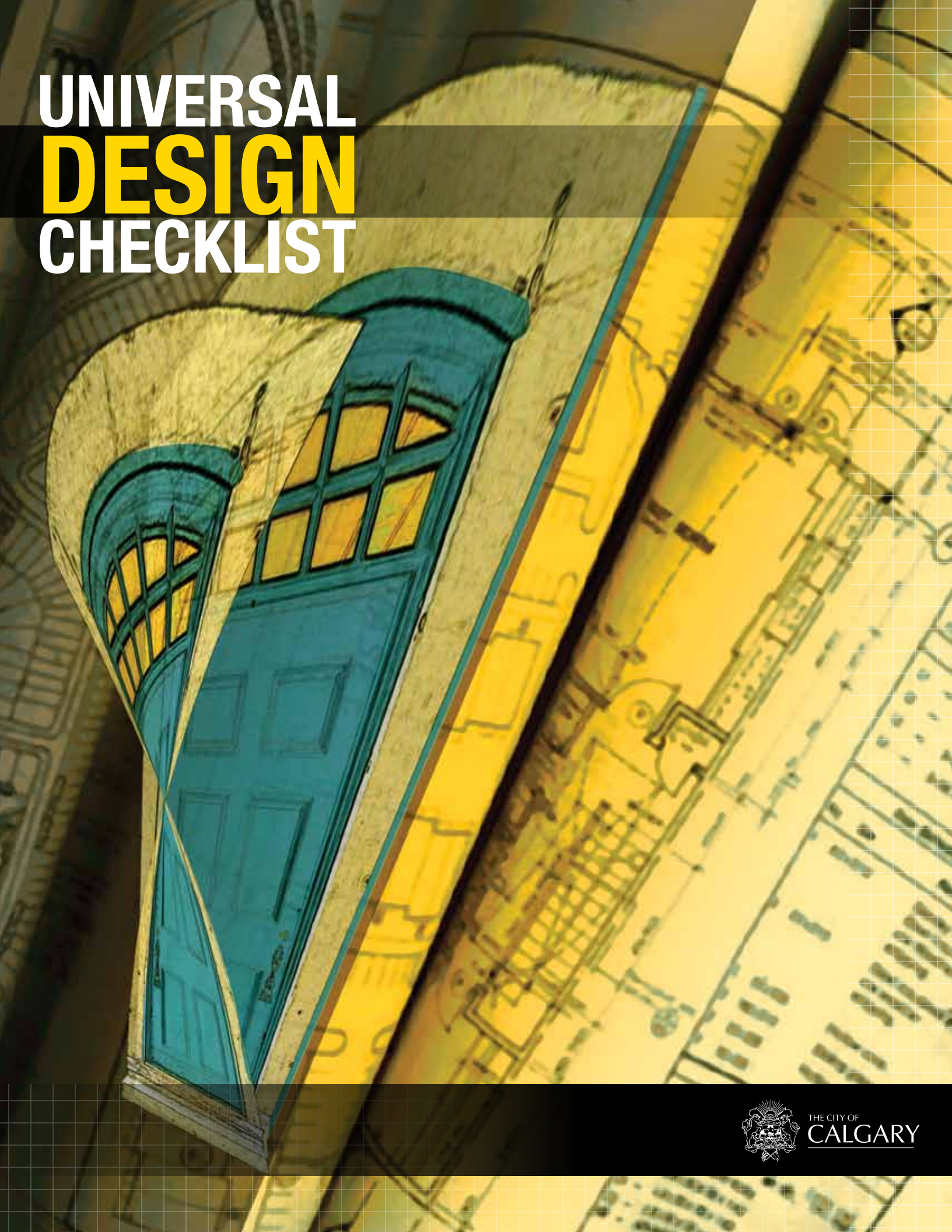
UNIVERSAL DESIGN CHECKLIST



THE CITY OF CALGARY

DEFINING UNIVERSAL DESIGN

Great spaces arise from great design. Universal design is today's best practice for building accessible environments because it embodies two simple, yet critically relevant tenets: it's sustainable and cost–effective. Making a building accessible from the beginning is easier and less costly than retrofitting an existing building and can benefit the greatest number of people. So, regardless of a user's ability, these environments can be accessible, functional and aesthetically pleasing as well as financially feasible.

Great design has the ability to adapt to all users and enable them to function successfully with - or within – it. That's why, every time they initiate a new project, universal design practitioners ask themselves, "Why make a special device or space for one group (i.e., persons with disabilities) alone? Why not make it better for everyone?"

This checklist for building modifications is based on the 2010 Access Design Standards published by The City of Calgary's Advisory Committee on Accessibility (ACA), with the assistance of Development & Building Approvals (DBA) and Community & Neighborhood Services (CNS). These Standards are a requirement for all City of Calgary owned and operated buildings, but are also recommended for all other buildings and construction developments throughout Calgary. A full set of these standards – along with diagrams and detailed explanations – can be found online at calgary.ca/dba. Look for the above Access Design Standards publication.

WHY UNIVERSAL DESIGN IS IMPORTANT

Each one of us is different. We come in different sizes, have different abilities, develop different preferences and continue to change throughout our lives. Now is a particularly opportune time to invest in projects that allow for change because Calgary is expected to become a community of increasingly older individuals – so much so that the number of seniors is likely to surpass the number of young people around 2030. And it's a given that the older a person becomes, the greater the chance of developing some form of disability. For more information on population aging, view the Universal Design Handbook at calgary.ca/spp.

PROFESSIONAL ADVANTAGES OF UNIVERSAL DESIGN

By modifying your construction contract documents to be in compliance with the standards found in this checklist, professionals such as yourself – whether you're an architect, designer, planner, or developer – have an opportunity to go beyond minimum code requirements and create inclusive environments that are beautiful, functional and likely to generate a great deal of interest from clients, both present and future.

A	EXTERIOR BARRIER FREE PATH OF TRAVEL		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
A.3.1. Surfaces and Textures	Ground surfaces	Well drained Even texture	
A.3.2. General Requirements	Obstructions	Placed out of path of travel	
	Path of travel	1,500 mm wide min.	
	Rest areas	2,400 mm x 2,400 mm wide min.	
A.3.3. Obstructions	Horizontally projecting obstructions	To extend within 200 mm above ground surface min.	
	Grates and guy wires	Placed outside of path of travel	
A.3.4. Curb Ramps (Designed in accordance with the most current edition of the City of Calgary Roads Standard Specifications, Road Construction)	Curb ramps	Aligned perpendicular to traffic flow Level surface behind curb ramp Contrasting texture	
	Medians	Curb ramps both sides Level area 1,500 mm x 1,500 mm min. between curb ramps	
A.3.5. Snow Removal	Fences, hedges, trees	Set back from path of travel to allow for piling of snow	

B	INTERIOR BARRIER FREE PATH OF TRAVEL		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
B.3.1. General	Corridors	1,500 mm wide min.	
	Acoustic design	Appropriate balance of sound reverberation and sound absorption	
B.3.2. Obstructions	Free-standing stairs, escalators, ramps	Barrier underneath where headroom is low	
	Overhead signage	2,100 mm above finished floor (AFF) min.	
	Horizontally projecting obstructions	To extend within 200 mm AFF min.	
B.3.3. Floor Surfaces	Flooring	Fastened securely Patterns do not distort perception Coefficient of friction 0.5 wet or dry Low glare	
	Carpet	Tight weave Low pile Firm underlay Trim installed at all exposed edges	
B.3.4. Wall Surfaces	Wall finishes	Patterns do not distort perception Low glare Smooth transitions between finishes Relatively smooth	
	Wall mounted fixtures	Recessed where possible	

C	VEHICULAR ACCESS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
C.3.1. Lay-bys	Lay-bys	Close to main entrance 3,700 mm wide x 7,600 mm long min.	
	Entrance canopy	3,000 mm overhead clearance min. Spans from lay-by to entrance	
C.3.2. Layout of parking areas	Accessible stalls	Close to main entrance Surfaced with asphalt, concrete, or firm gravel Paved surface and curb ramp between parking stalls and sidewalk	
	Wheel stops	Contrasting colour Set back from sidewalk to prevent vehicles from encroaching on sidewalk width	
	Landscaping	Controls drifting snow Provides wind protection Allows visibility	
C.3.3. On-site road parking	Accessible stalls	Served by curb ramp with 2,000 mm access aisle Located at both ends of block	
	Park Plus machines	900 mm to 1,100 mm above ground max. Unobstructed Well-lit Placed at either end of parking stalls	
C.3.4. Parking stalls	Individual accessible stalls	4,000 mm wide min.	
	Pairs of accessible stalls	3,700 mm wide min. 2,000 mm wide painted access aisle between	
	Curb ramps	Connect access aisles with adjacent sidewalk	
C.3.5. Signage	Signage at accessible stalls	Words ‘permit required’ included International symbol for access painted on ground Directional signage provided where necessary	
C.3.6. Parkades	Accessible stalls	Adjacent to elevators on each level	

D	ILLUMINATION AND ACOUSTICS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
D.3.1. Illumination	Level of illumination	Daylighting designed to reduce glare 200 lux min. emitted by illuminated signs Other signs illuminated to 100 lux min. Controls illuminated to 100 lux min. Consistent Low glare Increased at stairs, entrances, hazardous areas	
D.3.2. Acoustics	Acoustics	Mechanical and electrical systems designed to minimize background noise Public address speakers away from crucial areas of face to face communication	

E	LOCATION OF CONTROLS, DISPENSERS AND RECEPTACLES		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
E.3.1. General	Controls and dispensers	Operable by one hand and in one motion	
E.3.2. Lighting fixtures	Light switches	1,000 mm AFF max. Rocker switches preferred	
E.3.3. Electrical outlets	Receptacles	600 mm AFF min.	
E.3.4. Faucets	Faucets	Automatic or lever type	

F	BUILDING ENTRANCES, DOORS AND DOORWAYS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
F.3.1. Entrances	Entrances	Readily distinguishable Adverse weather conditions mitigated Well drained	
	Doormats	Non-slip underpadding Absorbent	
	Automatic sliding doors	At entrances and entrance vestibules	
F.3.2. Specifications for people with vision loss	Transition spaces between exterior and interior	Gentle transitions in lighting levels	
	Door push plates	Contrasting colour	
	Glass doors	Marked with warning strip, 1,350 mm AFF and 150 mm wide min.	
	Numbers on doors	Raised profile 1,200 mm to 1,800 mm AFF	
	Exit doors	Recessed where opening into path of travel	
F.3.3. Door openers and hardware	Hardware	Automatic door openers at entrances, lobbies, corridors, major public circulation areas Door release hardware mounted 800 mm to 1,100 mm AFF 50 mm min. clear between handle and door Audio and visual indicators for doors opened remotely 300 mm high kickplates for manual doors	
F.3.4. Doors and gates	Hinge location	In a series of doors installed in the same wall, at least one should be hinged on the opposite side of the others	
	Doorways	Without door: 850 mm wide	
	Doors	920 mm wide min.	
	Revolving doors and turnstiles	Swinging door with automatic door control placed immediately to one side	
	Closing period	Held open at 70 to 90 degrees for 8 seconds, with master control to open door if blocked	

G	RAMPS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
G.3.1. General requirements	Ramps	If located on private property, located outside of road right-of-way 1:25 to 1:20 max. slope 1:50 max. cross slope	
	Width	950 mm min. between handrails 1,800 mm min. where many people in wheelchairs will be present	
	Landings	1,500 mm long min.	
G.3.2. Exterior ramps	Exterior ramps	Protect from precipitation	

H	STAIRS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
H.3.1. General	Treads	No open risers	
H.3.2. Exterior stairs	Exterior stairs	Protect from climatic conditions	

J	HANDRAILS AND GUARDS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
J.3. Handrails	Handrails	Located on both sides of ramp or stair Tactile notches on inside of handrail for last 300 mm Contrasting colour	

K	ELEVATORS (for more information on these requirements, see Appendix E of CSA B44-04 “Safety Code for Elevators .“)		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
K.3.1. General requirements	Announcements in car	Indicating direction of travel	
	Controls	Mounted on both sides of car where possible	
K.3.2. Elevator lobbies	Size	1,500 mm x 1,500 mm min. space in front of elevators	
	Elevator doors	Close after eight seconds	
	Call buttons	Located on each wall between elevators Color contrasted No obstructions placed underneath	
	Tactile signage	Both sides of elevator door in the lobby 1,200 mm max. AFF	
K.3.3. Floor registration buttons	Floor registration buttons	Contrasting colour	
K.3.4. Exterior elevators	Exterior elevators	Oriented away from wind, rain and debris	
	Waiting areas	Sheltered Well lit Glass walls	

L	PUBLIC WASHROOMS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
L.3.1. Washroom entrances	Washroom entrances	Eliminate doors where possible 1,200 mm x 1,200 mm min. turning space required in L-shaped entrances	
L.3.2. Water closet stalls	Doors	Out-swinging Locking devices operable by any part of hand Slow-closing hinges	
L.3.3. Washroom fixtures	Toilet paper dispensers	750 mm to 850 mm AFF	
	Soap dispensers	900 mm max. AFF Within 500 mm forward reach	
	Paper towel dispensers and hand dryers	1,100 mm to 1,200 mm AFF Operable by one hand, with one motion	
	Toilet seat cover dispensers	900 mm to 1,100 mm AFF	
	Waste receptacles	900 mm to 1,000 mm AFF	
	Coat hooks	Mounted on solid wall	
L.3.4. Lavatory knee space	P-traps	Offset horizontally	
L.3.5. Universal washrooms	Location	Unisex washroom located near main entrance on main floor	
	Emergency call systems	Installed in buildings with full-time security Call buttons installed on same wall as side grab bar Pressable call strips on same walls as grab bars	

M	RECREATIONAL AND CULTURAL CENTRES		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
M.3.1. Swimming pools	Ramp and stairs	Located at shallow end	
	Power hoist		
M.3.2. Ice rinks and exercise areas	Ice rinks	Designed to accommodate sledge hockey Plexiglas in front of benches and penalty boxes Two 910 mm wide doors leading from player benches to ice	
	Exercise areas	Wheelchair clearance at exercise equipment Raised exercise platforms	
M.3.3. Exhibits	Exhibits	Explained using audio and visual messages Tactile signage	
	Display cases	1,000 mm to 1,200 mm AFF 1,200 mm to 1,500 mm AFF if wall mounted Tilted labels	
M.3.4. Drinking fountains	Drinking fountains	Front panel sloped 50 to 90 mm inwards 780 mm to 915 mm waterspout height Push button or lever controls	
M.3.5. Shower fixtures	Shower fixtures	Diverter mechanism	
	Storage shelf	850 mm max. AFF	
M.3.6. Common showers	Common showers	Flexible hand-held sprayer Shower wheelchair to be provided 1:20 floor slope	
M.3.7. Individual change/shower room	Size	1,500 mm diameter min. turning circle	
	Elevated change platform	1,500 mm wide x 1,800 mm long x 480 mm high min.	
	Accessories	Grab bars Coat hooks Shelving 1,000 mm min. AFF	

N	PUBLIC FACILITIES		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
N.3.1. Counters	Counters	750 mm x 1,200 mm clear floor space in front Cane-detectable Non-glare, matte finishes 760 mm wide x 685 mm high x 485 mm deep min. knee space Colour contrasted	
	Speaker system for two-way communication	Required when service personnel are behind glass partition	
N.3.2. Cafeterias	Liquid dispensers	Within wheelchair reach	
	Location of food	450 mm max. from edge of counter	
N.3.3. Assembly seating in public facilities	Assembly seating for people with mobility loss	Sightlines equal to those provided to the majority of the audience Number of spaces increased by two over and above ABC 2006 Table 3.8.2.1.	
N.3.4. Permanent barriers	Crowd control posts	At least one removable Removable post has signage with international symbol for access	
	Traffic control bollards	600 mm min. height 1,200 mm min. spacing Contrasting colour	

P	PARKS, PATHWAYS AND PLAYGROUNDS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
P.3.1. General considerations	Layout	Continuous, accessible paths of travel Simple, readily comprehensible Protected rest areas at 30 m intervals along pathways	
	Fences and earth berms	1,000 mm max. height	
	Signage	Raised characters 1,000 mm to 1,200 mm high Tilted Well-lit	
	Planting	Minimize wind	
P.3.2. Pathways	Pathways	Hard packed surface Follow site contours Clearly defined edges Positive drainage Well-lit	
P.3.3. Posts and maze gates	Posts	1,200 mm min. spacing	
	Maze gates	1,200 mm min. offset 1,500 mm min. spacing	
P.3.4. Benches	Benches	Arm and backrest 450 mm to 500 mm max. seat height Arm rest 200 mm max. height above seat pan 850 mm x 1,200 mm min. firm ground surface adjacent to bench Heel space Seats shed water away from walking surface Contrasting colour	
P.3.5. Picnic tables	Picnic tables	Adjacent to an accessible route 760 mm wide x 685 mm high x 485 mm deep min. knee space Table and seat shed water	
P.3.6. Trash containers	Trash containers	Operable by one hand 900 mm max. height of opening	
P.3.7. Children's play spaces	Children's play spaces	Designed in accordance with CAN/CSA-Z614-07, Annex H	

Q	PATIOS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
Q.3. Proposed standards	Turnaround locations	1,500 mm min. diameter Strategically placed	
	Tables	730 mm to 860 mm high 760 mm wide x 685 mm high x 485 mm deep min. knee space	

R	EMERGENCY EGRESS, ALARMS AND WARNING SURFACES		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
R.3.1. Emergency evacuation	Exits and pull stations	Easily located	
	Emergency procedures	Clearly defined	
R.3.2. Visual fire alarm devices	Visual signal devices	Installed in all buildings in conformance with ABC 2006 3.2.4.19.	
R.3.3. Detectable warning surfaces	Tactile warning strips	Installed at the top of all stairs, ramps, escalators and platforms Conform to ABC 2006 3.3.1.7.(4) and CSA B651-04 4.1.2.	
R.3.4. Areas of refuge	Location	Available on every floor that requires the use of exit stairs for egress Served by firefighter's elevator or exit stair Does not block egress path	
	Size	0.5 sq.m. min. area per ambulatory occupant 1.9 sq.m. min. area per non-ambulatory occupant If located in exit stair, landing size increased accordingly	
	Fire separation	Surrounds area of refuge and conforms to ABC 2006 3.4.4.1.(1)	
	2-way voice communication system	Installed inside area of refuge Connects area of refuge to emergency response point	
	Signage	Area of refuge identified by directional signage International symbol for access identifies area of refuge Area of refuge identified on publicly displayed evacuation plans	

S	COMMUNICATIONS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
S.3.1. Telephones	Accessible pay telephones	At least one telephone in a group wheelchair accessible and equipped with TDD/TTY Identified with international symbol of access Space provided for TDD In group of more than 10 telephones, 10% wheelchair accessible and equipped with TDD/TTY Cane detectable 1,000 mm min. cord length 760 mm wide x 685 mm high x 485 mm deep min. knee space 800 mm x 800 mm min space in front 200 lux illumination min.	
	Exterior accessible pay telephones	Protected from winds, snow, rain, and ambient noise	
S.3.2. Transactions	Automatic teller machines	At least one dedicated for wheelchair access Controls 1,100 mm AFF max. 760 mm wide x 685 mm high x 485 mm deep min. knee space	
	Point of sale machines	Transmit text and audio messages	
	Induction loop assisted listening devices	Installed in box offices, service counters, theatres, halls, churches	
S.3.3. FM radio frequency systems	FM radio frequency assisted listening devices	Considered for installation in airports and transport terminals Clearly marked listening zone	
S.3.4. Infrared systems	Infrared assisted listening devices	Transmission area to be protected from interference and the sun	

S	COMMUNICATIONS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
S.3.5. Signage	Signage	Contrasts, colors conform to CNIB standards Symbols preferred over words Helvetica Medium, Helvetica Light, Univers, Goudy Extra Bold fonts used International symbol for access displayed along routes to accessible facilities 25 mm capital letter height for general information at 5 m viewing distance 37 mm capital letter height for directional signs at 5 m viewing distance Non-distracting background	
S.3.6. Lettering and numbers	Tactile signage lettering	Width-to-height ratio 3:5 to 1:1 Stroke width-to-height ratio 1:5 to 1:10	
S.3.7. Location of signs	Directional signs	Installed at focal points on main traffic routes	
S.3.8. Building directional maps	Building directional maps	Installed at entrances 1,200 mm AFF max. Tilted Raised characters, lines, and symbols	
S.3.9. Intelligent navigation system	Intelligent navigation system	Encouraged where feasible	

T	PLUS-15 SYSTEM		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
T.2. Existing regulations (see also Land Use Bylaw 1P2007, Plus-15 Policy, Downtown Handbook of Public Improvements, Alberta Building Code applications to Plus-15 systems, Standard Development Agreement, Report on City of Calgary Plus-15 Access Stairs and the City of Calgary Regulations Bulletins published by the Building Regulations division)	Width	4,500 mm min.	
	Elevators	Providing access to grade and Plus-15 levels	
	Stairs serving Plus-15	2,000 mm wide min. Clearly visible Adjacent to street and Plus-15 Accessible from street and Plus-15	
	Automatic sliding doors	Both ends of Plus-15	

U	LIGHT RAIL TRANSIT (LRT)		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
U.3.1. Ramps	Ramps	Exterior conditions considered	
U.3.5. Announcements	Public address system	Transmitting visual, audible announcements of delay of service or emergencies	
U.3.6. Platforms	Platforms	Colour contrasted, low glare furniture Warning strips	
U.3.7. Benches	Benches	450 mm to 500 mm height	
U.3.8. Transit Shelters	Transit shelters	1,500 mm x 1,500 mm clear area at entrance on at least one side Set back from curb to allow for pedestrian clearance Barrier free path of travel from sidewalk and drop offs to entrance	

V	PEDESTRIAN TRAFFIC SIGNALS		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
V.3.1. Pedestrian Push Buttons	Pedestrian push buttons	Mounted on first pole away from intersection Mounted parallel to sidewalk 1,000 mm to 1,100 mm above ground max. Activated with any part of arm or hand	
V.3.2. Audible signals	Audible signals	Sound duration equal to crossing duration Clearly audible Located in high-traffic areas One audible signal device each side of crossing Two distinct tones each direction of crossing	

W	CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
W.3.1. General Requirements (for more details see www.calgarypolice.ca/community-cpted.html)	Natural access control		
	Natural surveillance		
	Territorial reinforcement		

X	UNIVERSAL DWELLING UNITS (for more information on these requirements, see the Alberta Building Code 2006, 3.8.1.1.(3) and STANDATA 06-BCI-010.)		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
X.3.1. General Considerations	Turning spaces	Placed at strategic locations 1,500 mm diameter min.	
	Doors	850 mm wide clear opening min. Lever handles	
	Cabinet hardware	D-shaped handles/pulls	
	Plumbing	Insulated and protected water supply lines and drains	
	Electrical and lighting	Electrical and telephone wiring installed to accommodate call systems	
	Window hardware	Easy to operate	
	Blocking	For grab bars, where required	
	Baseboards and door frames	Color contrasted	
X.3.2. Entrances	Closets	Located such that access does not impede access to rest of dwelling unit Sliding doors D-shaped handles Closet rods 1,200 mm AFF max.	
X.3.3. Living Spaces	Size	Large enough for wide seat or sofa Large enough for shelving 150 mm – 450 mm deep	
X.3.4. Kitchen	Cooktop, sink, counter	Capable of being adjusted to same level	
	Lighting	Under upper cabinets on separate switch	
	Cabinets	Drawers with full extension slides 150 mm to 450 mm deep	

X	UNIVERSAL DWELLING UNITS (for more information on these requirements, see the Alberta Building Code 2006, 3.8.1.1.(3) and STANDATA 06-BCI-010.)		
CATEGORY	DESIGN ELEMENT	REQUIREMENT	√
X.3.5. Washroom	Plumbing	Floor drain for curbless shower	
	Toilet	Elongated	
	Washroom accessories	Toilet paper dispenser contrasting color Matte finish Hooks installed to prevent injury Towel bars 1,200 mm AFF max. Towel bars within 450 mm reach	
X.3.6. Laundry Room	Work surfaces	600 mm deep max. x 730 mm to 860 mm high	
	Common laundry rooms	Washer, dryer with front-mounted controls Washer and dryer with side hinged doors	
	In-suite laundry rooms	Space to store laundry supplies Drawers 450 mm deep	
X.3.7. Bedroom	Telephone jack	450 mm to 1,200 mm AFF	
	Closet	Clear opening 810 mm 1,500 mm turning circle in front No mirrors on closet doors	
	Blocking	In ceiling for ceiling track lift	
	Clearance around bed	920 mm at sides and front	
X.3.8. Visual Emergency and Non-Emergency Alarms	Visual signal devices	Supplementing door bells	

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