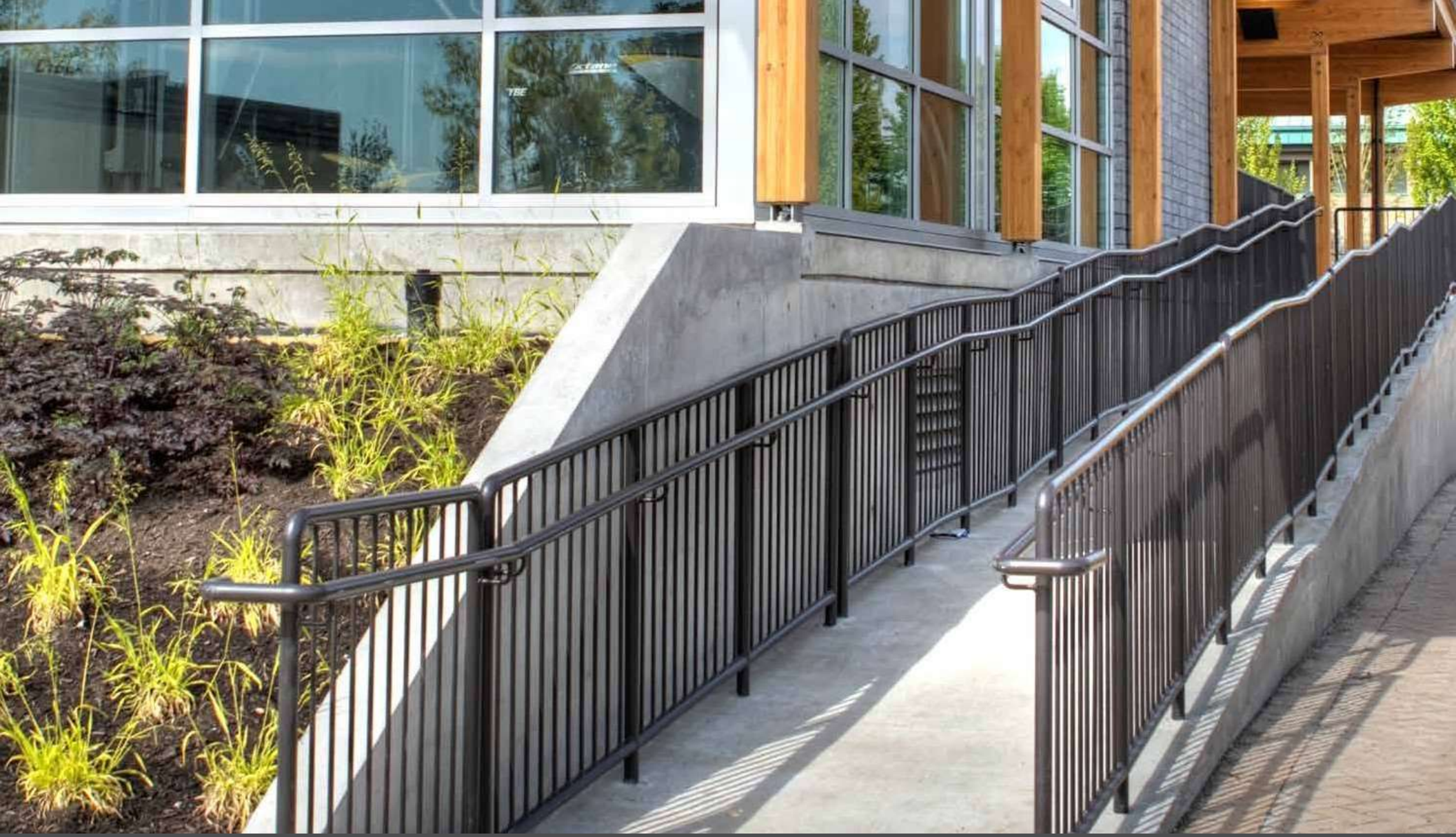

CITY OF RICHMOND

ENHANCED ACCESSIBILITY

DESIGN GUIDELINES AND TECHNICAL SPECIFICATIONS

Richmond

Acknowledgements

The City of Richmond Enhanced Accessibility Design Guidelines and Technical Specifications ["The Guidelines"] is the result of a collaborative effort that involved contributions from community organizations who support people with disabilities in Richmond, City of Richmond staff, and civil engineering and accessibility consultants. Special thanks to everyone who participated in the update process of the Guidelines by sharing their insight, expertise and support.

Community organizations

- Alzheimer Society of BC
- Aspire Richmond
- Canadian National Institute for the Blind (CNIB)
- Developmental Disabilities Association
- Pathways Clubhouse
- Richmond Accessibility Advisory Committee
- Richmond Centre for Disability
- Richmond Seniors Advisory Committee
- Vancouver Coastal Health
- Wavefront Centre for Communication Accessibility

Project Team

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Consultants

- Aplin & Martin Consultants
- Meaningful Access Consulting

Table of Contents

Executive Summary

The City of Richmond Enhanced Accessibility Design Guidelines and Technical Specifications ["The Guidelines"] were originally endorsed by City Council in October 2018 with an expectation the Guidelines would be updated on an ongoing basis to consider current and emerging accessibility standards and best practices. This is the second (2nd) version of the Guidelines based on updates that were completed on January 5, 2024.

The Guidelines are intended to assist City staff and the development community in the incorporation of accessibility features that go beyond the requirements of the BC Building Code for accessibility in City-owned or City leased premises. The Guidelines are provided as well to the public as a resource on an information-only basis.

Therefore, while the content is thought to be accurate on the publication date shown, the Guidelines are provided on an "as is" basis, and without warranty of any kind, either expressed or implied.

The City of Richmond, its elected officials, officers, agents, employees and contractors will, in no event, be liable or responsible for losses or damages of any kind arising out of the use of the Guidelines. Additionally, changes may be made to the Guidelines without prior notice.

The information contained in the Guidelines is subject always to the provisions of all governing legislation and bylaws including, without limitation, the most recent edition of the BC Building Code, CSA/ASC B651, the City of Richmond Zoning Bylaw 8500, the City of Richmond Building Regulation Bylaw 7230, and the City of Richmond Subdivision and Development Bylaw 8751, including all as they may be amended or replaced from time to time. Design considerations have also been sourced, without limitation, from the most recent edition of the CNIB Clearing Our Path Guidelines, PAS 6463 Design for the mind – Neurodiversity and the built environment – Guide, and Dementia-inclusive planning and design guidelines developed through the Dementia-inclusive Streets and Community Access, Participation and Engagement (DemSCAPE) Project.

Executive Summary

The City of Richmond is committed to incorporating principles of accessible design in all buildings and open spaces in the City. This is especially true for City-owned and City leased facilities as ongoing efforts are made to ensure that the design and construction of Richmond's public infrastructure reflects a strong commitment to accessible design requirements.

An essential aspect of this commitment to accessibility is the need to keep abreast of the current community context and the evolving needs of Richmond residents over time. City policies have, in the past, articulated such objectives. City Policy 4012 – Access and Inclusion, emphasizes this, and commits to:

- Advancing accessibility in the City's built environment through the use of universal design principles and the City's Enhanced Accessibility Design Guidelines and Technical Specifications;
- Enhancing equitable access to City facilities, parks, programs and services to all who live, work, play and learn in Richmond;
- Removing barriers to participation faced by vulnerable groups by adopting practices and accommodations so that every resident can take part in all aspects of community life;
- Continuing to seek community input from a wide range of individuals, community organizations and stakeholders in the planning and development of facilities, policies and services; and
- Collaborating with partner organizations and stakeholder groups to address the diverse needs of Richmond's population.

The City of Richmond Building Bylaws and the Provincial Building Code typically provide the minimum requirements for accessibility in buildings and public spaces. These regulations are informed by the BC Office of Housing and Construction Standards "BC Access Handbook (2020)", which provides an illustrated commentary, describing and suggesting how many of the Code requirements can be implemented.

The intent of the Guidelines is to go beyond the minimum standards to advance accessibility across City-owned buildings and public spaces. In addition to input from City staff, the preparation of the Guidelines has relied on consultation with key partners and advocates for people with disabilities. The contributions of these groups are recognized with thanks in the Acknowledgements section of the document. This document has also been informed by a survey of work in the field and best practices from other jurisdictions in Canada.

By enhancing accessibility in City-owned buildings and public spaces, Richmond continues to play a leadership role that inspires better standards for accessible design in privately developed buildings throughout the City.

Inclusive play features at the Middle Arm Waterfront Greenway

1.1 Mission Statement

The City of Richmond is committed to incorporating principles of accessible design in all buildings and open spaces in the City. The City is also committed to moving beyond the minimum requirements of the BC building code to enhance accessibility and the use of universal design principles to further barrier-free access for all community members. The goal is to help foster independence and inclusive mobility across all parts of the City for every person, regardless of age, size, ability or disability.

1.2 Intent of the Guidelines and How to Apply Them

In the City of Richmond, enhanced accessibility in buildings, streets, sidewalks and open spaces, is typically mandated through the City's development approvals and building permitting processes.

The Richmond Building Bylaws and the Provincial Building Code provide minimum requirements for accessibility for people with disabilities, including disabilities that are permanent, temporary or episodic; visible or invisible; range in severity; and include physical, sensory, mental health-related, developmental, cognitive and/or have multiple features.

The intent of the Guidelines is to provide information for the public, and to provide clarity for building owners, developers, architects, and others in the development industry, regarding the City's expectations to go beyond these minimum requirements, and provide enhanced design and accessibility in buildings and in the public realm.

More specifically, the Guidelines are intended to define expectations and guide the City's decisions for the design of all newly constructed, retrofitted, or renovated facilities, public spaces and right of ways that are owned, leased or operated by the City of Richmond.

1.3 City of Richmond's Commitment to Enhanced Accessibility

The City has a strong history of working closely with community organizations and people with disabilities to further access in the built environment. This includes identifying, developing and implementing policies, programs and practices that work to advance accessibility in Richmond. The Council-adopted Access and Inclusion Policy 4012 and Richmond's 2041 Official Community Plan (OCP) establish the City's commitment to social equity and inclusion and address the accessibility of its public spaces. The OCP outlines the City's goals for an accessible, diverse and connected community, which include the following objectives:

- Facilitate the establishment of an equitable, inclusive community, whereby City plans, policies, services and practices respect the diverse needs of all segments of the population; and
- Provide a full range of appealing, welcoming places for residents and visitors of all ages and backgrounds to walk, roll, exercise, play, socialize and engage in healthy, active lifestyles.

The Guidelines support ongoing efforts among City departments and the development community in achieving these objectives as well as advancing related actions in other City strategies and plans that work to build a more accessible and inclusive Richmond.

Park path.

The City's approach to enhancing accessibility in the built environment focuses on the following principles:

- That the Guidelines be considered throughout the design and construction of all new City-owned and City leased buildings and public spaces, and be applied to future City renovation projects. This will promote facilities that are more inclusive, sustainable and resilient, minimizing maintenance costs over the life of the facility.
- The City recognizes and values the diversity of all members of the Richmond community and actively engages with the public, including people with disabilities, on the accessibility of buildings and public spaces to better meet community needs.
- The City maintains ongoing collaboration across all sectors and levels of government to promote the development of an accessible environment that benefits everyone who works, lives, plays and visits Richmond.
- The City practices responsible financial management that works to effectively advance accessibility and balance current, ongoing and emerging priorities in areas such as sustainability, operations, maintenance and finance.
- The City meets the requirements of existing legislation, including the Accessible British Columbia Act, and its own policies as part of the City's corporate responsibility to identify, remove and prevent barriers to participation experienced by people with disabilities in the community.

Accessible Route Highlighted by Paving Contrast.

1.4 The Changing Regulatory Environment Concerning Accessibility in Canada

New builds or renovated buildings in Canada must comply with the minimum requirements for accessibility that are set out in the building codes adopted by the various provinces. In British Columbia, the 2018 BC Building Code sets out the minimum requirements for accessibility in buildings and public spaces. These regulations are further informed by the Building Access Handbook 2020, which is published by the BC Office of Housing and Construction Standards. The Handbook provides an illustrated commentary, suggesting how many of the code requirements may be implemented.

The first iteration of the Enhanced Accessibility and Design Guidelines and Technical Specifications was endorsed by City Council in October 2018, when a growing number of municipalities were opting to go beyond minimum building code standards for accessibility and were establishing new practices to enhance accessibility in publicly-owned and funded buildings. Since the Guidelines were introduced in 2018, new Federal and Provincial accessibility legislation has been established. This new legislation will influence Richmond's approach to building and strengthening access for all members of the community going forward.

On July 11, 2019, the Accessible Canada Act came into force with the purpose of making Canada barrier-free by January 1, 2040. The Accessible Canada Act established Accessibility Standards Canada (ASC) to support efforts in creating a barrier-free Canada. ASC is an accredited standards development organization and accessibility standards established by the ASC are recognized as the National Standards of Canada. While Federal legislation and ASC standards apply to organizations under Federal responsibility, the Accessible Canada Act will influence the advancement of accessibility legislation and practices across the country.

On June 17, 2021, the Legislative Assembly of British Columbia passed the Accessible British Columbia Act (the Act) into law. The Act focuses on making local government and organizations in the province of BC more accessible and inclusive. It establishes the legal framework to develop, implement and enforce accessibility standards to support people with disabilities in meaningfully participating in their communities. These standards will be developed across a wide range of areas, such as the built environment, service delivery, and information and communications.

On May 11, 2022, the Province signed a Memorandum of Understanding (MOU) with ASC that will support the alignment of standards developed under the Accessible BC Act with the National Standards of Canada. The development of Federal legislation will therefore have a great impact on how Provincial legislation is developed. As a result, this alignment will ensure a more consistent accessibility experience for people with disabilities between jurisdictions.

With British Columbia in the midst of a significant culture shift that is bringing accessibility to the forefront, this updated document is intended to continue guiding the development of accessible, equitable and inclusive public spaces in Richmond that benefit everyone, especially people with disabilities. This second (2nd) version incorporates recommendations from the latest edition of the CSA/ASC B651 Accessible Design for the Built Environment Standards as well as guidelines that support the entire spectrum of disability, including the:

- CNIB Clearing Our Path Guidelines;
- PAS 6463 Design for the mind – Neurodiversity and the built environment – Guide;
- Dementia-inclusive planning and design guidelines developed through the Dementia-inclusive Streets and Community Access, Participation and Engagement (DemSCAPE) Project;
- As well, universal design principles and current best practices from communities across Canada have been considered.

The City is committed to meeting and, to the extent possible, exceeding the requirements of existing legislation, including the Act, and any regulations that may be introduced now and in the coming years.

1.5 Principles of Universal Design

The concept of universal design is closely related to barrier-free design, and can significantly contribute to enhancing accessibility by ensuring the multi-faceted needs of each community member are considered throughout the planning process. Universal design focuses on designing and arranging the environment so it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability [Centre for Excellence in Universal Design. National Disability Authority, 2020]. It emphasizes creating spaces, products, and services that are safe, easy to access and beneficial to everyone.

The Seven Principles of Universal Design were developed in 1997 by a working group of architects, product designers, engineers and environmental design researchers under the leadership of Ronald Mace of North Carolina State University.

The Seven Principles of Universal Design

1.6 How the Development Process in the City of Richmond Works, and How Principles to Incorporate Enhanced Accessibility in Buildings and Open Spaces Can be Integrated into the Development Process

The City collaborates with the public, the development community, various key partners in the non-profit sector, and other involved groups to create high quality, accessible buildings and open spaces that advance accessibility beyond BC Building Code requirements.

To facilitate this process, it is important for applicants proposing projects to ensure their proposals align with the principles of enhanced accessibility and universal design. The following overview offers insight into the development process and should be considered prior to submitting an application:

- Review City and Provincial guidelines and requirements for accessibility for new City-owned projects and renovations.
- Review of the typical approvals process, including preliminary project discussions with City staff.
    - City Approvals
        - Modified Development Permit Process for City-Owned Buildings
            - A development application for the project, comprised of design drawings that incorporate City and Provincial requirements for Accessibility, as well as expectations for enhanced accessibility including the Guidelines, and any other related guidelines or regulations.
        - Building Permit
            - City approval that allows construction to begin, comprised of working drawings and specifications that demonstrate compliance with the Building Code and Development Permit requirements.
        - Occupancy Permit
            - City final approval of the constructed facility, indicating that it is ready for use.

The City of Richmond wants to enhance the accessibility of its City-owned buildings for the public and City staff and officials.

2.0 A Glossary of Definitions Pertaining to Accessibility in Buildings and Public Spaces

Access Aisle
A pedestrian space that provides satisfactory clearances between specific elements, such as parked cars or desks or seating, and which provides navigation clearance.

Accessibility
A design standard that allows for all persons including those with disabilities to approach, enter, pass to and from, and make use of an area and its facilities independently. Refers to offering everyone the same opportunity to fully and equally participate in the environment.

Accessible Route
A continuous and clear path of travel that is unobstructed by vertical or over-hanging elements, as well as any encroaching or protruding horizontal elements. Interior accessible routes may include hallways, ramps, or specific floor areas such as clear spaces at doors or furnishings or fixtures. Exterior access routes may include sidewalks and crossings, curb cuts and ramps, parking access aisles and building exits and entrances.

Active Transportation Routes
Refers to routes that support active modes of transportation such as walking, rolling or cycling. Providing for barrier-free design typically enhances the functionality of Active Transportation Routes, as well as enhancing their accessibility for people with disabilities or those using mobility devices such as walkers, wheelchairs and scooters, and people using certified guide dogs.

Active Transportation Routes.

Adaptable Buildings and Public Spaces
Refers to anticipating future needs, or changing aspects of existing buildings and public spaces to make them more functionally useful to people with all types of disability. For example, bathrooms can be constructed with backing in the wall, to enable the addition of grab bars in the future and enhance accessibility in the years to come.

Aging in Place
The ability to live safely at home or in the community for as long as possible. This often depends on the adaptability and accessibility of the living space to ensure individuals have access to health and social supports and services.
[Thinking about aging in place. Government of Canada, 2016]

Area of Refuge [Area of Rescue Assistance]
A designated space or floor area with direct access to a building exit, where individuals who cannot use stairs can wait in relative safety until assisted or instructed to evacuate the building. An area of rescue assistance can also be located at an exterior location, where individuals can wait for help to arrive.

Assistive Listening Device
A device that provides wireless sound transmission to improve sound reception for persons with hearing loss and those using hearing aids and cochlear implants.

At-Risk Populations
Individuals or households with income or health vulnerabilities, and typically whose shelter needs are a concern. This can include people living with disabilities.

Automatic Door / Power-Assisted Door
A door equipped with power-operation and controls that open and close the door without manually touching the door. These doors can be swing or automatic sliding door type. Switches for such doors typically are push plates to enable accessibility, and may also include photoelectrical devices, or floor mat actuators.

Barrier
Anything that hinders the full and equal participation in society by a person with a disability. Barriers can be caused by environments, assumptions, practices, policies, communication methods or technologies, and affected by intersecting forms of discrimination. The six main types of barriers include: physical, attitudinal, sensory, systemic, information and communication, and technological barriers.

Barrier-Free Design
A design philosophy that looks to eliminate barriers impeding accessibility in the built environment. Primarily concerned with avoiding curbs, steps or changes in grade that restrict or limit movement, approach to or use of spaces by people with disabilities. Barrier-free design benefits everyone since obstacles in the environment, like tripping hazards, are avoided or eliminated.

BC Building Code
The legislation that governs the design and construction of new buildings, additions to buildings, alterations to existing buildings, and the occupancy of any building. The BC Building Code sets out the minimum requirements for accommodating accessibility in buildings.

Cane Detectable
The condition of an object being within the detection range of a user's white cane as it sweeps or taps; providing information to someone who is blind, deafblind, or has low vision.

Circulation Path
Refers to a way of passage for pedestrians, including walkways, hallways, courtyards, stairways and stair landings. Accessible circulation paths must meet minimum regulatory standards in order to comply with building code requirements.

Barrier-free design incorporates a clear accessible path with cane detectability and high colour contrast.

Clear Space
The minimum unobstructed floor area or ground space required to accommodate a single stationary wheelchair, power wheelchair, scooter, or other mobility device, including the user of the device.

Closed-Circuit Telephone [Enterphone]
Refers to a house or courtesy phone, or a telephone to gain entrance to a building. An appropriate mounting height is installed for the telephone to provide for accessibility.

Colour Contrast and Conspicuity
Refers to using high-contrast colours between building elements, such as stair nosings or signage, to promote legibility for persons who have low vision. Research shows that elements are more conspicuous when there is a colour contrast of at least 70%, with light-coloured characters on a dark background providing the best readability. An example of this is using white text on a dark blue background.

Complete Community
A neighbourhood where individuals and households of all income strata, and levels of ability, can be housed with the appropriate design and community supports in order to meet their daily living needs.

Crime Prevention through Environmental Design (CPTED)
An approach to building and urban design which can foster feelings of security for residents and users. CPTED principles should also endeavor to accommodate principles of enhanced accessibility.

Disability
When the features of a person's body and/or mind meet a barrier created by the design of the society in which they live, preventing their full and equal participation. Individual features can be permanent, temporary or episodic; visible or invisible; range in severity; and include physical, sensory, mental health-related, developmental, cognitive and/or have multiple features.

Egress, Means of
A continuous and unobstructed exit path of travel, in a vertical or horizontal travel direction, or a combination thereof, that provides the ability to safely leave a building. On upper floors of a building, an accessible means of egress implies that exiting is accommodated without the use of stairs, elevators or escalators. In such cases, areas of rescue assistance, such as areas of refuge or protected lobbies, provide a safe refuge until help arrives. It is also advisable to include an area of refuge outside of the building on the ground level, where people with disabilities can gather to wait for help to arrive.

Enhanced Accessibility
A barrier-free design philosophy that seeks to go beyond the requirements of the Building Code for accessibility, to foster independence and mobility for all citizens regardless of their ability.

Entrance
An access point into a building or part of the public realm. The accessibility and spatial requirements of entrances are many, and include an approach walkway, any vertical climb or descent to the entry, the entrance element itself, whether a vestibule is provided at the entry or gate, and what the nature of the entry hardware is at the door or gate. Well-designed entrances are key for enhanced accessibility.

Floor Area Ratio (FAR) or Floor Space Ratio (FSR)
A calculation where the total floor area of a building or development is divided by the area of the site. Since providing enhanced accessibility is often about providing more space in a building that can often encroach into the maximum FAR or FSR permitted, a municipality may provide floor space exclusions so that enhancing the accessibility of a developing building does not have negative economic consequences.

Guard
A protective barrier or safety railing used to prevent falling off of a raised platform or floor, or at the open sides of stairs, landings, or raised walkways. The barrier or railing may or may not have openings on it.

Handrail
A building element that provides support for pedestrians, primarily at steps, ramps and stairways, and also at hallways or horizontal passageways such as corridors. Handrails should be designed for ease of gripping, and provide sufficient clearances to walls or adjacent surfaces.

Mixed-Use Development
A building or development that blends two or more uses, including retail, office, institutional and residential uses. Mixed-use developments are more urban in character and should incorporate barrier-free design elements throughout to foster the establishment of complete and accessible communities.

Mixed Use Development.

Multi-Use Pathway
Off-street pathways that are physically separated from motor vehicle traffic and can be used by any non-motorized user, also known as shared-use pathways. This may include people walking, rolling, cycling, skateboarding, kick scootering, in-line skating, and using other active modes. Care should be taken to design the multi-use path in order to avoid conflicts between pedestrians and those who use mobility devices, and ensure a continuous and unobstructed pathway design without curbs or steps.

Operable Portion of Piece of Equipment
The part of a piece of equipment that is used to activate, de-activate or adjust how the equipment performs. These include door handles, push buttons, water fountains, washroom fixtures and accessories, and mail and coin slots, among other elements.

Ramp, including Ramp Slope and Cross Slope
A walking surface where the slope is greater than 1:20 [5%]. The preferred running slope of a ramp is between 1:20 (5%) and 1:15 (6.7%) and no greater than 1:12 (8.33%). Appropriate landings should be provided in compliance with code requirements.

Cross slopes at ramps should be minimized to allow for surface drainage [maximum 6mm (1/4”) in one foot], while not compromising the safety of the ramp. Handrails and guards are required by code to accommodate safe use of ramps. Regulations for curb cuts or lay-downs to the street level at exterior sidewalks differ from those for ramps. The dual wheelchair curb cut design is a preferred best practice for crosswalks at intersections, where the centreline of the curb cut ramp lines up with the centreline of the crosswalk. This also includes ramps at the end of pedestrian access aisles for van accessible parking and as defined in City of Richmond Zoning Bylaw 8500 Section 7 Parking and Loading.

Resilient Cities and Neighbourhoods
An urban planning strategy that encourages new development to be built for the long term, with an emphasis on a high level of energy utilization, and a reduction in the need to replace buildings systems or components. Elements that provide accessibility in buildings should be designed with the same level of resilience in mind.

Service Entrance
Typically, a non-public entrance, provided for the delivery of goods and services. As such entrances often also provide entry for staff, principles of accessibility should also be considered.

Accessibility should be considered for all drop-off and service entrances.

Signage
Providing for general information or wayfinding in buildings and in the public realm, signage should provide for a wide range of effectiveness in communication, and include an appropriate combination of words, icons, braille, and tactile features.

Speaking Port
A piece of security equipment that provides for effective two-way communication. Often amplification of voice levels is required to deliver effective communication at speaking ports.

Sustainability
Meeting present needs without compromising the ability of future generations to meet their needs. Sustainability is made up of economic, cultural, social, and environmental components. Providing for accessibility and barrier-free design enhances the social sustainability of urban places for the long term.

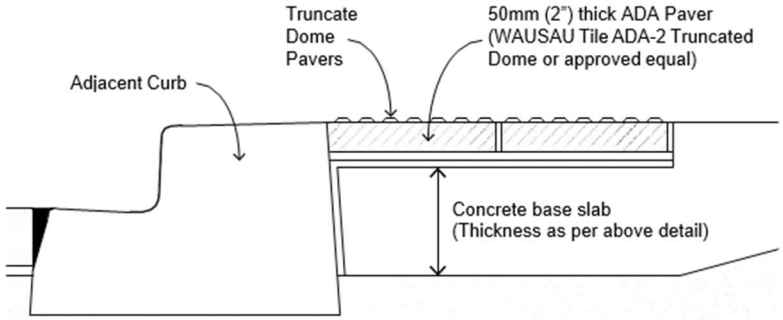
Tactile Walking Surface Indicators [TWSI]
A standardized surface, detectable underfoot or by a white cane, to assist people who are blind or have low vision by alerting them or guiding them. There are two types of TWSIs: Tactile Attention Indicator—comprised of high colour-contrasted, truncated domes that signal a need for caution at a change in elevation, a vehicular route, train tracks or other potential hazard—and Tactile Direction Indicator—which uses flat-topped, high colour-contrasted, elongated bars to facilitate wayfinding in open areas.

Technically Not Feasible [Building Renovations and Alterations]
When an existing building is being altered, at times a building upgrade cannot be carried out because of structural or building services considerations. In some instances, building upgrades that promote use of the building by people with disabilities should be implemented, even though they do not provide complete compliance with minimum code requirements for new construction, and are “technically not feasible”.

An example of such a condition would be the installation of a wheelchair lift in a building that cannot accommodate installation of a code-compliant elevator.
[Note: an inadequate budget is not a reason to relax full code compliance].

Transit-Oriented Development [TOD]
An urban planning strategy that looks at encouraging pedestrian-oriented developments by clustering higher density urban developments around public transit infrastructure such as rapid transit stations. Transit-oriented developments should incorporate accessibility considerations and barrier-free design.

Truncated Domes
Small domes with flattened tops that are inset into paving as tactile warnings at hazardous places such as transit platforms or at stair and ramp landings. (see Figure below).



Typical Detail for Truncated Paver Installation. See- Pavers and Tactile Warning Strips Drawing Number: R-18-SD, City of Richmond Engineering Department Supplementary Specifications and Detail Drawings.

Universal Design
The design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability. Universal design is linked to enhanced accessibility and barrier-free design, as well as the concept of visitability.

Visitability
A strategy to change home construction practices, so that all new housing incorporates features that improve access and functional comfort for people with disabilities, both in their own homes and in other dwelling units that they may visit.

Wayfinding
Refers to the systems that guide people through the city, helping individuals find their way and connecting them to their surroundings – for example through signage, digital tools, surface textures, colours, illumination, acoustics, visual landmarks and other architectural features. It is especially important to consider integrating wayfinding elements such as signage that includes words, icons, braille and tactile features consistently throughout public buildings.

A sense of place to enhance wayfinding can be created through effective use of colour.

3.0 Understanding Accessibility Requirements

3.1 Meeting Community Needs

Accessibility requirements as set out in the 2018 BC Building Code, tend to be conservative, and typically assume that people with disabilities, including those using wheelchairs, are relatively physically strong individuals whose needs are being met.

Such an approach tends to overlook the many individuals who are not as strong or mobile, or who use a larger mobility device like a power wheelchair or scooter.

The Guidelines strive to be more inclusive than the approach set out by code compliance alone and try to reflect spatial requirements and design improvements that serve a wider range of user abilities with the goal of enhancing accessibility in Richmond.

3.2 Preferred Dimensions to Enhance Accessibility

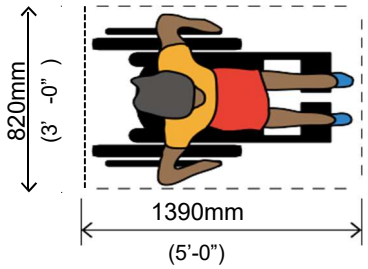
3.2.1 Wheelchairs - Clear Space

The preferred clear space for a wheelchair to make a 360-degree turn is 2100 mm [7'-0"]. The preferred clear floor or ground space to accommodate a stationary wheelchair is 820 mm [3'-0"] wide x 1390 mm [5'-0"] long.

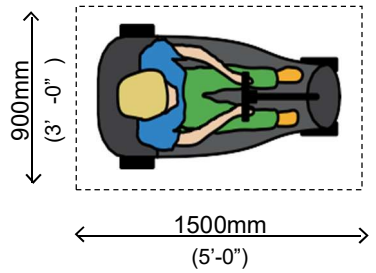
This clear space may be part of the knee or toe space required under all objects, such as counters or sinks. It is important to provide clear accessible space along at least one side of a wheelchair. If possible, additional space beyond the preferred clear floor or ground space should also be considered to support individuals using wheelchairs who may also carry shopping bags and/or have an attendant, family member or friend push their wheelchair or walk alongside them. Reclining wheelchairs will require significantly more clear space.

Wheelchair 180-degree turning space is accommodated in a corridor at least 1100 mm [3'-8"] wide, with a T-shaped contiguous corridor at least 900 mm [3'-0"] deep. However, note that it is preferred that public corridors that are meant to be accessible should be 1800 mm [6'-0"] wide, and at minimum 1500 mm [5'-0"] wide.

Clear space allowances to enhance wheelchair manoeuvring also accommodates space requirements for parents with strollers and people using walkers.



Clear space for Wheelchair.



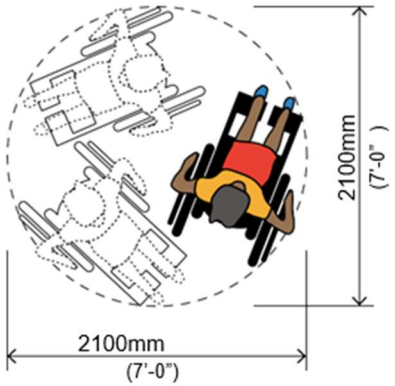
Clear space for Scooter or Power Wheelchair.

Understanding the spatial requirements for people who use mobility devices leads to the creation of more responsive design solutions.

3.2.2 Wheelchairs - Reach Requirements

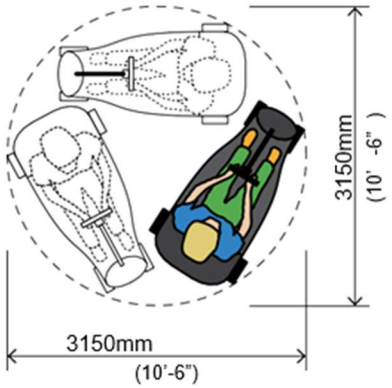
If the available wheelchair clear space allows a parallel approach to an object, the unobstructed side reach should be no less than 230 mm [9”] above the finished floor and no higher than 1400 mm [4’-7”]. All switches or other wall-mounted devices should be mounted between 400 mm [2’-10”] minimum to 1200 mm [4’-0”] maximum above the floor.

Wheelchair reach limits for overhead obstructions and at desks and counters, are summarized in the accompanying diagrams.



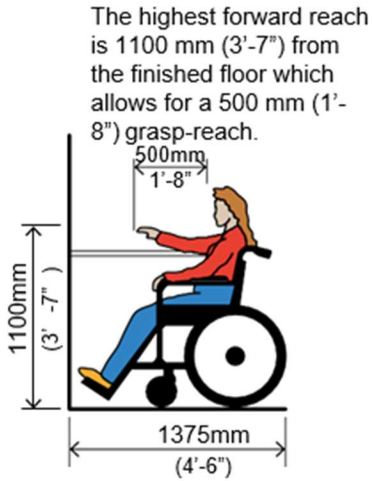
Wheelchair 360°

Turning Space (acceptable except where larger space is specified i.e. Individual Washroom).

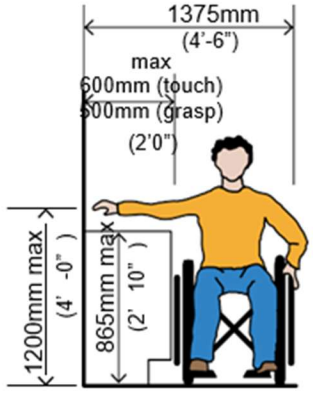


Scooter 360°

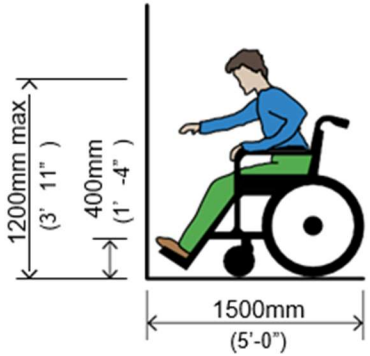
Turning Space (Preferred).



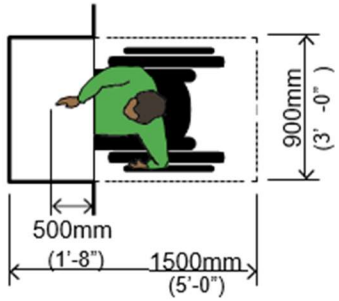
Forward Reach over an Obstruction.



Wheelchair Reach allowance over an Obstruction.



Wheelchair Forward Reach Allowances.



Forward Reach over an Obstruction.

3.2.3 Requirements for Power Wheelchair and Scooter Manoeuvring

- Stationary clear space for both a power wheelchair or a scooter is 900 mm [’3’-0”]wide x 1500 mm [5’-0”] long.
- A power wheelchair requires a clear space of 2250 mm x 2250 mm [7’5” x 7’5”]to make a 360-degree turn.
- For a scooter to make a 360-degree turn a clear space of 3150 mm x 3150 mm [10’-6” x 10’-6”] is required.

3.2.4 Requirements for Persons Accompanied by Certified Guide or Service Dogs or Using a White Cane

A minimum width of 1200 mm [4'-0"] is required for the clear width of a path of travel. For protruding objects on walls, or obstructions on the ground plane, it is important that the clear width of travel path not be decreased. Also note that the white cane detectable range is between 900 mm [3'-0"] and 1600 mm [5'-3"] forward.

If objects project more than 100 mm [4"] into the path of travel, the object should be mounted no higher than 685 mm from the ground [26.9"].

When there is a drop-off at the side of the path of travel, a minimum 100 mm [4"] high curb should be installed to provide cane detectability. Where the drop off is greater than 255 mm [10"], a guard should be installed above the edge protection.
Overhead clearance of 2440 mm [8'-0"] should be provided for all overhanging obstacles that encroach on the clear path of travel.

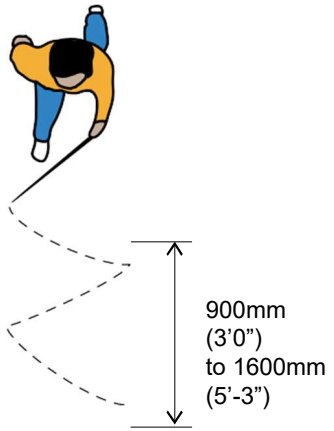
3.2.5 Acoustic Considerations for those who are Deaf or Hard of Hearing

During the design and development of buildings, there are opportunities to create more supportive acoustic environments that improve communication and wayfinding by people with disabilities. The transmission of sound in different areas of a building can be used as cues for orientation, supporting users' navigation within a space. Additionally, appropriate systems to mechanically amplify sound can be installed, to assist with information comprehension in various interior spaces.

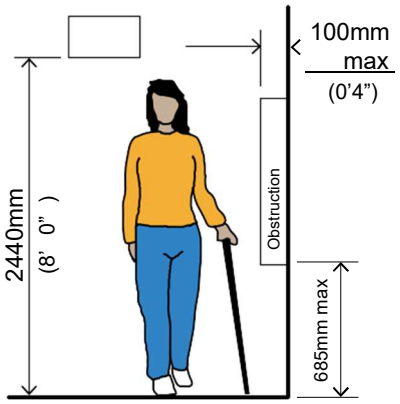
Design opportunities include:

- Control of sound reflection and sound transmission effects through the choice of sound-reflective or sound absorptive finish materials. Generally, designers should consider how ambient sound can be used to allow people to orient themselves in public lobbies and corridors in buildings, and how disruptive echoing might be dampened in assembly areas and between rooms.
- Avoid creation of unnecessary background noise. Mechanical equipment such as fans and air diffusers should typically be dampened, and ambient effects such as people's voices or exterior traffic noise should be curtailed as much as possible, especially at locations where information is shared.
- For public address systems, best results occur when the system is zoned to key areas of a building, rather than being a general address system throughout the building. General comprehension is increased when background noise is minimized.
- For users who are hard of hearing, public address systems should be tied into a visual alert system. A reader board is recommended for better comprehension, so the public address message is graphically broadcast the same way it is announced.

Clear Width for Persons with Service Dog.



Cane Detectable Range



Limits of Protruding Objects

4.0 General Design Considerations to Enhance Accessibility

4.1 Corridors and Paths of Travel

Routes through buildings and open spaces should accommodate a wide range of individuals. The following design principles are to be considered:

- Provide the necessary clear width for paths of travel.
- Allow for corridor spaces that permit people using wheelchairs or scooters to make 180-degree turns.
- Avoid long minimum-width corridors.
- Gradual sloped walkways are preferred to ramps or wheelchair lifts in exterior locations.
- Avoid changes in flooring or pavement type along a path of travel. Use changes of flooring or ground plane material as delineators of the path of travel, or to signify the presence of an obstruction. High colour contrast between path surfaces and delineator surfaces is preferred.
- Provide edge protection at changes in level.
- A person using a mobility device such as wheelchair should not have to exit the building to gain access to another floor.
- It is not appropriate to have only some areas accessible in a building. An accessible route should be provided to link all occupiable building spaces and to allow facility staff with disabilities the same access in buildings as the public.
- It is preferred that the width of corridor be 1800 mm [6'-0"] wide, to allow for two wheelchairs users to easily pass each other. At minimum, an accessible corridor should be 1525 mm [5'-0"] wide.
- Where the longitudinal grade of an accessible path is greater than 1:20 [5%], it should be designed as a code-compliant ramp, with level landings spaced as required for longer ramps and changes in grade.
- Wall surfaces in corridors should be non-abrasive.
- Where the edges of an accessible route are located beside a vehicular street, or where there is a change of elevation greater than 75 mm [3"] between the path and adjacent grade, the edge of the accessible path should be separated with a truncated dome surface, or a 100 mm [4"] high curb with colour contrast. Handrails and guards should also be considered, and installed as required by code.
- Install wayfinding signage with words, icons, braille and tactile features where appropriate in public buildings and open spaces, to promote more universal independence of movement.

Straight Run for Wheelchair Ramp is preferred to a ramp that switches back 180 degrees.

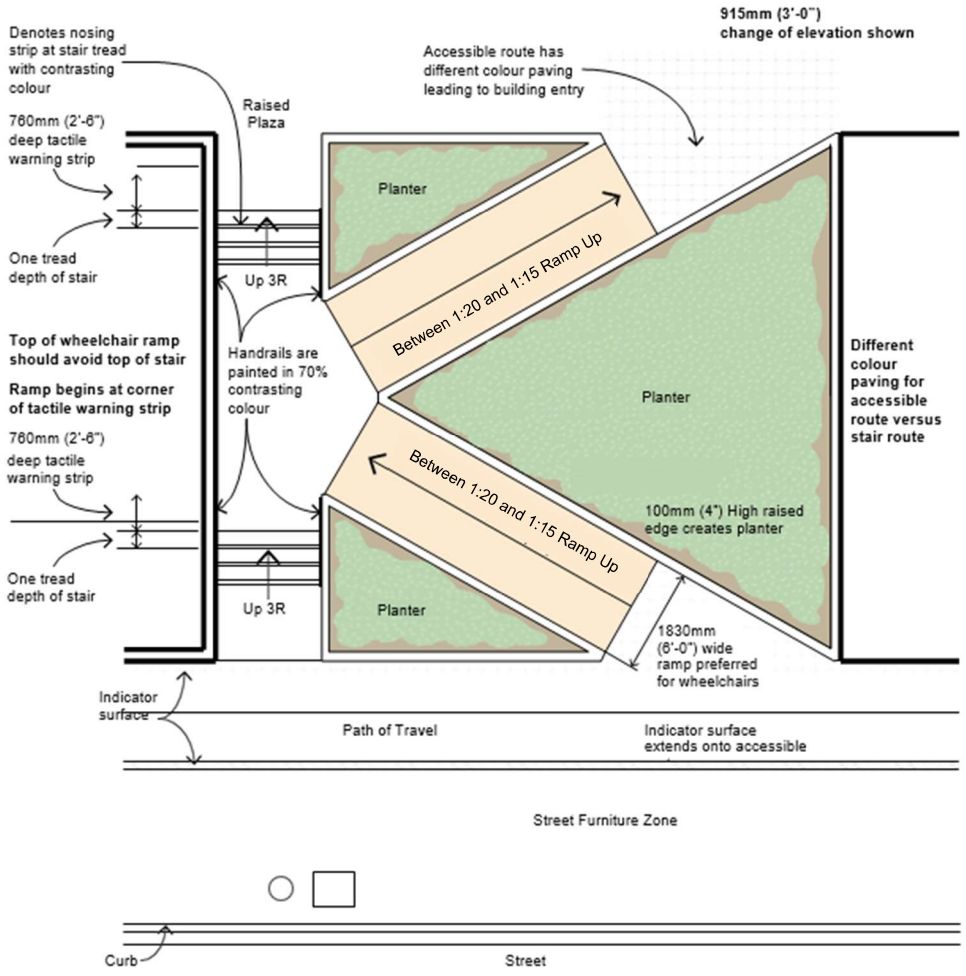
4.2 Gates and Turnstiles

It is important to accommodate users who have difficulty with negotiating gates, turnstiles or revolving doors. Gates that open via sensor/motion are preferred. Typically, a separate means of passage is required that is a minimum of 950 mm [3'-1 1/2"] wide, and has hardware that is suitable for independent use. Install colour contrasted posts at the sides of gates to highlight the accessible path oftravel.

4.3 Ramps

While the code requirements for ramps are the minimum standard, the following design installations also need to be considered:

- Have a slip-resistant surface, free-draining surface where precipitation does not accumulate.
- Demarcate the leading edges of landings at ramps with a colour contrasted tactile warning strip, as well as at the beginning and end of the ramp.
- The preferred running slope of a ramp is between 1:20 (5%) and 1:15 (6.7%) and no greater than 1:12 (8.33%).
- Landing slopes should not exceed a 2% [1:50] slope in any direction.
- Provide curb edge protection at ramps that is a minimum 100 mm [4"] high or provide barrier edge protection with opening that is a maximum 100mm [4"] high.
- A ramp landing should not terminate adjacent to a stair landing.
- Avoided curved ramps.
- Avoid excessively long ramp installations, even with multiple landings that are code compliant.
- Provide a second handrail on ramps, typically located at 685 mm [2'-3"] above the floor and 230 mm [9"] below the second handrail. [Do not compromise code climbability concerns where guards are installed].
- Handrails should always return to a supporting post or a wall, to avoid being a pedestrian hazard.
- Many people find using steps easier and safer than using a ramp. Hence it is preferable that both steps and ramps be installed in close proximity to each other at required locations.
- Installing handrails on each side of a ramp allows someone to manoeuvre using their stronger side or both arms.



Stair and ramp design at change of level from sidewalk to raised building entry.

4.4 Stairs

Similar to ramps, the Building Code defines minimum requirements for stairs, but the following should also be considered:

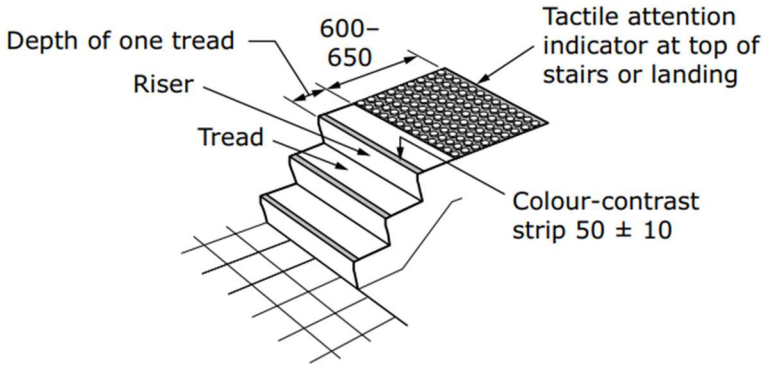
- Provide high colour contrast tactile attention indicators to demarcate landings and the top of a flight of stairs. Stair nosings and thread edges should also feature high colour contrast.
- Avoid materials such as rubber or safety tape on stair nosings that can lift and become safety hazards.
- Avoid highly patterned textures on stair treads or open risers.
- Ensure stairs and landings have a non-slip surface at top landings or where people may enter the stairwell from another pathway.
- Stairs should be illuminated to at least a level of 100 lux [9.2 ft.-candles].
- Handrails should be circular or ovoid in shape for graspability.
- Ensure handrails have colour contrast compared to the adjacent surface.
- Add a second lower handrail located 685 mm [2'-3"] to the top of the handrail above the line of the nosings.
  [Note: check that climbability issues are not created for guards on stairs].
- Handrails should be continuous on the inside face of the stair between floors, to ensure continuous ability to handhold.
  [Note: avoid newel posts or any obstructions that can break a handhold].
- Consider installing handrails on both sides of a staircase to allow someone to manoeuvre using their stronger side. A handrail installed in the centre of the stairs is also advisable if the stairs are significantly wider.

4.5 Colour and Texture

Texture and colour systems should be selected to enhance accessibility:

- Avoid heavy, overly distinct patterns, or reflective materials on walking paths, floors, walls and ceilings as these can be disorienting.
- With the exception of demarcation strips, a general material palate should have simple, repetitive, non-directional patterns and low colour contrast.
- A high contrast colour for baseboards is recommended, to visually emphasize where the floor meets the wall.
- Colour should be used consistently, to distinguish important wayfinding elements, such as exit doors, or end walls at the end of corridors (to note a change of direction).
- All textured surfaces that are used as demarcation strips should be cane detectable.
- On exterior pathways, select a material for the path of travel that is non-slip and that contrasts with adjacent surfaces.
- For signs, a glare-free, 70% colour contrast is required to promote visibility. A white/ buff or yellow on a black or dark blue background is optimal.

Tactile Attention Indicator (Source: CSA/ASC B651:23)



4.6 Signage

Generally, signage in buildings should provide essential information to users of buildings and public spaces. Consistently organized and displayed signage enhances usability in buildings for everyone, such as blade signage down long hallways and directional signage at decision points. Signage should be well-lit and provided at an accessible height that is visible to all users, including children, people of shorter stature and people using mobility devices. The use of universally recognized symbols promotes improved understanding and wayfinding, and is helpful for children, those with developmental and cognitive disabilities, and those whose first language is not English.

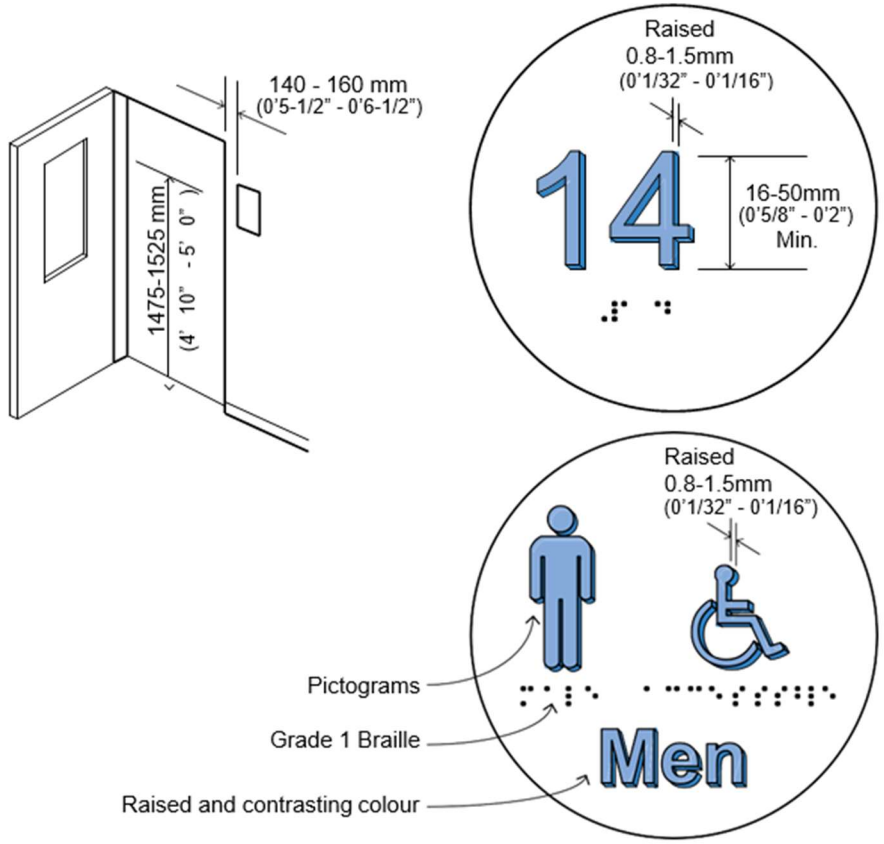
Universal Symbol of Accessibility

- Should be used at all locations with facilities for individuals with disabilities, such as designated parking stalls, accessible entrances and loading zones, accessible and universal washrooms, elevators, and areas of rescue assistance (areas of refuge).

Design Requirements for Signage

- For lettering, avoid stylized, italicized, or fonts with serifs. Sans serif fonts are preferred such as Arial, Calibri, and Verdana.
- For text orientation, avoid using vertical text and text rotated up or down by 90°, as these orientations are often harder to read. Horizontal text is preferred.
- Use Arabic numbers and avoid Roman numerals. Ensure widths and heights of letters and numbers are sufficient to enhance readability. Avoid the use of capital letters alone, as lower-case letters are typically easier to read.
- Backgrounds of signs to be glare-free (eggshell finish preferred).
- Colour contrast to be a minimum of 70% between sign characters and background. [Refer to CNIB Clear Print Accessibility Guidelines].
- Signs, such as room identification signs, should include tactile information including letters, numbers and icons raised to 0.8 mm [0’1/32”] minimum, and not be sharply edged, and be between 16 mm [0’5/8”] and 50mm [0’-2”] high.
- Room identification signs should also include braille.
- Icons or symbols for key facilities (washrooms, elevators, changerooms etc.) should be included

The Canadian National Institute for the Blind [CNIB] publishes “Clear Print Accessibility Guidelines” that are a useful resource for signage colour and design.



Tactile lettering is the preferred means of signage to enhance accessibility for door or interpretive signage.

Information Systems and Panels, Display Kiosks, and Video Display Terminals

- Information panels should be inclined and allow for knee space underneath for ease of reading.
- Provide an alternative format when video display terminals are used, such as audio, braille, tactile and large-text print.
- Ensure push buttons or other controls are mounted at an accessible height.
- Avoid vertical wording or electronic scrolling signage. Where scrolling signage must be used, a slower scrolling speed should be used.
- Consider incorporating digital and communication technologies that aid wayfinding for persons with disabilities.

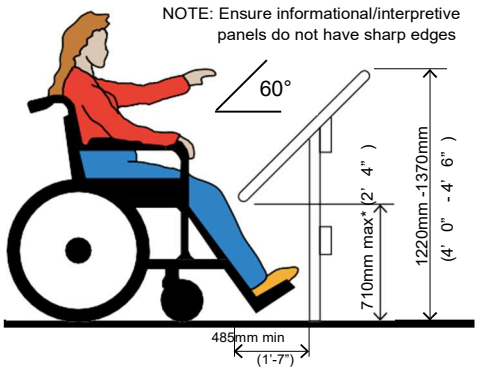
4.7 Spatial Requirements at Drinking Fountains and Bottle Fillers.

Generally, it is preferred that two types of fountains be installed:

- A higher one for use by individuals that have difficulty bending.
- A lower one that is more suitable for use by children, people of shorter stature or those using mobility devices.

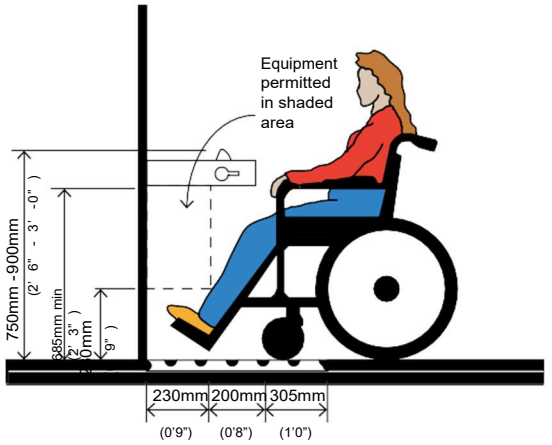
Fountains and bottle fillers should:

- Be located in an alcove, out of the path of travel, especially if they are wall-mounted above the height of cane detection.
- Have an operating system that accommodates limited hand strength or dexterity. Controls should be on the front of the unit or on both side and front.
- Have spouts that are at the front of the fountain, and with a water trajectory parallel to the front of the fountain.



* If sign is legible from 760 mm (2'-6") or further, clearance can be lower with a minimum toe kick clearance of 230 mm (0'-9")

Information Systems and Panels, Display Kiosks and Video Display Terminals should be designed to accommodate accessibility for people with disabilities.



At least one Drinking Fountains and Bottle Filler should be provided, along with one regular height fountain, that allows for access for children, people of shorter stature and for those using mobility devices.

4.8 Clearances at Mailboxes and Vending Machines

Generally, provide for space at these elements that allows for manoeuvrability of wheelchairs and other mobility devices:

- Locate these adjacent to a path of travel, and not encroaching into the accessible travel route.
- The highest operable part of the subject element should not be located more than 1050 mm [3'-5"] above the finish floor or ground surface, and not below 460 mm [1'-6"]

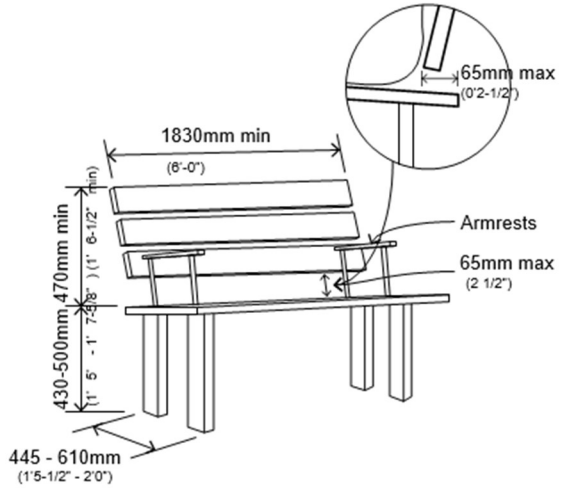
4.9 Waiting, Queuing and Seating Areas

Waiting and queuing areas should provide enough space for mobility devices, such as strollers, walkers, wheelchairs, power wheelchairs and scooters, especially at corners or where queues double back on themselves. Seating areas should provide a variety of seating options, including seating with armrests and backrests as it assists with sitting and rising.

Additionally:

- Provide rigidly-mounted handrails to provide support for waiting persons.
- Avoid rope-queuing systems, as these are a hazard to persons who are blind or have low vision.
- Seating should be easily recognized as seating to people with cognitive disabilities, including those living with dementia. An example of this is providing a traditional "bench" shape (pictured right), which can be readily identified as a place to rest.
- Provide intermittent seating opportunities for people in waiting areas, or along long routes preferably every 100m minimum in public spaces.
- Seating should be located outside the path of accessible travel.
- Seating should be at a height that facilitates sitting and rising, and be made of a material that provides stability when rising (e.g. firmer seat cushions).
- Seats with backs are preferred to ledge seating, but where ledge seating is provided, such as on top of planters, the ledge should have a pitched surface for drainage, and a heel space to promote ease of getting up. An adjacent, landing pad of 850 mm wide by 1390 mm deep should be provided to accommodate a mobility device or stroller.
- When selecting furniture, avoid slippery materials as it can be harder when rising for people who may not have core strength.
- Consider adding an adjacent level area to a bench of 850 mm [2'-9"] wide by 1390 mm [4'-6"] deep to accommodate a mobility device or stroller.
- Where picnic tables are provided, it is preferred that all tables have an extension of the table surface to provide knee space for people using wheelchairs.
- Universally designed picnic tables should have a concrete pad connected to a primary path of travel.

Public Seating is Set Back from the Accessible Path.



Preferred Bench Dimensions for Enhanced Accessibility

4.10 Interior Finishing

4.10.1 Flooring

The selection of an appropriate flooring material allows for the safe and easy movement of people using mobility devices, as well as people who are blind or have low vision.

- Floor finishes should be stable, firm, non-slip and glare-free.
- Carpet or carpet tile should be low profile, directly glued to the subfloor. Avoid separate underlay, and do not use carpet on ramps.
- If possible, specify carpet that has been off-gassed prior to installation as off-gassing from new carpeting can adversely affect people with environmental sensitivities.
- Avoid strong, contrasting patterns when selecting flooring. These can lead to confusion and difficulties with depth perception (e.g. perceived as a hole in the ground) for people with sensory and cognitive disabilities, including those who have low vision and individuals living with dementia. Plain colours are preferred.
- If tile or stone is used, the product should be large in size to minimize joint grout lines, and the finish should not be slippery, uneven or rough, or produce glare or reflections. Non-slip, low luster or matte finishes are preferred.
- Keep joints in flooring narrow, 6 mm [0’1⁄4”] maximum. Flooring should be flush on either side of the joint.
- While it is preferable to pick up any variations in finish floor elevations at the subfloor level in order to get flush transitions from one flooring material to another, the use of transition strips is sometimes unavoidable. Such strips should be wider and more gradual, and rated for wheelchair accessibility.

Accessibility is enhanced at elevators by providing a contrasting floor colour to delineate the accessible path. Similar flooring contrasts should be considered to delineate the path to entrances, or other strategically important pathways.

4.10.2 Walls

Interior wall finishes should typically be smooth and have matte or satin finishes to reduce glare:

- More neutral colour palettes are recommended. Avoid patterned finishes.
- Avoid any rough surfaces, especially with the use of specialty finishes like wood, stone or feature wall tiles.
- In high traffic areas, some types of impact resistant wainscoting is recommended, again with a smooth finish.
- Where keyed access hatches are required to access all in-wall service shut-offs or valves, or similar service items, paint these out as per the colour of the wall.
- Handrails along the length of public corridors is recommended.
- For people who have low vision, a high colour contrasted baseboard or vinyl cove base is preferred.
- Do not obstruct the path of travel with projecting obstacles. Amenities like water fountains should be recessed in an alcove rather than projecting into a corridor.

Generally speaking, neutrally coloured resilient flooring, without excessive patterning, is preferred for flooring in public areas. Select furniture to provide a variety of seating options.
Minoru Seniors Centre, Richmond

4.10.3 Ceilings

- Provide a floor-to-ceiling dimension that is appropriate for the space involved. Larger floor areas should have higher floor-to-ceiling dimensions.Allow for floor-to-floor dimensions that permit a ceiling service space of at least 610 mm [2'-0"], or more if service requirements in the ceiling space are considerable. Do not design floor-to-ceiling dimensions such that the finish space feels compressed.
- Ceilings with exposed services can work if it is appropriate for the subject interior space location. Exposed services and ducts should be thoroughly painted out the same as the exposed structure, to lessen visual clutter in the ceiling space.
- More neutral colour palettes are recommended for finished ceilings. Avoid patterned finishes. Refer to City of Richmond Standard Paint Colour palettes.
- If ceiling drywall is used, it should be limited in the area, with access hatches provided at all required service locations.
- Acoustic T-bar ceilings are preferred, with a tile that is simple in texture and pattern. Select T-bar lighting systems that provide an even distribution of lighting and do not project any glare.

4.10.4 Material Selection

- Ensure doors are marked to avoid confusion.
- Ceilings, walls and floor materials should be designed and specified to provide the right amount of absorptive materials for everyone to orientate, focus and dwell within a space without discomfort and to aid communication for both speaking and listening.
- Materials used for doors, ceilings, walls, floors, and furniture should also be scent-free or have low odour/emissions.
- Surface finishes should minimize glare, enhance visual contrast and provide differentiation between spaces.
- Floor finishes that offer some contrast and intentionally use textures can support wayfinding and help indicate changes between areas within a space.

The disorienting effects of glare in public lobbies and hallways, can be reduced by using appropriate interior finish materials, and limiting adjacent large areas of glazing to north-facing exterior walls, as shown in this photo.

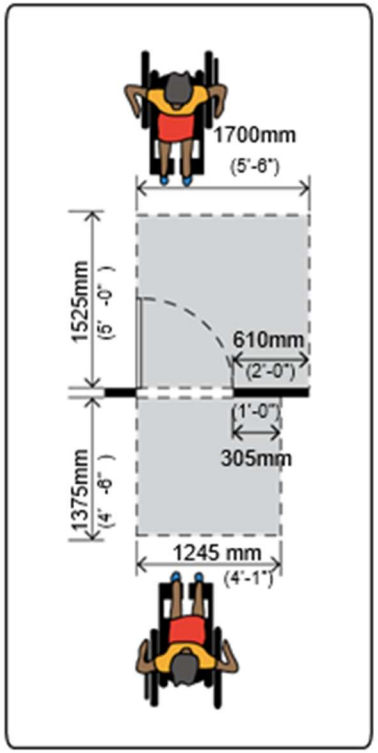
4.10.5 Doors, Doors with Power Operators and Entrances

Doors

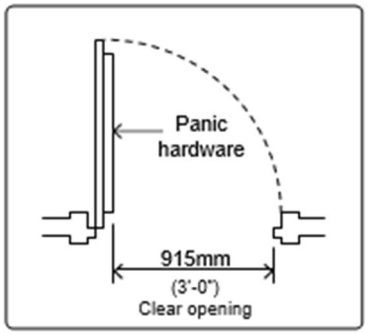
Doors should function in order to maximize independence of use. Reliance on assistance from others in order to negotiate doorways is not an appropriate design strategy:

- Ensure doorways are sufficiently wide and high. A 915 mm [3'-0"] wide x 2135 mm [7'-0"] high doorway is preferred.
- Consider the use of 1000 mm [3'-3"] doors, in order to have a finished door width of 915 mm [3'-0"].
- If double doors are used, avoid the use of a centre post.
- Avoid any raised thresholds over 6 mm [1/4"] in height.
- Door mats should be fully recessed, flush with the finish floor level, and firmly affixed to the subfloor. (Occasional door mats for use in bad weather should have gently beveled edges).
- If glazed doors are provided, install colour contrast strips across the glazing at two levels; one between 1350 and 1500 mm [4'-5" to 5'-0"] from the floor and second strip between 850 and 1000 mm [2'-9" to 3'3"] from the floor, to assist those who have low vision. High colour contrasting door frames and door hardware are also recommended.
- Automatic door openers are preferred as they provide independence, but these should include an emergency push bar release and battery back-up to ensure operation during power outages.

  Automatic openers should be used at:
  - Building entrances.
  - At least one washroom for each gender that includes an accessible toilet stall (unless the facility is doorless).
  - Accessible individual washrooms or toilet rooms.
  - Accessible change rooms.
  - Intermediate doorways across primary circulation routes within a building.



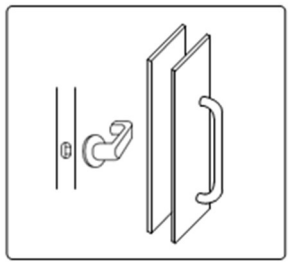
Front approach at hinged doors. [at top of ramps landing should be 2440 mm x 2440 mm min (8ft x 8ft)].



Minimum clear opening at doors.

Note: Consider availability of standard door size

- Provide level wheelchair manoeuvring space on both sides of doors, and clear space at the latch side to the adjacent wall, distance dependent on the swing of the door.
- The minimum space between doors in a series is 1525 mm [5'-0"], plus the width of the door leaf.
- Door operating hardware should be lever type, with the lever bent and returning towards the door surface. Operating hardware should not require tight grasping or twisting of the wrist to operate and should be installed no higher than 1090 mm [3'-7"] above finished floor.



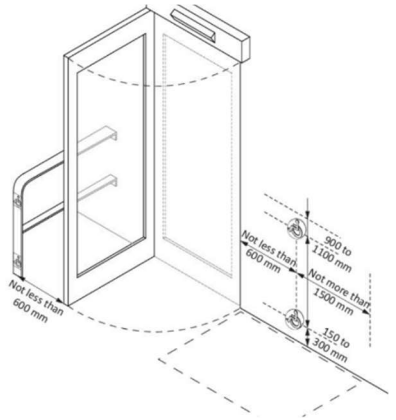
Example of accessible hardware.

- Provide a smooth, uninterrupted 305mm [1'-0"] high kick plate on all doors providing access.
- The maximum door opening force should be:
  - 38 N (8.5 lbs.) for exterior hinged doors.
  - 22 N (4.6 lbs.) for interior hinged doors.
  - 22 N (4.6 lbs.) for sliding or folding doors.
- Door closers should be adjusted to the least pressure possible, but never more than the door opening forces noted above. The sweep period of the closer should be set so that from an open position of 90 degrees, it should take no less than 3 seconds for the door to move to a semi-closed position of 12 degrees.
- Power-assisted swinging doors should:
  - Be adjusted to take not less than 3 seconds to move from the closed to the fully open position, and remain fully open for a minimum of 5 seconds.
  - Be equipped with a sensor, that stops the door from closing on a person or object that is still in the area of the door swing.
  - Require a force of not more than 66 N (13.8 lbs.) to stop the door movement.

Doors with Power Operators

Automatic doors operated by motion sensors for both hand and foot are often ideal. However, power-operated doors activated by accessible controls are also acceptable.

- The controls must be operable with a closed fist and be reachable.
- The controls must be located so that the individuals using them are not in the way of the opening door.
- The physical effort required to open or close a door should be as low as reasonably practical for people to pass through doors with ease.
- Doors equipped with a power operator actuated by a pressure plate identified with the International Symbol of Access or, where security is required, by a key, card or radio transmitter, and that can otherwise be opened manually, meet the intent of the requirement.
- The location of these actuating devices should ensure that a wheelchair will not interfere with the operation of the door once it is actuated.
- Swinging doors equipped with power operators which are actuated automatically and open into passing pedestrian traffic should be provided with a guard or other device designed to prevent pedestrians from stepping in the swing area of the door.
- These guards or devices should be detectable by white cane detector users.
- These doors should also have a device (mat or other sensor) on the swing side to prevent the door from opening if someone is standing in the swing area.

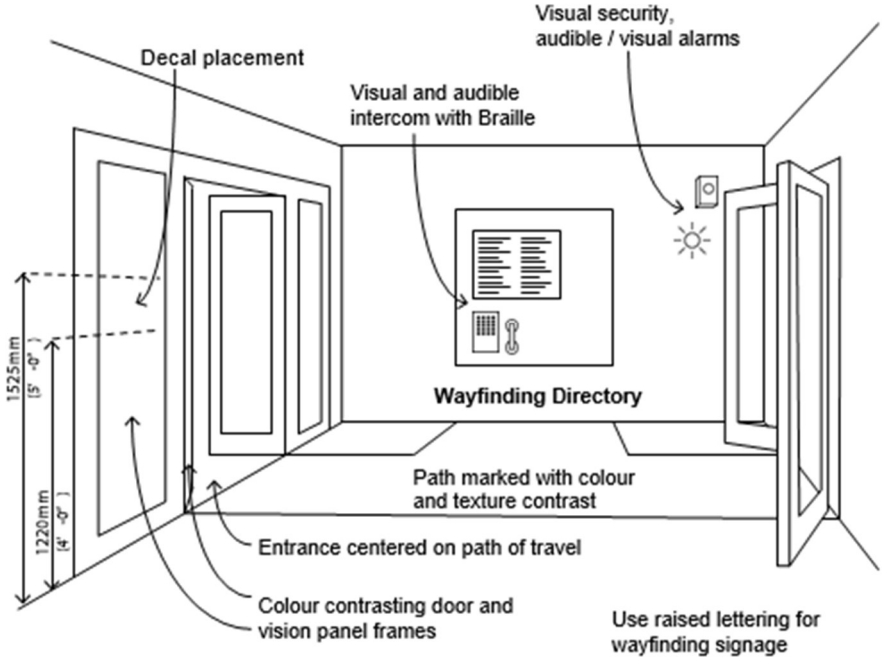


Door Power Operators Considerations.

Entrances

Entrances should be designed to create an inclusive sense of welcome, and address the widest possible range of abilities. The intent should be to promote independence for all users, and not to create separate accessible entrances to meet specialized needs.

- Make the place of entrance as obvious as possible.
- Install entry canopies and weather protection at main entrances.
- Provide required spatial clearances at doors and between series of doors.
- Provide automatic door openers.
- Provide appropriate intercom communication and electronic security measures.
- Provide signage on adjacent latch side of door.



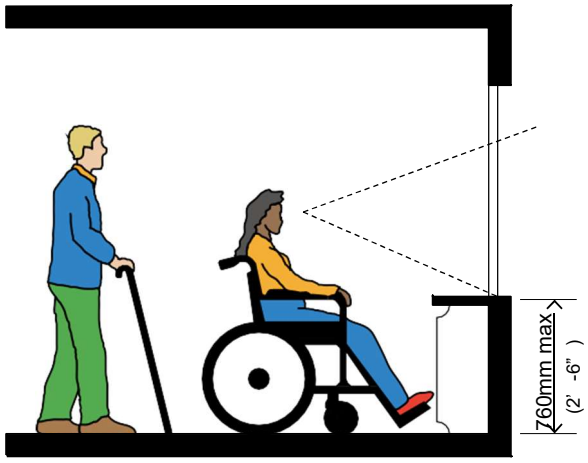
Entry Foyer Considerations.

4.10.6 Windows, Glazed Screens and Sidelights

Extensively glazed areas can create perception difficulties for persons who have low vision. This can be alleviated by installing rows of decals, typically at eye-level and ideally at two heights 1220 mm [4'-0"] and at 1525 mm [5'-0"] above the finish floor on the glazing. Best practice is to use coloured decals rather than simple frosting.

Additionally, persons using wheelchairs or scooters experience building interiors from a lower eye level. Lower sill heights as well as easily reached and operated opening mechanisms on windows are recommended.

Minimize glare from lighting refraction by offering glare control through blinds, curtains, & film.



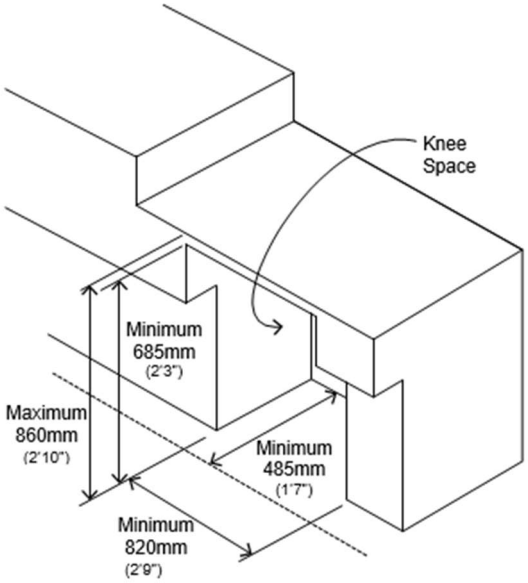
Preferred window sill height.

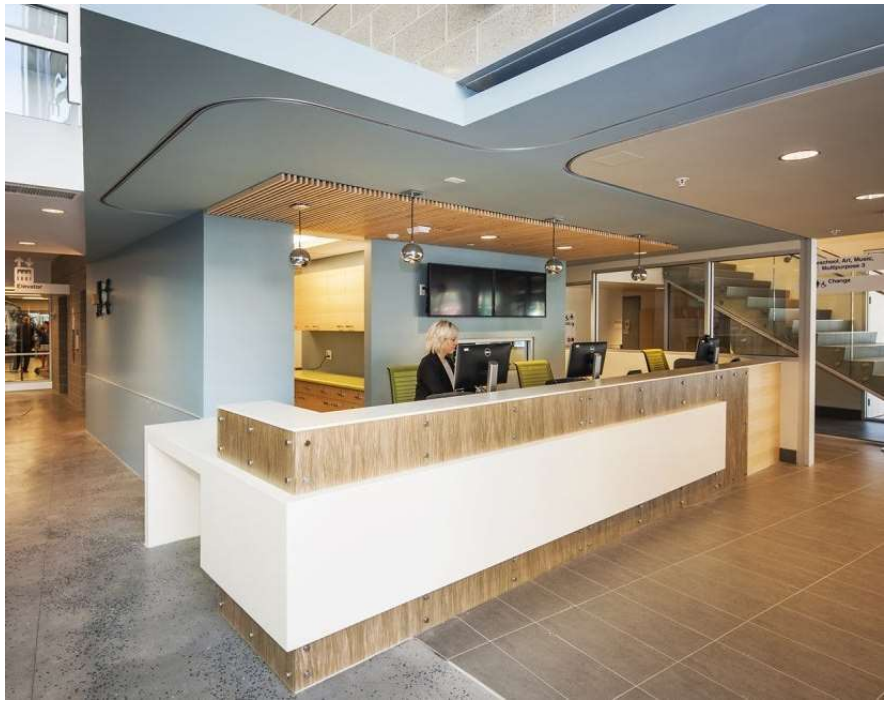
4.10.7 Service Counters

A choice of counter heights is recommended to provide a range of options for visitors and staff using Service Counters in a building.

- Provide a lower counter section with knee clearance which allows users including children, people of shorter stature and people using mobility devices to receive or deliver services. Positioning this lower section at the front of the service counter rather than around the side is preferred.
- Other sections can be made higher to provide a sense of security and visual privacy for staff at Reception services.
- Provide high colour contrast between counter surfaces and adjacent finishes to give visual clues to people who have low vision.
- If additional security measures such as security glazing is required, ensure that speaking ports intended to serve people using wheelchairs are installed no higher than 1065 mm [3'-6"] above the finished floor.

Dimensions for Accessible Reception Counter.





Reception Desk with Accessibility Counter. City Centre Community Centre, Richmond.

4.10.8 Elevators, Lifts and Escalators

Elevators

Elevators are key in providing independence of movement and can provide access for emergency responders. An elevator car is required by code to be sized to allow emergency personnel to manoeuvre a stretcher in the car space.

Provide audio and visual messaging clarity, avoid key words that sound similar, e.g. “escalator and lifts” sounds clearer than “escalator and elevators”. In addition to visual indicators, a verbal audible message identifying the floor landing, and the available direction of travel, should be announced when the elevator stops at a floor.

Elevator car controls should be mounted no higher than 1200 mm [4’-0”] from the finished floor to centreline, identified by high colour contrasted, raised characters and braille and be located where there is sufficient clear floor space.

- It is important to ensure touch screen car controls also include tactile features for individuals who are blind or have low vision.

Elevator doors should have a high colour contrast from the walls in the elevator car, and from the walls adjacent the elevator doors at landings.

- Mirrors should not be used as a wall finish on the wall opposite the elevator door.
- There should also be a pronounced colour contrast between the car sill, and the adjacent flooring in the car and the landing adjacent.
- Avoid using dark flooring in an elevator car which can be perceived as a hole in the ground or open shaft by people with sensory and cognitive disabilities, including those who have low vision and people living with dementia.
- Lighting should provide 100 lux (10 ft.-candles) illumination minimum in the car, on the control panels, and at the landing on each floor.

Platform Lifts and Stair Lifts

Typically, these should not be used in place of an elevator, but there might be retrofit or heritage reasons why such vertical transport aids should be used in existing buildings. If such lifts must be used, they should be sized to accommodate scooters, as well as a person using a wheelchair with an attendant.

Escalators

Boarding and stepping off of an escalator can be a challenging experience for many people. To enhance safety of escalator use, the following aids are recommended:

- Provide high colour contrast strips on escalator nosings and tread edges.
- Provide a cane detectable warning strip at the head and foot of the escalator, similar to those required at flights of stairs.
- Provide lighting over escalators at a minimum of 200 lux (18.4 ft.-candles), from a low-glare lighting source.

4.10.9 Work Stations and Shelving

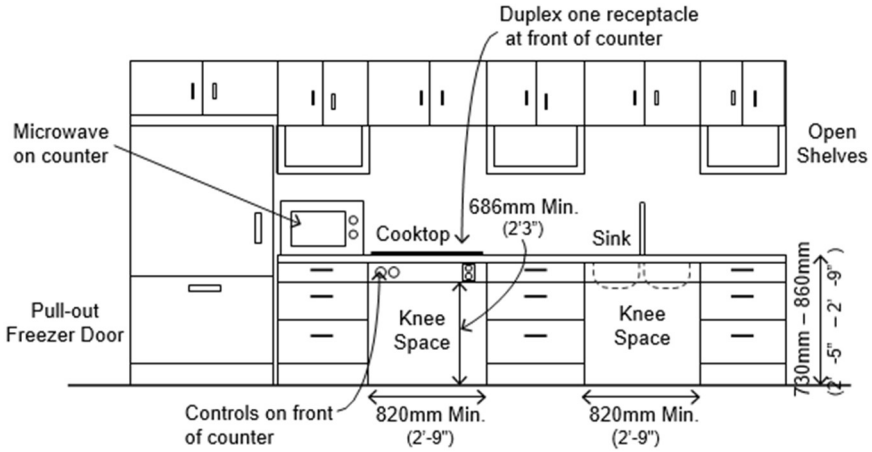
Provide a range of work space counter heights and shelving options for work stations to accommodate a range of user needs and abilities.

- For individuals using wheelchairs, provide a maximum height for work surfaces of 860 mm [2’-10”]; however, 760 mm [2’-6”] is preferred. The minimum height under the work surface should be 685 mm [2’-3”], with 510 mm [1’-8”] minimum of knee space.
- Floor shelving that is meant for use by people using wheelchairs should have the lower shelf a minimum of 230 mm [0’-9”] off of the finish floor, with the top shelf 1370 mm [4’-6”] maximum above the finish floor.
- Cabinet fronts should have high colour contrasting from the work surface and hardware should be selected that provides easy grasp and use with one hand.

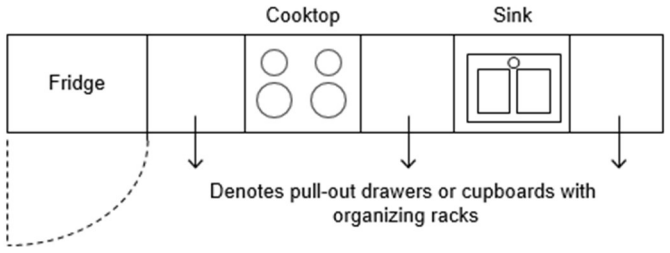
4.10.10 Staff Kitchenettes

Staff Kitchenettes should provide adequate manoeuvring space and counter, storage cabinet and appliance selection and layout to accommodate persons using mobility devices:

- Provide for a minimum of 1120 mm [3'-8"] clearance between the Kitchenette and opposite wall or other counter space.
- Provide a counter top that is a minimum 730mm [2'-5"] to maximum of 860 mm [2'-10"] above the finished floor.
- Provide a portion of the counter top with knee space that is a minimum of 820 mm [2'-9"] wide, and provide knee space at the kitchenette sink.
- Provide for pull-out drawers rather than shelving in base cabinets.
- If a dishwasher is provided, allow for a clear space adjacent to the open dishwasher door.
- Microwaves should sit on the countertop, and be reachable for the wheelchair user, with sufficient space in front of the microwave to place hot food.
- Refrigerators with a lower pull-out freezer compartment are preferred, rather than those with upper freezer cabinets, or side-by-side fridge and freezer doors.
- All kitchen elements should have high colour contrasting to differentiate the cabinets, counters and appliances from the adjacent wall and floor surfaces.



Staff Kitchenette - Elevation.



Staff Kitchenette - Plan.

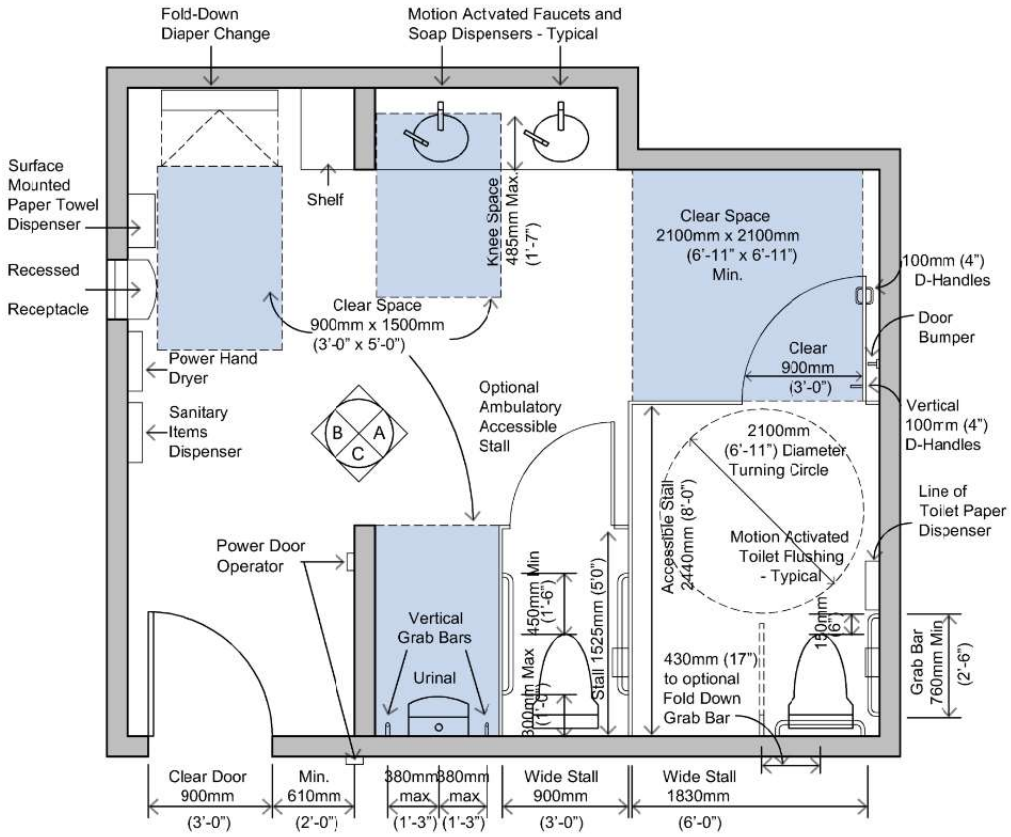
4.10.11 Washroom Facilities

Washroom facilities should be easy to use for people who work or visit public buildings, regardless of ability. The Building Code sets out minimum standards for accessibility in washroom design, however these requirements do not provide for the wider range of users in buildings; additionally, more space is typically needed to accommodate the use of mobility devices, such as power wheelchairs:

- Sometimes gender-specific washrooms create awkward situations where washroom assistance is required. In such cases, providing Universal Washrooms that also function as Family Room Washrooms, in addition to Men's and Women's washrooms, are recommended.
- Wet floor surfaces in washrooms can increase the risk of falls; therefore, an emergency call switch is recommended in accessible toilet stalls.
- High colour contrast is recommended between elements such as the wall and washroom fixtures. It is important to avoid using dark flooring as it can be perceived as a hole in the ground for people who have low vision and for individuals with cognitive disabilities, including those living with dementia.
- If space allows, it is preferable that doors to washrooms be eliminated by means of open vestibules that provide for visual privacy.
- Where doors into washroom are provided, automatic door openers / operators should be installed.
- Infant change tables should be provided in all washrooms.
- Soap and paper towel dispensers/hand dryers should be within reach of the sink so that someone can fully wash and dry their hands prior to touching their mobility device.
- Paper towel dispensers are preferred but a combination of paper towel dispensers and hand dryers is also very accessible.
- Open toilet paper dispensers are recommended for ease and accessibility.

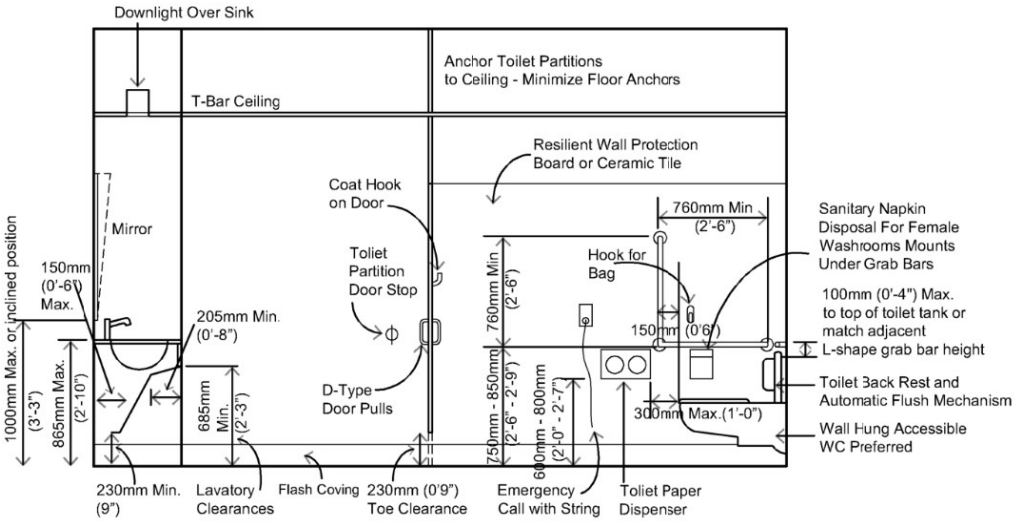
Typical Gender-specific Washrooms

Even if a Universal Washroom is provided, accessible facilities are still required in gender-specific washrooms (e.g. Men's and Women's washrooms). Extra space should be included in these washrooms, beyond the requirements of the Building Code, to allow for user movement with mobility devices and for assistance by attendants.

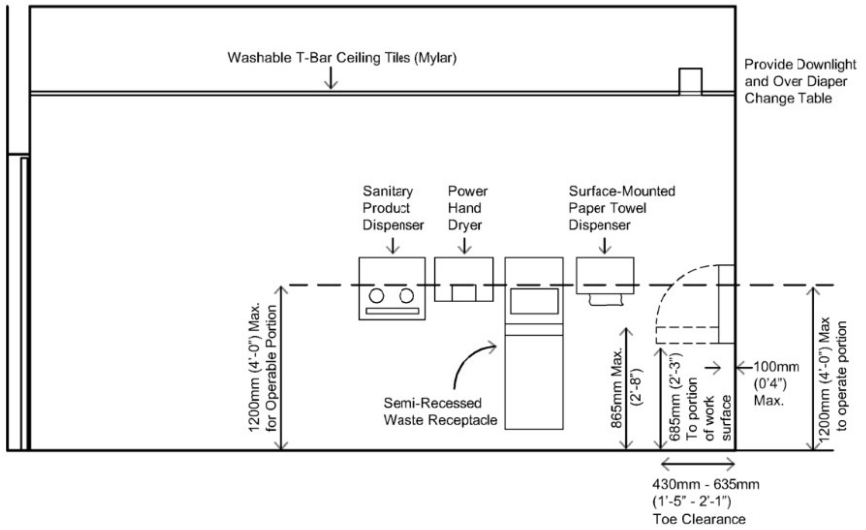


Typical Accessible Washroom - Plan.

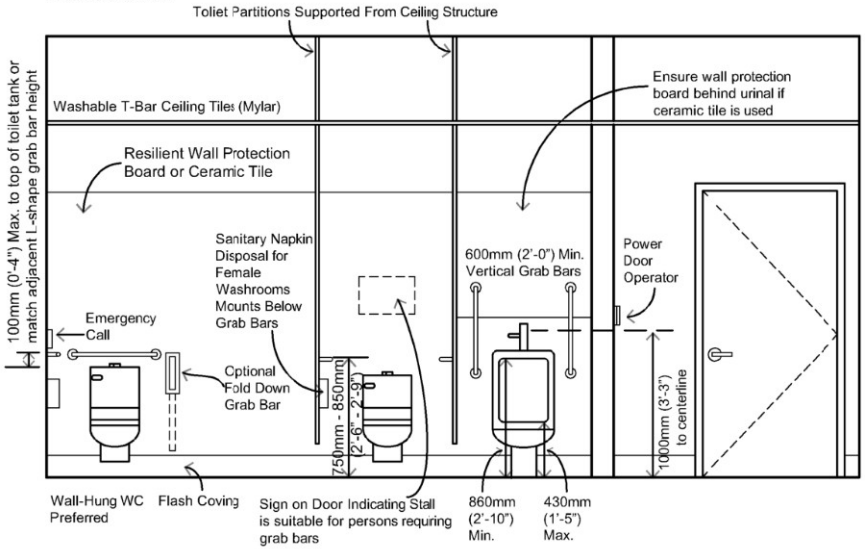
Elevation A



Elevation B



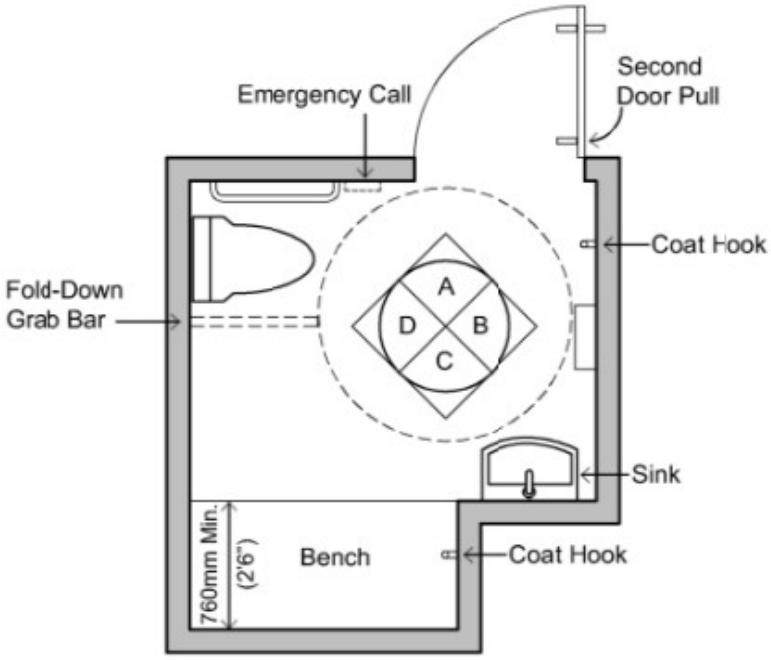
Elevation C



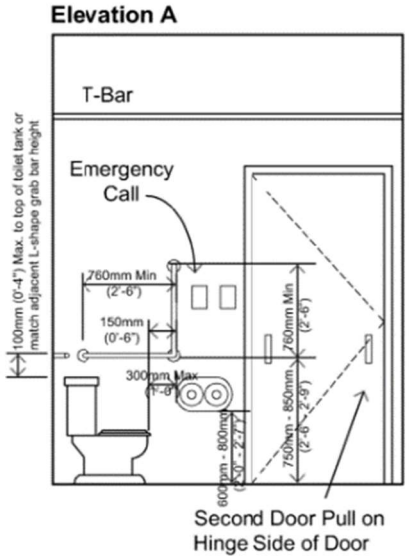
Universal Washroom

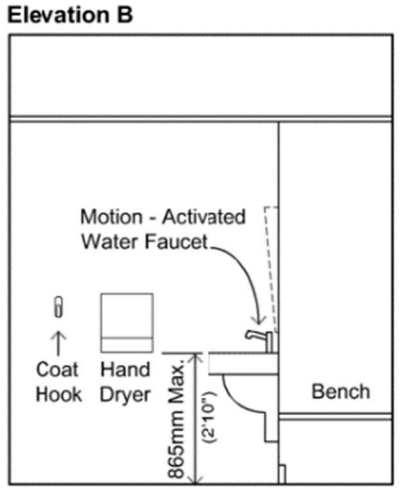
One universal washroom should be provided on each floor, in addition to accessible gender-specific washroom stalls, and should:

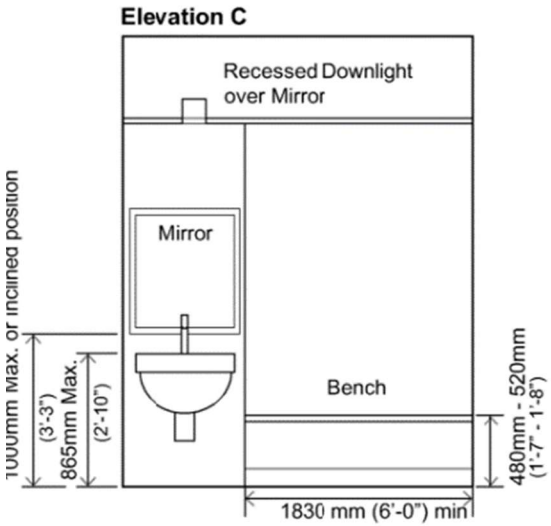
- Provide an emergency call switch with obvious user instructions.
- Emergency call button should have audible and visual signals.
- Be equipped with a door that is capable of being locked inside with one hand, and which has a lock that can be released from the outside by authorized staff in case of emergency.
- Height adjustable change benches are preferred in City facilities, especially recreation and aquatic centres, that are at least 760 mm [2'-6"] deep x 1830 mm [6'-0"] long.

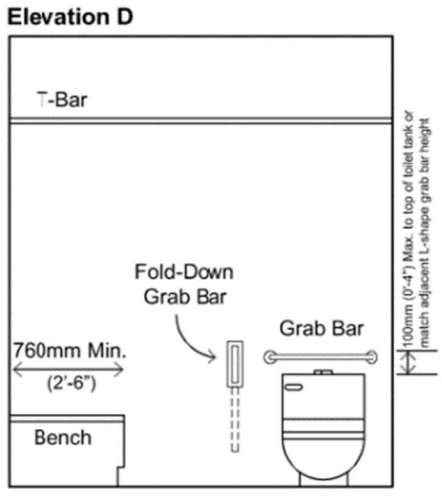


Universal Washroom - Plan.



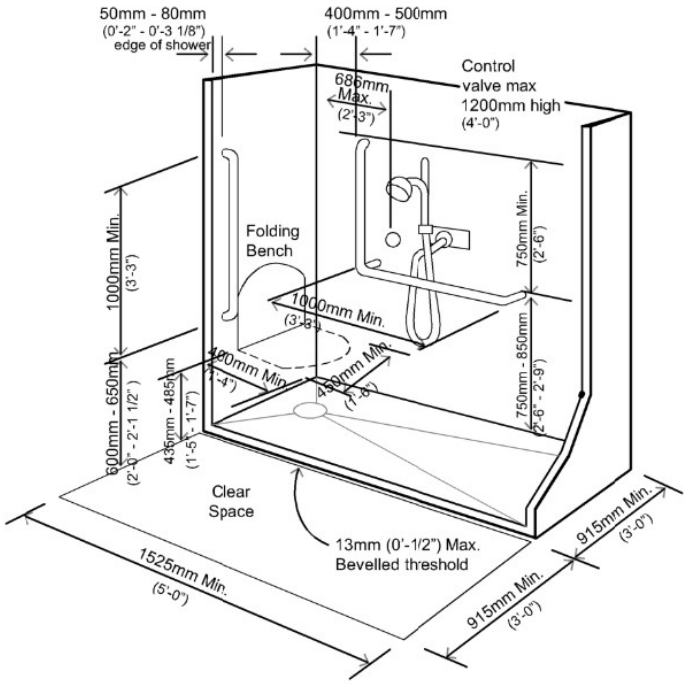






Shower Stalls
When showers are installed for use by staff in buildings, the shower stalls provided should be accessible, and incorporate low thresholds, hand-held shower wands, and folding seating benches.

Additionally:
- Shower valves should be equipped with thermostatic mixing valves that limits the hot water temperature to 49 degrees C [120 degrees F].
- Enclosures for shower stalls should not obstruct controls or the ability to transfer from wheelchairs onto shower seats.
- Emergency call button is recommended in accessible showers.



When shower stalls are installed for use by staff in City-owned buildings, the shower stall should be an accessible one.

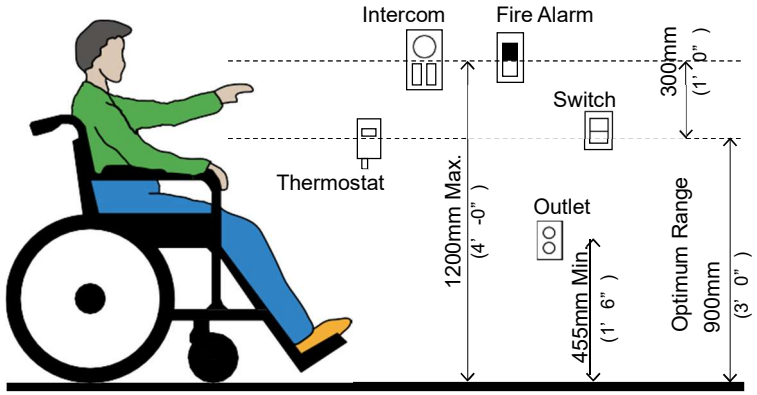
4.10.12 Lockers and Storage Areas

Lockers
Accessible staff locker areas should be provided for 20% of staff.
- The bottom shelf of a locker should be no lower than 460 mm [1'-6"] above the finish floor.
- The top shelf should be no higher than 1050 mm [3'-5"] above the floor.
- The locking mechanism for the locker should be mounted no higher than 1065 mm [3'-6"] above the floor.
- Locker numerals or names should be in clearly legible, high colour contrasted with raised lettering.

Storage Areas
Provide a minimum of 1375 mm [4'-6"] for aisle spaces in front of storage shelves and lockers.

4.10.13 Controls and Operating Mechanisms

The placement of controls is integral to their accessibility:
- Install controls so that they accommodate the reach of people using wheelchairs.
- Provide controls that contrast in colour from their background, and provide tactile markings to assist people with vision impairments.
- Plumbing controls should generally be electronically controlled, however if hand-operated controls like faucets are provided, these should be operable by one hand without the need to grasp tightly or twist the wrist.

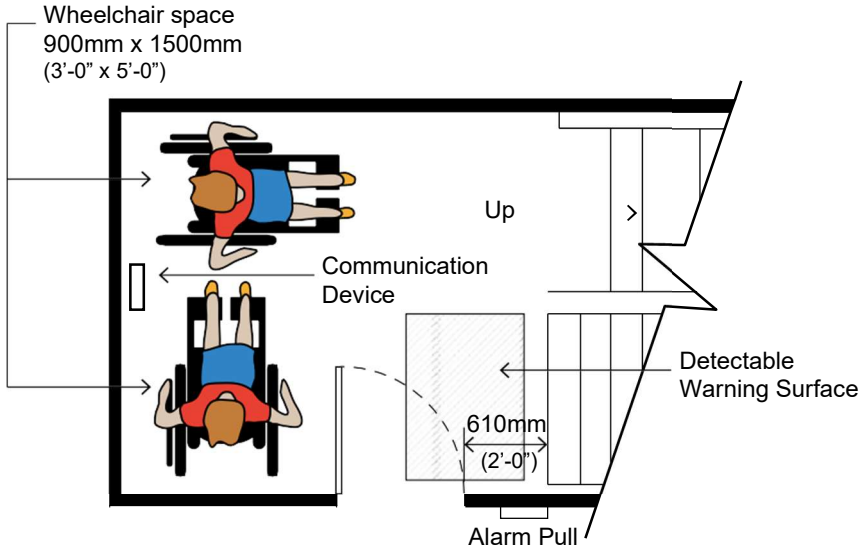


Reach range for accessible controls.

4.10.14 Emergency Exits and Areas of Refuge

In the event of fire when elevators cannot be used, areas of refuge (areas of rescue assistance) are provided by code in protected floor areas at floor landings in stairwells.

- Provide additional space between the door jamb and the leading edge of the stair, beyond that which is required by code.
- Provide a two-way voice communication system for use between the area of refuge and the central alarm and control facility.



Area of rescue assistance.

On the ground level outside of the building, it is recommended that a gathering or refuge area be located for people with disabilities to wait in an emergency, in a relatively safe place until help arrives.

Such a refuge area would ideally be linked with the building exit by a clearly demarcated path, with a handrail situated on the path edge leading to the refuge area. Signage indicating the area of refuge should be mounted on the door of the egress route.
The refuge area could also be developed as a seating area for everyday pedestrian use.

4.10.15 Security Considerations and Alarms Emergency Signaling

To provide an added sense of security for people who are using building facilities; it is important to consider adequate lighting and emergency signaling in building design:

- Provide sufficient lighting along public walkways, steps and ramps.
- Provide emergency visual signaling devices (strobe lights for example) throughout the building, but particularly in locations like washrooms where someone may be alone.
- Provide emergency call switches where the potential for a fall may be increased and an individual may be alone such as washrooms and showering facilities.

Security System Access

- When card-access systems are used, all system components should be suitable for persons of varying abilities.
- Intercom entry systems should provide both visual and auditory features. These include providing both audible (beep) and visual (light) signals to indicate that access has been granted.

4.10.16 Indoor Lighting Considerations

Artificial lighting and natural light typically should provide a glare-free and evenly distributed light where required, at working areas, on routes of travel, at areas of potential hazard, and at building entrances. Preference for daylight for positive health effects. Fast moving or changing light effects should be avoided as they can induce seizures for individuals with epilepsy. Only introduce with consultation and specialist input. LED lighting is preferred as fluorescent lighting can cause sensory perception difficulties and headaches.

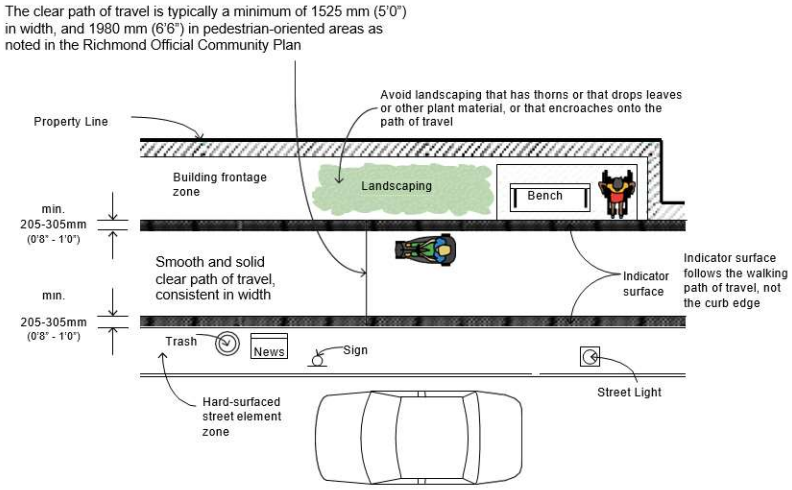
Indoor Lighting Principles

- Typically, light fixtures should be selected to minimize glare. Avoid wrap-around lenses and install fixtures that employ diffusers or are recessed.
- Provide for general, even distributed levels of illumination, and task lighting at work stations.
- Use curtains, blinds or other sun-screen elements to modify direct sunlight exposure.
- Select interior material finishes that generally do not create high-gloss reflective surface effects.
- Provide illumination at the surface level of stairs, ramps and landings of at least 50 lux. Operating portions of control devices should be illuminated to a level of at least 100 lux, and where reading is necessary, to a level of 200 lux.
- Provide a gradual change of lighting level from indoor to outdoor spaces, and vice versa, to help make transitioning between spaces more comfortable for users.
- Offering adjustable lighting levels (i.e. to brighten and dim lights) can help to accommodate a variety of preferences.
- Pair lighting with wayfinding to ensure that signage is well illuminated and legible.

4.11 Streetscape Considerations

All on-site parking areas and sidewalk and street design elements within 3050 mm [10'-0"] of City-owned buildings should be designed for greater ease of accessibility:

- Avoid slippery surfaces, or irregular surfaces, such as cobblestones or gravel that are difficult for walking or for those who use mobility devices.
- Avoid openings in grates or grilles that can catch high heels, canes or wheelchair wheels. (A maximum width of opening should be limited to 13 mm [0'-1/2"], with the opening at right angles to the path of travel).
- If boardwalks are installed, accessible viewing platforms should also be added.
- Edge protection along the length of the boardwalk is required and a handrail is recommended at viewing areas, at ramps or when sufficiently elevated.
- Avoid surface materials that are prone to differential settlement, and which can develop trip hazards. Surface materials should be installed on a stable sub-base that is not susceptible to frost heave or other vertical movement.
- Ensure that all accessible routes have a smooth, firm and solid surface, free of obstructions like streetlight and traffic signal standards and poles, street trees and raised tree roots, waste receptacles, newspaper boxes, benches, outdoor patios or bus shelters.
- For individuals who are blind or have low vision, demarcation strips to signal the presence of such street furniture are recommended as well as ensuring that street furniture is white cane detectable.
- All street elements that serve the public, like push button signal controls or handles on waste receptacles or mailboxes, should be installed at an accessible height.
- Curb ramps should have a wide and smooth transition from a travel path or a sidewalk to the street finish elevation at a crosswalk. Truncated domes are required in designated pedestrian zone areas so that people who are blind or have low vision can safely navigate the curb ramp.[Refer to City of Richmond Supplement to Master Municipal Construction Standards].
- Contrasting paving strip should be installed in open plazas to increase wayfinding, particularly for those who have low vision to safely and effectively navigate from the path of travel/sidewalk to the entry of the building.
- Design interventions that increase the comfort can help people feel at ease and enjoy staying in a space longer.
- Colour is an effective way to distinguish spaces and create visual interest; however, use of colour and pattern requires consideration of where and how it is used. High contrasting patterns on ground surfaces is not recommended, as they can lead to confusion and difficulties with depth perception (e.g. perceived as a hole in the ground). However, using contrasting colours and textures intentionally can support wayfinding and delineate the path of travel.
- Landscape materials, trees, shrubs and plants should be selected to enhance enjoyment by all persons during the landscape design process.
- Shrub plantings at landscaped areas should not encroach into the path of travel, and plant material should be selected to minimize potential obstruction of the pedestrian path by excess leaf droppings or seed pods.
- Thorny shrubs should be avoided directly adjacent to the path of travel.
- Using fragrant plants can support ease of navigation in the built environment by individuals who are blind or have low vision.
- Overhanging tree branches should be cut back to provide a minimum of 2440 mm [8'-0"] clearance over the path of travel.
- Dog parks or dog relief areas should not encroach on the accessible path of travel and should feature a waste receptacle that provides for accessible use.

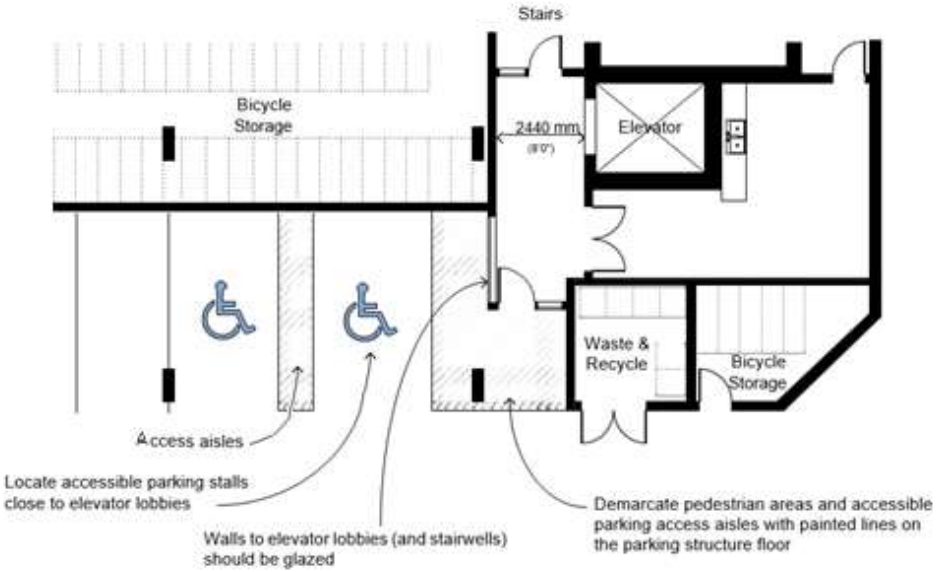


Streetscape element and the path of travel.

4.12 Parking Area Considerations

It is important to provide parking spaces for people with disabilities close to building entrances, and provide an accessible path that is convenient and safe:

- Accessible parking requirements, including van accessible parking, access aisle and signage per Richmond Zoning Bylaw 8500, Section 7 Parking and Loading.
- Avoid any steps or curbs.
- In parking areas with angle parking, provide a parking stall as required by the Richmond Zoning Bylaw 8500, Section 7 Parking and Loading, along with an adjacent access aisle.
- Where parallel parking is provided, consider the space and curb height for those who utilize a side-loading lift in a van. A curb cut in the passenger loading area or access aisle is required. It is not recommended for the curb cut to enter the accessible stall, if at all possible.
- Accessible stall signage is recommended to be both mounted on a pole and marked on the pavement.
- Ensure that all surfaces on the ground plane are firm and level, with a maximum 2% slope to drain to keep the parking and manoeuvring areas free-draining.
- Ensure access aisles are clearly marked.
- Allow for additional over height clearance at certain marked parking stalls, to anticipate that some users may be driving vans that are higher than standard height.
- Break up large parking spaces with landscape buffer.
- Wherever possible, ensure there is a safe passage of travel from an access aisle that connects to a curb cut, avoiding the user to navigate behind other parked vehicles.
- When designing the parking plan, consider the facility's use and the needs of all individuals to determine the appropriate number of accessible parking stalls beyond code minimum. Some sites, like senior's centres may require more than others.



Approaching and entering a City-owned building entry from an under-building parking structure.

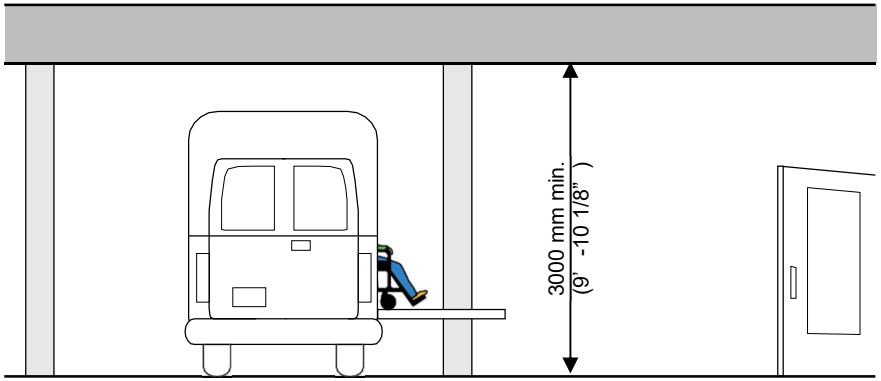
Curb Cut at Access Aisle. Minoru Centre for Active Living – Seniors Centre, Richmond.

4.13 Passenger Loading Zone Considerations

Similar to installing access aisles for accessible parking stalls, passenger loading zones also require manoeuvring space to safely and conveniently accommodate users with disabilities.

Additionally, it is beneficial to provide weather protection, as well as interior or covered exterior waiting areas that have a clear line of sight to the vehicle loading area.

Provide accessible drop-off locations at shops, services, and other essential destinations to reduce travel time and frustration for people with disabilities, including those living with dementia, and the individuals who support them. Consider drop-off areas at services and destinations that people frequent such as community centres, clinics, and hospitals.



Passenger loading zones require manoeuvring space to safely and conveniently accommodate users with limited mobility.

4.14 Outdoor Recreational Facilities

Opportunities for active outdoor recreation should be available to all members of the community, regardless of their abilities.

An accessible path of travel should be provided to all public facilities, including outdoor areas and washroom facilities located in parks and recreational areas, given Richmond's generally flat topography.

- Avoid steps and ramps if possible. Where ramps or elements like footbridges are installed, ideally these should be sloped at no greater than 1:20 [5%], with non-slip surfacing and suitable handrails or guards that have high colour contrast. For stairs, please follow guidelines detailed in section 4.4 – Stairs.
- On paths, install lighting, waste receptacles, benches, drinking fountains, trees and shrub plantings, and other pedestrian path elements consistently and in a location adjacent and not encroaching on the accessible path. Consideration should be given to providing shaded areas along pathways.
- Ensure bike paths are separate from pedestrian paths, and that intersections are
- well-marked, informing cyclists to slow down and give pedestrians the right-of-way.
- Entrance gates to park and recreational areas should allow at least two people using wheelchairs or people with strollers to walk alongside or easily pass one another.
- Boardwalks should include a guardrail or edge protection based on the height of the adjacent drop off.
- Ponds and water features adjacent to walking or play areas should feature cane detectable edge protection or a guardrail.
- A water feature should be outside of the path of travel.
- Spectator areas for people with disabilities should also be installed at sports fields, incorporating universally designed benches and raised viewing areas.
- Children's play areas should incorporate features that enhance accessibility, both for adults supervising children's play, and for children with disabilities. This includes elements such as picnic tables, benches and shade or weather protection.
- Provide a variety of seating options, with adjacent space for a mobility device or stroller.
- Ground treatments, such as paving compared to gravel or paving stones, impacts someone's ability to navigate the community. In addition to people using mobility devices, people living with dementia have an increased risk of falling so a seamless path of travel can reduce risks and increase access to outdoor recreation independently.
- Landscape materials, trees, shrubs and plants should be selected to enhance enjoyment of outdoor spaces without creating obstructions to the path of travel.

4.15 Drop-Off and Pick-Up Shelters

Platforms for pick-up and drop-off shelters should provide a minimum of 3 m x 9 m of clear space to accommodate buses that deploy a ramp and also maintain a clear route of travel for pedestrians. The clearance from the pavement to the underside of the shelter ceiling needs to provide no less than 2750 mm [9'-0"].

It is recommended also that such shelters have at least one seat with armrests and backrests, with a seat height between 430 [1'-5"] and 485 mm [1'-7"]. All vertical glass elements should be framed, typically in metal, and using high colour contrast.

4.16 *Outdoor Lighting Considerations*

Similar to indoor lighting, artificial lighting and natural light typically should provide a glare-free evenly distributed light where required, at outdoor working areas, on pedestrian paths, at areas of potential hazard, and at building entrances and places of outdoor amenity. Lighting should be designed to minimize the creation of shadow due to visual misinterpretation as a barrier, obstruction or hole in the ground.

LED lighting is preferred as fluorescent lighting can cause sensory perception difficulties and headaches.

Outdoor Lighting Principles

- Consistent illumination along a pedestrian route should not create any dark or shadowy areas.
- At public entrances, provide a full spectrum type lighting, of a minimum 100 lux (9.4 ft.-candles), measured at the ground.
- At walkways, stairs and ramps, rest areas, and accessible parking areas, lighting levels should be 50 lux (4.7 ft.-candles) measured at the ground.
- In interior parking garages, the lighting level should generally be 10 lux (0.94 ft.-candles) measured at the ground, with higher lighting levels provided at entrances to building circulation and adjacent areas.
- At passenger drop-off areas, lighting should be 50 lux (2.82 ft.-candles), measured at the ground.
- At steps or stairs, provide lighting directly beside to clearly define the treads, risers and nosings.
- Provide supplementary lighting to highlight signage and other orientation elements.

Richmond park path.

4.17 Quiet & Sensory-Friendly Spaces

Offering quiet and sensory-friendly spaces help support those who may experience hypersensitivities to certain sensations in the environment, such as bright lights, loud noises, strong smells, and crowded spaces. This can include children and adults with autism, attention-deficit/hyperactivity disorder (ADHD), and sensory processing disorder. Consideration should be given to the facility context when designing a quiet and sensory-friendly space and the potential needs of its users.

- Ensure flexibility with a variety of design options that are customizable to the individual's sensory needs.
- Take into account the following:
  - Include both low and high stimuli options to accommodate both hypersensitive and hyposensitive needs.
  - Size of the quiet room as some may find a confined space difficult, with enough space to move freely, and options to stand or pace.
  - A location free of odours and low background noise; the space does not have to be silent but designed to create a mentally "quiet" environment.
  - Easy and immediate access to the quiet room from nearby spaces.
  - Visual and audible privacy.
  - Adjustable acoustic and lighting properties to accommodate a variety of preferences.
  - Comfortable temperature ranging from 19 °C to 23 °C.
  - Use furniture that can be easily repositioned.
  - Plain ceilings (without patterns) and wall finishes in matte, muted or natural colours and ones that occur in abundance in nature (e.g. browns, greens and blues). Avoid bright or vivid colours, and complex, repetitive patterns.
  - Adjacent walls should differ in shade but avoid walls with stark contrast from one another.

Pacific Autism Family Centre, Richmond.

5.0 Technical Specifications

5.1 Purpose - Technical Specification References

- To organize the design, construction, material and building system requirements associated with enhanced accessibility, into industry-standard specification nomenclature.
- To be used as a tool for preparing cost estimates early in the design process.
- For use by consultants who are ultimately responsible for ensuring that the completed project meets all standards, and conforms to the regulations of all authorities having jurisdiction.

5.2 Technical Specification Sections

- Consultants for City-owned building projects should use the following Divisions and Sections annotations in this document, as a basic guideline when creating construction specification document packages accompanying construction drawings.
- Specification packages will vary from project to project, and will be the consultant's responsibility to ensure that the specification requirements adequately describe the scope of work associated with the specific project.
- The following specification references are organized according to the Masterformat Specification System.
- Please refer to the City's "Building Facilities Design Guidelines and Technical Specifications" for a more detailed overview of specification considerations for City-owned buildings.

5.3 Outline Specification - Enhanced Accessibility

5.3.1 Overview of New Construction General Design Requirements

- Provide designs for accessibility in buildings that respond to users' needs, and that provide durability and that are cost effective in construction.
- Respond to the Guidelines noted in this document.

5.3.2 Overview of Construction Design Requirements for the Renovation of Existing Buildings

- Respond to the requirements of the Guidelines as much as possible.
- Review structural engineering and code issues with consultant specialists, regarding incorporating enhanced accessibility design requirements.
- Install an accessible elevator in all multi-storey buildings. If there are concerns about how an elevator might be successfully integrated into an existing building condition, consider the inclusion of other elevating devices such as platform lifts, and review with City staff.

5.3.3 Excavation, Backfill and Compaction

- Comply with all municipal bylaws and applicable building codes, as well as all Master Municipal Construction Documents, relating to subsurface, paving, and drainage work.
- Ensure sub-bases and base course layers receive proper compaction and drainage to provide for durable paved finish surfaces that are not prone to differential settlement and heaving.

Specification Reference – Section 31 00 00 - Earthwork

5.3.4 Exterior Surface Finishes - Hard and Soft Surfaces /Landscaping

- Provide exterior surface areas and landscape designs that are simpler in nature and that provide durability and amenity, and that require low maintenance.
- Provide parking areas that are required by the City, and that meet accessibility standards.
- Select landscaping that does not create hazards for people with disabilities, such as thorny bushes adjacent to pedestrian paths. Also select fragrant plants that can provide olfactory and orientation clues, such as aromatic flowering trees or shrubs in strategic locations.

Specification References – Section 03 35 00 - Concrete Finishing
Section 31 22 13 - Rough Grading (Landscape)
Section 32 01 90 - Landscape Establishment & Maintenance
Section 32 05 23 - Concrete for Exterior Improvements
Section 32 14 13 - Concrete Unit Paving
Section 32 12 16 - Asphalt Paving
Section 32 17 23 - Pavement Markings
Section 32 91 21 - Growing Medium and Finish Grading
Section 32 93 10 - Trees, Shrubs and Groundcovers

5.3.5 Basic Concrete Materials and Methods

- All floors to be left exposed, or that receive carpeting, resilient flooring, or floor tile, should be finished flat, and free from defects that would telegraph through finish materials.
- Provide control joints at required locations to control cracking.
- Avoid changes in floor elevation between finished surfaces, by anticipating the depth of floor finishes and accommodating these with different finish concrete substrate elevations, to keep the overall finish flooring level flat and true.

Specification Reference – Section 03 33 00 - Cast-In-Place Concrete
Section 03 35 00 - Concrete Finishing
Section 03 54 00 - Concrete Self-Leveling Topping

5.3.6 Basic Metals Materials and Methods - Miscellaneous Metals

- Provide guardrails, handrails and other miscellaneous metal fabrications that meet accessibility requirements.
- The Contractor will retain a structural engineer registered in the Province of BC to prepare signed and sealed shop drawings for metal fabrications.
- Finish for miscellaneous aluminum or steel metals should be powder coat paint.

Specification Reference – Section 05 50 00 - Metal Fabrications
Section 05 58 00 - Historic Metalwork Restoration [Existing Buildings]

5.3.7 Rough Carpentry

- Floor Underlayment for Finish Resilient Flooring or Carpeting
- Provide 3 ply, 9 mm [11/32”] thick spruce plywood with the finish face double-sanded and the back face lightly sanded. Prior to installation, confirm that the finish product will be acceptable to the resilient flooring manufacturer.
- Grab-Bar and Railing Blocking
  - provide 38 x 235 mm [2 x 10] typical in the wall framing at anchoring locations for grab-bars, handrails and guards.

Specification Reference - Section 06 10 00 - Rough Carpentry

5.3.8 Finish Carpentry

- Workmanship should conform to the Quality Standards for Architectural Woodwork as published by the Architectural Woodwork Manufacturers Association of Canada [AWMAC], latest edition.
- **Casework**
  - AWMAC Custom Grade typical.
- **Wood Cabinets for Transparent Finish**
  - Grade A face veneer, with adjustable shelving veneer plywood core.
- **Plastic Laminate Cabinets**
  - All surfaces P.Lam, with adjustable shelving veneer plywood core.
- **Countertops**
  - "Corian" type non-porous countertops with integral splash.
- **Cabinet Hardware**
  - 100 mm [4"] minimum D-pulls, polished or brushed chrome finish.
- **Wall Protection**
  - 9 mm [3/8"] veneer face plywood is acceptable, as is PVC plastic wainscoting. Provide wood battens or PVC trim strips to avoid flush detailing.
- **Outdoor Wood Furniture (Benches, Picnic Tables, etc.)**
  - Smooth sanded finishes. Transparent coatings preferred.

Specification Reference – Section 06 20 00 - Finish Carpentry
Section 06 20 11 - Landscape Finish Carpentry
Section 06 40 00 - Architectural Woodwork
Section 06 42 00 - Restoration of Existing Architectural Woodwork [Existing Buildings]

5.3.9 Doors

- Typically provide a 915 mm [3'-0"] clear opening at doors. [Generally this means a 1000 mm [3'-3 3/8"] wide door].
- Position doors to allow for required clearances at jambs, and approach clearances for wheelchair users.

Specification Reference – Sections relating to Doors

5.3.10 Glass and Glazing - Doors and Windows

- Provide frames with high colour contrasting for glazing in doors and windows, to provide potential obstruction signals and orientation. Similarly, provide decals or patterns on glazing at eye level in the standing and seated positions.

- In lieu of tilt mirrors to serve people who are of shorter stature or seated, consider wall mirrors that extend down to the deck of the sink vanity or counter.

Specification Reference – Sections relating to Windows and Doors
Section 08 80 50 - Glass and Glazing

5.3.11 Finish Hardware

- Provide lever handles on all passage or locksets. Install pulls with faceplates on non-locking doors.
- Provide automatic door openers at entry doors and at selected washroom and universal washroom doors (See Guidelines), and at all doors where required clearances at jambs are technically not feasible.
- Provide level thresholds at doors.
- Install electronic and security system hardware height of between 800 mm [2'-7"] and 1200 mm [4'-0"] from the floor.

Specification Reference – Section 08 70 00 - Door Hardware
Division 28 - Electronic Safety and Security

5.3.12 Interior Finishes

Floors

- Provide resilient flooring generally and in wet areas. Vinyl tile or sheet vinyl goods with welded seams are acceptable. Flash coving is preferred in wet areas with sheet goods, in lieu of standard vinyl base.
- If ceramic or stone tile is used, larger size tiles are preferred that are non-slip. Use ceramic base tiles and darker colours for grout.
- Carpet tile is a preferred product compared to wall-to-wall. Avoid carpet with underlay.
- Walk-off entry mats should be recessed in the finished floor, so that finish floor elevations are flush and level. Vinyl transition strips between floor finishes should be rated for accessibility.
- Specify flooring materials that do not create off-gassing or negatively affect interior air quality.

Specification Reference – Section 09 30 13 - Ceramic Tiling
Section 09 65 10 - Resilient Flooring
Section 09 65 16 - Athletic Flooring
Section 09 68 00 - Carpeting
Section 10 90 00 - Miscellaneous Specialties (Walk-Off Mats)

Walls and Ceilings

Walls and Partitions

- Painted drywall is the typical finish. Avoid rough wall finishes.
- Wall protection and corner guard treatments are recommended in high traffic areas.
- Provide sound absorptive panels in areas where echo problems could occur.

Ceilings

- Typically install commercial quality T-bar acoustic ceilings, with an NRC rating of 70 or better.
- Provide washable ceiling tiles in washrooms, kitchens and service rooms.

Painting

- Provide paint sheens that are washable.
- Refer to City of Richmond Standard Paint Colour palettes for paint colour selection.
- Specify paints that are low VOC (volatile organic compounds) and that do not negatively affect interior air quality.

Specification Reference – Section 09 21 16 - Gypsum Board Assemblies
Section 09 30 13 - Ceramic Tiling
Section 09 51 13 - Acoustic Panel Ceilings
Section 09 84 13 - Fixed Sound Absorptive Panels
Section 09 91 10 - Painting
Section 10 90 00 - Miscellaneous Specialties (Wall Protection, Corner Guards)

5.3.13 Washrooms and Accessories
- Common and Accessible Washrooms

Plumbing Fixtures
- Accessible height wall-hung commercial toilets with back rest. Alternately (review with City staff), accessible height tank style WC's with bolted tops.
- Self-rimming drop-in sinks in vanities with motion- activated plumbing brass. (Preferred compared to single wall-hung sinks).
- Roll-in showers should be provided where public and staff showers are provided to ensure the facility can be used by all individuals.

Washroom Accessories
- All accessories to be rated for accessible use.
- Annealed finish on grab bars.
- A combination of paper towel and hand dryers are preferred. If paper towels are used, provide recessed accessible towel and waste containers, or an under-counter receptacle with a wide diameter grommet opening in the washroom countertop.

Lighting
- Install at sufficient levels to improve safety, visibility and detectability of elements and features within the built environment. Provide indirect over-mirror lighting at 100 lux (9.4 ft.-candles) illumination in combination with general room lighting.

Toilet Partitions
- Ceiling-hung, with no supports anchored in the flooring. Provide heavy-duty polished chrome or brushed nickel finish on hardware, which should be anchored with tamper-proof screws.

Diaper Change Tables
- Typical in washrooms.
- Mounted at a height of between 730 mm and 865 mm.

Specification Reference – Section 10 21 14 - Toilet Compartments
Section 10 28 14 - Toilet and Bath Accessories
Division 22 - Plumbing
Division 25 - Lighting
Division 22 - Plumbing

5.3.14 Kitchenettes

Millwork - See 5.3.8 - Finish Carpentry
- Plywood construction and "corian" countertop with corners eased.

Plumbing Fixtures
- Double bowl self-rimming stainless steel kitchen sinks preferred, in countertops designed for accessible use and manoeuvring.

Appliances
- Refrigerator with a pull-out bottom freezer compartment is preferred.
- Countertop model microwave.
- Cooktop with front controls (unless in a location accessed by children).

Specification Reference – Section 06 40 00 - Architectural Woodwork
Section 11 31 00 - Residential and Commercial Appliances
Division 22 - Plumbing

5.3.15 Staff Facilities

Staff Office

Millwork - See 5.3.8 - Finish Carpentry

Staff Room
- Provide Kitchenette as per 5.3.14 over.
- Lockers should be mounted at a variety of heights, accessible handle installed height between 800 mm [2'-7"] and 1200 mm [4'-0"] from the floor.
- Provide accessible staff washroom and roll-in shower if showers are required.

Maintenance and Storage Areas
- Provide maintenance workbench and storage shelves from nominal frame lumber and good-one-side 19mm (3/4") plywood.

Design for accessible use
- Storage systems should provide for accessible use.

Specification Reference – Section 06 20 00 - Rough Carpentry
Section 06 40 00 - Architectural Woodwork
Section 10 90 00 - Miscellaneous Specialties
(Metal Lockers and "Interlock" Shelving Systems)

Checklist for Enhanced Accessibility

The City of Richmond continues to identify, remove and prevent barriers in the community to support a healthy and aging population. The number of people with disabilities is increasing in Canada, in part due to the aging population. As a result, many people have, will or currently live with a disability. This means that going beyond the minimum standards of accessibility is fundamental for creating a more equitable, inclusive, and livable community. Enhancing accessibility and universal design in buildings and public spaces maximizes peoples' independence and choice, especially people with disabilities.

As an important component of the Guidelines, the following checklist works to support planning that considers a wide variety of design aspects that promote the full and equal participation of everyone who lives, works, play and visits Richmond, regardless of ability.

Checklist Legend

- **Physical Access**
- **Blind or Low Vision Access**
- **Deaf or Hard of Hearing Access**
- **Cognitive and Developmental Access**

1.0 Building Entrances		Notes / Remarks
1.1 Barrier-free paths to entrances are provided and enhanced with demarcation strips.		
1.2 No obstructions are located in the path of entry. E.g. Waste receptacles, overhanging branches, hydrants, light standards, etc.		
1.3 The primary entrance has a power-operated door. Automatic sliding doors are preferred. If a power door with a large paddle push plate is used, the plate should be located 1220 mm [4'-0"] back from the door.		
1.4 It is preferred that entry doors provide a clear opening of 915 mm [3'-0"] when the door is in a 90 degree open position.		
1.5 Doors with glazing should have a frame with a high colour-contrast and contrast strips.		
1.6 Lever handles on door hardware is required. On non-latching doors, a D-shaped pull handle is required. E.g. Buildings in parks where it is not feasible to install an automatic door opener.		

1.7 For existing buildings, non-accessible entrances should have signage indicating where the accessible entrance is located.		
1.8 At vestibule entries (doors in series), provide 1525 mm [5'-0"] between the end of the 90 degree open door and the next door in the vestibule.		
1.9 In case of emergency, provide a safe and accessible gathering place on the ground level outside of the building, where people with disabilities who have exited the building, can wait for further assistance.		
1.10 Provide a variety of seating options, including seating with armrests and backrests.		
1.11 The main entrance of the building is obvious and well-marked from arrival points. Provide clear, logical and understandable directional signage indicating the route to the main accessible entrance and parking. Signage should be viewable from a distance and colour contrasted with the background		
2.0 Parking Areas		
2.1 Provide accessible parking stalls as per the requirements of the City of Richmond Zoning Bylaw 8500, Section 7 Parking and Loading		
2.2 Designated accessible parking stalls are located closest to an accessible building entrance in parking areas.		
2.3 A curb ramp to the sidewalk is located adjacent the accessible parking stall in a clearly demarcated aisle.		
2.4 An accessible parking symbol is painted on the designated parking space, and a vertical sign located 1830 mm [6'-0"] above the ground level is situated at the centerline of the stall.		
2.5 Covered drop-off / pick-up zones are preferred, with appropriate overhead clearance for service vehicles.		
2.6 Provide a barrier-free non-obstructed path of travel from the parking area, on a sidewalk that is well lit and not prone to obstruction from the ends of parked vehicles.		

3.0 Signage		Notes / Remarks
3.1 All facilities and services for individuals with disabilities are identified with signage that uses universally recognized symbols.		
3.2 Signage is large print, with high colour contrast and raised tactile lettering and braille, as appropriate.		
3.3 Design general and wayfinding signage that is consistent in all locations, and easily identifiable.		
3.4 Signage font is Sans Serif, such as Arial, Calibri and Verdana.		
3.5 Incorporate virtual and/or audible accessible technologies where possible.		
3.6 Room signage should be located on the latch-side of the door, not on the door.		
4.0 Ramps, Stairs, Handrails, and Elevators		**Notes / Remarks**
4.1 Slip-resistant tactile strips at stair and ramp landings, and at the beginning and end of the ramp, should have a high colour contrast.		
4.2 Avoid single isolated steps.		
4.3 The preferred running slope of a ramp is between 1:20 (5%) and 1:15 (6.7%) and no greater than 1:12 (8.33%). The more gradual the slope, the more easily people can use it without assistance. Avoid tight turns or switch backs for ramps.		
4.4 Provide a high colour contrast on handrails. Terminate all handrails to the wall or to ground. A second lower height handrail on ramps is recommended, if climbability issues are not created.		
4.5 Provide high colour contrasted, tactile demarcation strips at the step edges and sides of escalator steps.		
4.6 Elevator doors should have a high colour contrast from the surrounding walls.		

4.7 Clearly mark elevator locations and wayfinding at the main entrance of the building. 4.8 The minimum size of the elevator cab is 1525 mm [5'-0"] deep to permit the turning radius function for a wheelchair user. 4.9 Elevator buttons and emergency controls are located at an accessible height 1065 mm [3' - 6"] above finish floor, have visual contrast with adjacent surfaces, and incorporate large print tactile numbers and braille so call buttons can be read by touch. 4.10 Provide an auditory and visual indicator in the elevator signaling that "help is on the way". 4.11 Provide an auditory and visual notification announcing the arrival of the elevator as well as the floor number.		
5.0 Washrooms		**Notes / Remarks**
5.1 For washrooms without entry doors, provide only one turn, to avoid feelings of disorientation. 5.2 Provide universally recognized signage outside washroom entrance. 5.3 In addition to providing all accessible elements as required by code, increase the size of the accessible cubicle to 1830 mm [6'-0"] wide x 2440 mm [8'-0"] deep. Ensure the cubicle latch is of the large sliding variety or operable with an open fist (no thumb-turn). 5.4 Provide a clear space of 1525 mm [5'-0"] back from the lip of sink line to walls, or the face of toilet stalls opposite. 5.5 Increase the dimensions of Universal Washrooms to incorporate a seating bench as well as diaper change table. Include an emergency call button in the room. 5.6 High colour contrasting in the washroom between entry door and stalls with adjacent surfaces (e.g. walls, flooring). Low contrast can be very disorienting, particularly for people who have low vision and/or disabilities that impact balance, when going from seated to standing positions.		

6.0 Other Interior Building Elements		Notes / Remarks
6.1 Provide a public emergency phone at an accessible location.		
6.2 Provide a video relay service that offers Video Remote Interpretation for users who are Deaf or hard of hearing.		
6.3 Provide at least one accessible height drinking fountain.		
6.4 Include an accessible height portion for all counters where the public is served, including but not limited to reception, food service, and retail.		
6.5 Provide space for people using wheelchairs in all public seating areas. Include companion seating adjacent wheelchair seating areas.		
6.6 All glass doors and glass wall screens should have a high colour contrasted strip at two heights (1220 mm and 1525 mm) above the finish floor on the glazing.		
6.7 All alarm systems should include a visual as well as an audible signal. [e.g. Flashing light and bell sound]		
6.8 Zone intercoms to be more audibly legible. Install a read-o-graph to print out announcements that are made by loudspeaker.		

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