person depends on a third party to open the door. The person cannot be fully autonomous.	The ramp and automatic door are at the rear of the building, in the same place as the emergency exit. A person in a wheelchair is not free to choose which entrance they prefer, like other clients. The person is more vulnerable in the event of a building evacuation, as they can only exit at one point.	No constraints. The main door is at ground level, with an easy-to-cross threshold. The person enters and leaves from the same access points as others.
Example	Photo credit: Ariane St-Louis (2021).	Photo credit: Ariane St-Louis (2021).	Photo credit: Ariane St-Louis (2021).

Depending on the context, it is not always possible to adopt a universal approach. For this reason, no approach should be excluded. However, regardless of the method chosen, the upstream design of inclusive facilities remains more economical than the adaptation of existing buildings (30). Simple, inexpensive actions should be considered right from the planning stage. For example, determining the best place to install urban furniture so that it does not have to be moved later, or choosing surface coverings that will allow everyone to circulate with ease, will help avoid adaptation costs once the project is finished.

The 7 principles of universal design

Being able to ask the right questions before designing plans is an essential step toward meeting a variety of needs. To this end, architects have formulated a list of 7 principles to guide planning professionals toward inclusive designs. The universal design approach goes beyond considering disability: it presumes that each individual has different living conditions and needs (being left-handed, short, agile, mobile, illiterate, etc.). Each

principle is important, but depending on the context (building, furniture, road design, etc.), certain ones will predominate. These principles are just as useful for upstream reflection on a project as they are for assessing existing structures (31). To facilitate understanding of these principles, illustrated examples are provided in Figure 2.

EQUITABLE USE

Use should be similar for all individuals, regardless of their characteristics. Equitable design is intended to be attractive, safe and secure, while ensuring that no one is excluded.

FLEXIBILITY IN USE

Users' preferences and abilities are taken into consideration. Flexibility consists of offering different options so as to facilitate movement and adapt to the pace and characteristics of users.

SIMPLE AND INTUITIVE USE

The design facilitates the understanding and use of objects, and the navigation of spaces by users, regardless of their abilities, experience, knowledge, language skills, cognitive abilities or level of concentration. It is consistent with user expectations and information is arranged according to its importance. Unnecessary complexity is thus eliminated.

PERCEPTIBLE INFORMATION

Information is communicated in a manner that is accessible to everyone, regardless of their visual, auditory or intellectual abilities. Essential information may be presented using different modes (pictorial, verbal, tactile). It is also compatible with a variety of techniques and devices used by persons with sensory limitations, and its legibility is maximized, in particular through adequate contrast.

SIZE AND SPACE FOR APPROACH AND USE

The space for approaching an object (e.g., door, water fountain, elevator) is sufficient to allow access and movement regardless of a user's size, reach or mobility. The object can be used in a sitting or standing position, and if it requires manipulation (e.g., a handle), different sizes or shapes can be considered.

LOW PHYSICAL EFFORT

The design or object requires little physical effort and minimizes the fatigue incurred through its use by reducing repetitive actions and effort. Use of the object requires a reasonable amount of strength, and the user's body position is not compromised; it remains neutral (e.g., a short person will not have to stand on tiptoe to access the object).

SAFE USE AND TOLERANCE FOR ERROR

Safe, error-tolerant design minimizes the risk of accidents or unintended actions. The design prevents unconscious action when performing tasks requiring vigilance. Information is provided and measures are in place to prevent unsafe use.

Figure 2   Examples that incorporate the principles of universal design

Photo credit: Ariane St-Louis (2020).

The picnic table and its use are easily recognizable (**simple and intuitive use**). It is accessible to children, persons with reduced mobility and groups. It can be used in a sitting or standing position, according to the user's need and accommodates any difficulty in sitting down or getting up (**flexibility in use**). The table can be accessed from the grass or from an access path connected to the concrete slab, which includes room to manoeuvre (**size and space for approach and use**). The benches are riveted to the ground to minimize the risk of tipping (**safe use and tolerance for error**).

Photo credit: Tessier Récréo-Parc inc. and Ville de Sainte-Catherine (2017).

Francis-Xavier-Fontaine Park in Sainte-Catherine is designed to foster the physical, cognitive, sensory and social development of all children (**equitable use)**. The park includes play modules accessible to children in wheelchairs, panels for learning Braille, textured materials with contrasting colours (**perceptible information**), a parent-child swing, a large oval chair for relaxing, etc. The ground surfacing facilitates access for parents pushing their child in a stroller, as well as for wheelchair users (**requires low physical effort**). The municipality held a public consultation during the pre-design phase so the needs of parents and children could best be integrated.

Photo credit: Ariane St-Louis (2020).

Curb extensions reduce pedestrian crossing time and, consequently, exposure to the risk of accident (**safe use and tolerance for error**). Contrasting pavement markings and tactile indicator plates on either side indicate the location of the crossing and provide guidance for visually impaired persons (**perceptible information**). The curb cuts are level with the road. This makes the transition from sidewalk to road easier for persons in wheelchairs, with walkers or pushing strollers. This also minimizes the risk of falls, and reduces water accumulation and ice formation in winter, improving comfort and safety for everyone (**low physical effort, safe use and tolerance for error**).

The city of Montréal's department of urban planning and mobility and its advisory committee on universal accessibility have adapted the principles of universal design to the pedestrian environment, to make it both inclusive and safe (31,32). They agreed on 10 elements of street design that minimize the risk of accidents, falls and injuries and make crossing the street safer:

+ An obstacle-free pedestrian corridor, whose width and height are unobstructed.

+ A pedestrian corridor on the side away from the roadway: street furniture located in the space between the street and the sidewalk (the road verge) so as not to obstruct a guiding line.

+ A pedestrian corridor with a continuous, contrasting border on each side.

+ A straight pedestrian corridor on and between street sections.

+ Simple intersections: pedestrian corridor, curb cuts and aligned crossings; easy-to-understand signage; sufficient time to cross; one direction of traffic flow to manage at a time (e.g., bike path on the pavement).

+ Easy transition from sidewalk to road: lowering of sidewalks to road level.

+ Easy, safe crossing: fewer lanes to cross, safety island for multi-lane street crossings, simple and contrasting road markings.

+ Surfacings that facilitate movement: non-slip materials, uniform (joints are minimized) and well-maintained (snow is cleared, free of holes, etc.)

+ Furniture in the right place (in the road verge) and in sufficient quantity.

+ Easy transition to buildings (on the same level).

Tactical urbanism and universal accessibility

The COVID-19 pandemic brought tactical urbanism practices to the fore. In order to quickly introduce arrangements that encourage people to follow health guidelines, some municipalities did not hesitate to close streets and remove parking lanes on commercial streets to make more room for pedestrians. Other initiatives were undertaken, notably by retailers, who marked out waiting areas on the ground outside their shops. If these practices indeed encourage physical distancing between users, they should not prove disadvantageous for persons in disabling situations. However, this is the case,

for example, when facilities placed on the sidewalk obstruct the guiding line of a visually impaired person, or require a wheelchair user to bypass the obstruction using the street without the presence of an access ramp. This could also apply to the addition of sidewalk cafés in front of restaurants, or the occasional pedestrianization of streets (e.g., for a sidewalk sale) during the summer season. Thus, although temporary, these facilities should be designed to comply with the above-mentioned accessibility principles.

Integrating accessibility into design practices

The Act to secure handicapped persons in the exercise of their rights with a view to achieving social, school and workplace integration requires public agencies with 50 or more employees and municipalities with a population of at least 15,000 to produce an annual action plan for disabled persons (33). Although not compulsory for smaller organizations, this exercise can prompt reflection about the current accessibility of the environment. Furthermore, according to the Québec Construction Code all new residential construction must comply with standards regarding the accessibility and adaptability of dwellings for people with disabilities (34).

In addition to action plans, localities can adopt a universal accessibility policy or, using a cross-functional approach, include the principles in existing policies and plans. Here are some examples of actions that can be included in policies so as to promote universal accessibility:

+ Housing policy: provide for more universally accessible housing; vary the supply of housing for seniors (e.g., several small structures in the heart of cities or near green spaces rather than large structures located on major arteries); include accessible housing in the subsidized housing stock...

+ Mobility and transportation policy: make active and public transportation networks accessible; ensure safety and accessibility of pedestrian bypasses near construction sites; improve paratransit service and supply...

+ Urban plan: develop new accessible public spaces and redesign existing spaces to make them accessible; adopt a bylaw requiring the construction of accessible housing in real estate development projects; align various policies (urban planning,

housing, transportation) to encourage the establishment of accessible housing projects and seniors' residences close to active and public transportation networks, community infrastructure and parks and green spaces...

+ Cultural policy and sports and leisure policy: improve universal accessibility to cultural and sports activities, community buildings (e.g., libraries), sports facilities and during events...

+ Snow removal plan: prioritize clearing snow from active and public transportation infrastructure to ensure safe access; prioritize streets surrounding disadvantaged neighbourhoods, densely populated neighbourhoods and neighbourhoods with a high proportion of elderly residents...

+ Seniors and families policy: develop parks and green spaces that are accessible in all seasons; implement measures that encourage travel on foot, in a wheelchair or using a mobility scooter; develop accessible parks that focus on sensory development for children...

+ Procurement policy: plan to purchase universally accessible furniture (picnic tables, water fountains, benches, shelters, etc.).

Whatever strategy is chosen, universal accessibility action plans and other relevant policies and planning documents must be consistent and complementary.

Where to begin?

All projects, whether involving the design or the modification of infrastructure, represent an opportunity to improve accessibility. Several factors need to be considered when deciding which locations to prioritize when transforming the built environment.

The location of vulnerable populations and disadvantaged areas constitutes a starting point. Using census data, it is possible to situate these populations and prioritize sites for intervention. Since more seniors live with disabilities and seniors are more likely to develop them, targeting neighbourhoods with a high density of residents aged 65 and over could be one priority to adopt. The same is true for disadvantaged neighbourhoods, where the population experiences more difficult living conditions, is less healthy and has limited access to various resources. In addition, census data

includes a section linking activities of daily living to people's abilities (seeing, hearing, walking, etc.). Adding this information (population aged 65 and over, low income, abilities) to a map makes it possible to geolocate areas at risk.

It is also recommended to reflect on the accessibility of places and services that are heavily used by the population (e.g., public institutions, parks, community and sports facilities, grocery stores, etc.). In particular, parks and green spaces provide a safe space to practice physical activities and are conducive to social participation. These should be universally accessible, as should the transportation infrastructure used to access them (sidewalks, bike paths, public transit stops).

Evaluate and consult to plan better

Once the area of intervention has been chosen, the next step is to produce a diagnostic portrait. To do this, it is important to take into account the context (socio-demographic aspects, project scale, zoning, site functions, transportation network), the components (obstacles, facilitators, existing structures, destinations) and potential interactions with users. Analysis of the diagnostic portrait will enable the identification of current and potential issues, as well as strengths, allowing for better planning of the development's accessibility. In the case of a redevelopment project, the principles of universal design will be useful for analyzing existing structures. These principles could also be incorporated into a health impact assessment. In addition, there are a number of assessment tools and organizations working in the field of universal accessibility that can be of assistance (refer to the subsequent text box and to the section header Looking for tools…).

PPassage: a process leading to universally accessible streets

Developed by Société Logique, in collaboration with the Direction de santé publique de Montréal and the municipal and community sectors, the PPassage* audit (for active, safe and universally accessible pedestrian potential) can be used to diagnose the built environment, identifying features that are or are not conducive to walking. This tool is used to collect, analyze and share data, as well as to point out elements that need to be corrected, so that the urban environment can be modified, in the short and medium term, to become functional, user-friendly, safe and universally accessible. This process greatly assists in assessing the impact of urban design on communities and in ensuring infrastructure optimally supports mobility and quality of life for all citizens, while facilitating community mobilization and better decision-making by stakeholders (35).

* Charges may apply.

The formation of a universal accessibility advisory committee can greatly advance understanding of the difficulties experienced by persons with limited access to resources and services, or who are in a disabling situation. Similar to an urban planning advisory committee, this committee would be called on to meet several times a year to give advice, make recommendations and provide expertise on universal accessibility as applied to development and urban planning projects. Ideally, it would be composed of a council member, and representatives of local community organizations, target publics or universal accessibility professionals.

Another option for assessment would be to form a discussion group or to organize an exploratory walk with citizens who have less access to resources and services, or who are living in disabling situations. This approach makes it possible to gather qualitative data and sensitive information related to the participants' lived experience.

Adopting a participatory approach to urban planning, in which the population is consulted and takes part in decision making, fosters support and acceptance of projects. Whatever the technique chosen, all users, including vulnerable or disadvantaged users, should systematically be included as stakeholders in a development project.

Once a project is underway, a follow-up assessment will verify whether the solutions advanced by municipalities or designers effectively ensure universal accessibility and safety. Afterwards, a post-completion follow-up makes it possible to highlight successes and to measure their impact. As with the preliminary stages, the principles of universal design can serve as indicators during the follow-up process. Although many resources are freely available, it may be useful to consult an organization with expertise in universal accessibility or health impact studies.

Beyond universal design...

Universal accessibility is not limited to the design of the built environment. A number of other factors are required to promote the full participation of individuals. The following topic areas can prompt public, community and private organizations to reflect more broadly on universal accessibility:

+ Employment: access to internships; adoption of equitable hiring measures (positive discrimination); accessibility of hiring procedures; integration of persons with limitations into the workplace; job retention; use of work integration organizations or businesses that seek to employ persons in disabling situations, etc.

+ Communication and access to information: accessibility of websites, local media, municipal documents (policies, plans, forms, etc.); accessibility of council meetings, public consultations and the electoral process, etc.

+ Emergency measures and public safety: accompanying persons in disabling situations during emergencies; multi-sensory emergency reporting; communicating with persons with disabilities in emergency situations, etc.

+ Procurement of accessible equipment: the purchase or rental of equipment that facilitates universal accessibility (walker, courtesy wheelchair, aquatic wheelchair, etc.).

+ Training: raising staff awareness about issues related to disability (e.g., exploratory walk with a disability simulator, design workshop with universal accessibility professionals) and about communicating with persons with functional limitations; raising public awareness about issues experienced by persons with disabilities (e.g., reserved parking), etc.

There exist subsidy programs for promoting universal accessibility in municipalities, and in public and community organizations. The Office des personnes handicapées du Québec lists these on its website, along with municipal action plans concerning disabled persons and best practice guides for the topic areas listed above.

Looking for tools...

Several tools are available that provide further information about universally accessible design:

+ Vers des parcours sans obstacles (toward obstacle-free routes) (Office des personnes handicapées du Québec, in French only)

+ Guide pratique d'accessibilité universelle (practical guide to universal accessibility) (Ville de Québec, in French only)

+ Aménagements piétons universellement accessibles (Ville de Montréal, in French only)

+ Outil d'évaluation du potentiel piétonnier Ppassage (pedestrian potential assessment tool) (Société Logique, in French only) (fees may apply)

+ Guide d'analyse de l'expérience inclusive en parc urbain (guide to analyzing the experience of inclusivity in urban environments) (Association québécoise pour le loisir des personnes handicapées, in French only)

+ Resources and references for improving universal accessibility (AlterGo training, in French only)

+ Aires de jeu accessibles au Canada (accessible playgrounds in Canada) (Active Living Alliance for Canadians with a Disability, in French only)

+ Accessibilité à l'intérieur des logements d'habitation (accessibility inside dwellings) (Régie du bâtiment du Québec, in French only)

+ L'approvisionnement en biens et services accessibles aux personnes handicapées : guide d'accompagnement mobilier urbain (procurement of goods and services accessible to persons with disabilities: street furniture guide) (Office des personnes handicapées du Québec, in French only)

Looking for inspiration...

Here are some examples of projects that have been carried out across Québec:

+ An example of an integrated policy: Victoriaville, ville inclusive (Victoriaville, an inclusive city) (Collectivités viables, in French only)

+ Several approaches to design: Plan de développement pour rendre accessible le service de transport en commun régulier aux personnes à mobilité réduite (development plan for making regular public transit service accessible to people with reduced mobility) (Société de transport de Sherbrooke, in French only)

+ Integrating universal accessibility throughout the entire design process: Complexe aquatique multifonctionnel (multifunctional aquatic complex) (Ville de Lévis, in French only)

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Universal Accessibility: Designing Environments for All

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