



Winter Design Guidelines

Transforming Edmonton into a Great Winter City

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“ We should not
have to struggle
against climate;
we must form
alliances with it. ”



Foreword

By virtue of their locations, northern cities possess specific regional characteristics. They ought to impress themselves onto our senses as belonging to and springing from the north, not just from anywhere. Importing urban forms from southern climatic zones is inadvisable since their architectural grammar is unsuitable in conditions that include frost, ice, snow, wind, darkness and prolonged cold temperatures. To ignore winter's presence is both unreasonable and irresponsible. Winter hardships must be explicitly acknowledged in architecture, planning, development policy, and urban design so that built environments can function more effectively—reducing the negative impact of winter while enhancing its positive attributes.

Whether a city is viewed as safe, comfortable, desirable and aesthetically pleasing can impact significantly on its ability to attract people, to safeguard economic vitality and to instill civic pride. In winter cities, it is essential to build in a way which provides thermal comfort especially in outdoor public and semi-public space. Careful microclimactic planning is critical to counteract people's tendency to hibernate. We should not have to struggle against climate. Instead, we must form alliances with it.

Edmonton possesses approximately 150 outdoor-comfort days (the number of days between 9°C in spring and 11°C in autumn), from early May to mid-October. But urban spaces designed to catch the sun, block the wind and reduce shadows from tall buildings can extend this time by up to 30%, meaning people can be outside in comfort up to four weeks earlier in spring and three to four weeks later in fall.

Edmonton's newly formulated Winter Design Guidelines are a strategic tool for providing developers, architects, engineers and planners with a framework for their projects, identifying the City's intentions in terms of what kinds of development and what levels of quality it deems acceptable.

These Guidelines are a welcome and needed addition to existing knowledge. They will find eager users as northern places seek to turn winter to advantage, while encouraging attractive living and working environments, enhancing community pride and providing incentives to attract new business investment. They will spur design excellence in all seasons and clarify the city's preferences regarding future development. It is the intention to integrate them into existing land-use policies, zoning by-laws, official plans, approval mechanisms and other regulations requiring coordination between public and private sectors. With more than 120 superb illustrations and photos, this landmark document offers practical advice as well as inspiration. Based on the most up-to-date information and currently accepted planning practices, the Guidelines will become an indispensable reference for other communities.

Edmonton will be in the forefront of leading international practices once the Guidelines are applied. They shall improve the ways in which decisions are taken, aiming at the highest possible urban quality while creating thermal comfort and enjoyment for the city's residents. I believe that these Guidelines for transforming the city into a model for other cold regions provide the most comprehensive analyses and insightful prescriptions presently available. They will undeniably change the way we view and plan our cities.

Norman Pressman

**Founding President of the Winter Cities Association
Professor Emeritus, Urban Design & Planning
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A night cityscape with fireworks and illuminated pyramids. The scene is dominated by a dark blue sky filled with vibrant fireworks in shades of pink, purple, and white. In the foreground, several large, illuminated pyramids are visible, each with a different color scheme (green, red, blue). The city skyline in the background is lit up with various colors, including yellow, white, and blue. The overall atmosphere is festive and celebratory.

1

Introduction

WINTER CITY

A concept for communities in northern latitudes that encourages them to plan their transportation systems, buildings, and recreation projects around the idea of using their infrastructure during all four seasons, rather than just two seasons (summer and autumn).

- *The Way We Grow: Edmonton's Municipal Development Plan*

FACTS ABOUT EDMONTON WINTERS

SUNSHINE

Our winters are very sunny, with 121 of the 154 days between the beginning of November and the end of March being sun-filled. Edmonton and her sister prairie cities lead the list of Canadian cities for the most sunshine.

COLOUR & LIGHT

Snow accumulation during extended darkness reflects light and brightens the outdoors. Early sunsets present an opportunity to showcase northern creativity and the natural wonders of our Northern Lights.

WINTER SPORTS

We have outdoor recreational opportunities and sporting events, including over 150km of cross-country trails, seven city-maintained toboggan hills, and over 100 outdoor skating rinks!

EVENTS & FESTIVALS

Winter tourism, events, and festivals are all great ways to celebrate winter. The WinterCity Winter Excitement Guide and website found at www.wintercityedmonton.ca list events and festivals from October through March.



WINTER LENS

A winter lens is simply a way of seeing developments and designs from a winter perspective. If a streetscape, open space or amenity is designed with winter in mind, it will be comfortable in all seasons. Winter should be considered at the beginning of the design process, not treated as an after-thought at the end.

1.1 Designing for Winter

Winter is a core part of Edmonton's identity and needs to be fully considered as our city grows. Northern urban design fully considers the winter context, making the most of opportunities to stay outdoors by capturing the sun's warmth, providing protection from the wind, and making the city more accessible, safe and enjoyable year-round. Thanks to the extensive community consultation undertaken for the development of the WinterCity Strategy, the conversations around how Edmonton embraces winter are changing. The development of winter design guidelines is foundational to making Edmonton a great winter city.

The winter design guidelines provide flexible guidance and inspiration for future development decisions throughout Edmonton. The guidelines are intended to facilitate leading-practice urban design solutions with a winter lens to transform Edmonton into a great year-round city. They establish key outcomes, rationale and design guidelines for the physical components of the private and public realms that support a positive quality of life for Edmontonians.

Attention to cold climate design can yield greater levels of comfort and accessibility throughout the year and effectively extend the outdoor season by six weeks each year (Pressman, 2005). With a winter lens, we can start designing our communities with celebration rather than hibernation in mind.

WINTER IN EDMONTON, NORTH AMERICA'S NORTHERNMOST LARGE CITY

Our winter, or cold season, typically lasts from November to March, though it varies greatly in length and severity. Most Edmontonians consider the months of October and April to be part of the shoulder seasons. Winters in Edmonton are less severe than in many other Canadian cities, with low humidity and less snow. Although the winter temperature can dip to -40°C , the cold spells last only a few days. But we have lots of sunshine! We see an average of 325 sun-filled days a year, with 121 of them falling between November and March. Year-round, Edmonton is actually the second sunniest city in Canada!

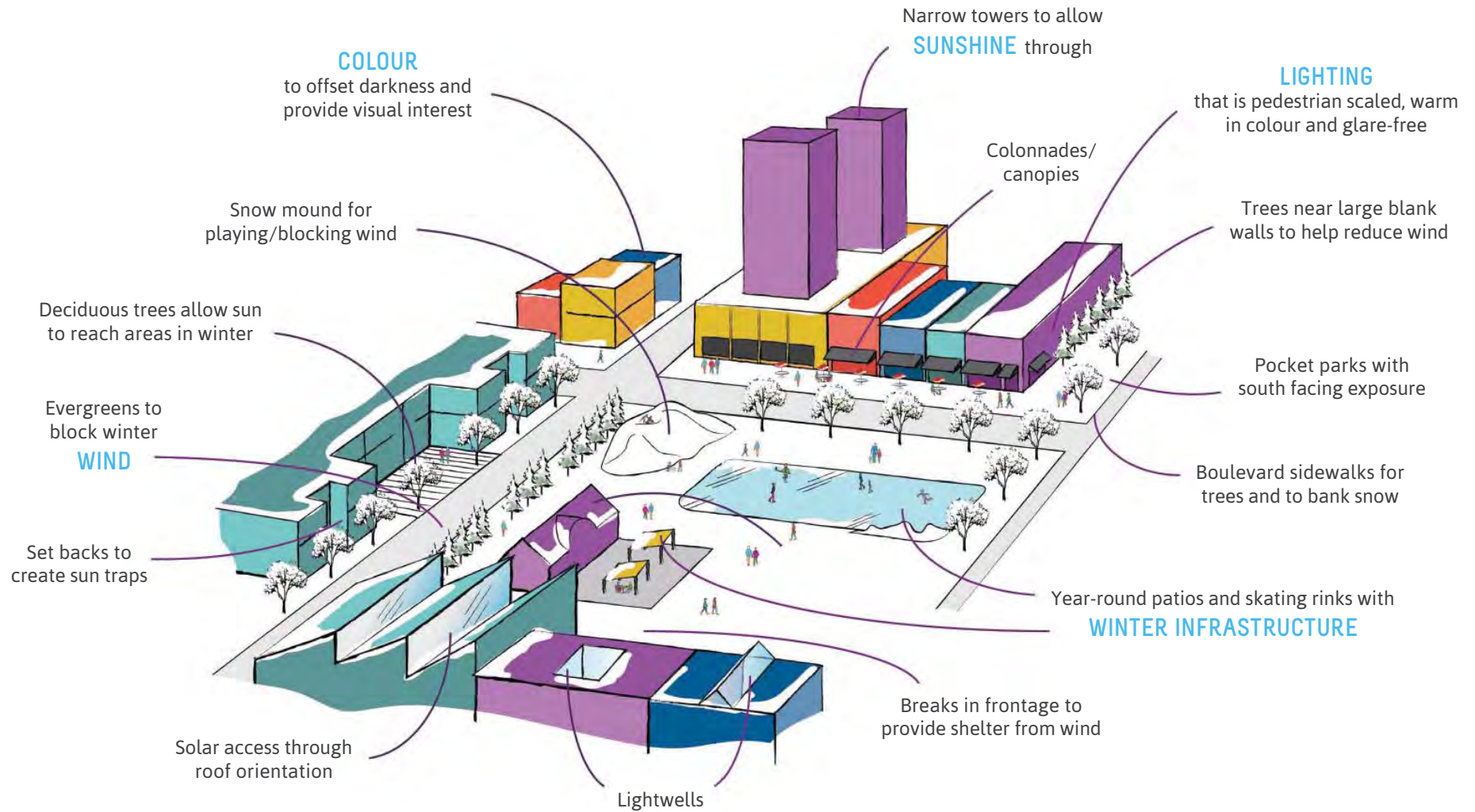
Winter Design in a Nutshell

The Winter Design Guidelines are comprehensive. For the sake of simplicity, however, the five main principles of winter city design are:

1. Incorporate design strategies to block wind, particularly prevailing winds and downdrafts.
2. Maximize exposure to sunshine through orientation and design.
3. Use colour to enliven the winterscape.
4. Create visual interest with light, while being mindful of intensity, spread, contrast and colour.
5. Design and provide infrastructure that supports desired winter life and improves comfort and access in cold weather.

The five main principles are applied in all contexts throughout these guidelines. Multiple examples are provided for how to apply the principles in all scales, from building to site to neighbourhood. The following image demonstrates how all five principles can be used in one space.

PRINCIPLES OF WINTER DESIGN



1.2 Investing in Our City

The business case for designing for winter lies in improved economic and social outcomes for our city, year-round. These results will be realized through leveraging the winter assets we already have, and by applying a winter lens to future investments in Edmonton.

Collectively, we are spending billions of dollars in our city on new construction. In order to get the highest return on this investment, we need to ensure that the winter season is fully taken into consideration. Our developing urban fabric needs to support a vibrant outdoor winter life. Winter is our dominant season, and there are many opportunities to design better for it.

A livable and sustainable city requires the integration of compact development, transportation infrastructure, and high-quality public and private realm amenities. These urban design elements are particularly important in a winter city, where people shy away from extended exposure to the outdoors on extremely cold days. While access and mobility for all transportation modes are necessary to allow people and goods to move efficiently through the city, the movement of goods and single-occupant vehicles are sufficiently accommodated in Edmonton.

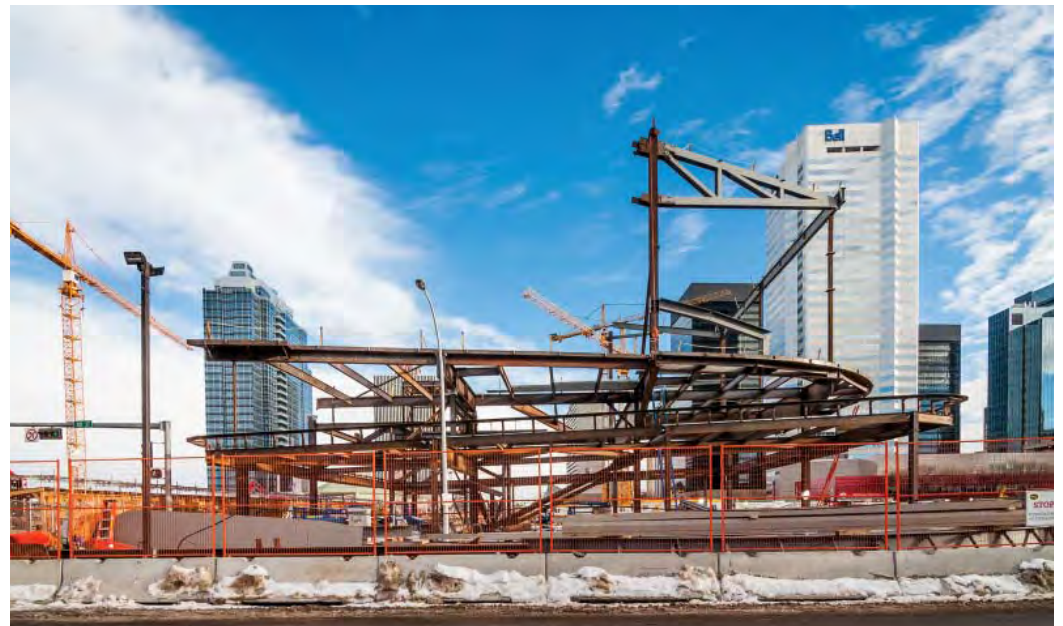
With a focus on improving outdoor experiences in winter, these guidelines promote, support and champion pedestrian and transit-oriented development, as well as active winter living. Investing in the quality of Edmonton's public realm, including the transportation network, and our green and white spaces, is essential for encouraging private sector investment, as well as improving our image as a place to live and work.

WINTER IS AN ASSET OFFERING GREAT SOCIAL AND ECONOMIC VALUE TO OUR CITY

Innovative northern urban design transforms the challenges of the season into opportunities that work with our climate.

“We need to focus on urban design that takes advantage of all that winter offers, embrace the opportunity of its activities and create a city that flourishes through the unique beauty of our northern landscape.”

**- Councillor Ben Henderson, Ward 8, City of Edmonton,
and WinterCity Advisory Council Co-Chair**



▲ Ice District under construction in downtown Edmonton

1.3 For the Love of Winter: Edmonton's WinterCity Strategy

In October 2012, the City of Edmonton became a leader on the winter city world stage as Edmonton City Council endorsed *For the Love of Winter: Strategy for Transforming Edmonton into a World-Leading Winter City*.

In doing so, Council formally supported a vision both shared by many Edmontonians and admired by those living in northern cities around the world. That vision is a city that celebrates and makes the best of winter, no longer viewing it as a time to shut things down and stay inside.

Winter is an asset offering great social and economic value to our city. Streets and public gathering places designed to capture sunlight and block the wind, walkways that are easy to navigate, and playful lighting illuminating our long winter nights, all make it easier and more enjoyable to stay outside. With more people outside on the streets, the city feels more alive and attractive; a place both locals and tourists want to be part of and experience.

The WinterCity Strategy implementation plan was approved in September 2013.

The WinterCity Strategy vision document and implementation plan can be found online at www.edmonton.ca/wintercitystrategy.



▲ For the Love of Winter Strategy document cover



INTRODUCTION

For the Love of Winter: Edmonton's WinterCity Strategy

STRATEGY GOALS

The WinterCity Strategy was developed around the following ten goals, which fall under four pillars:

Winter Life

Goal L1:

Make It Easier to 'Go Play Outside':
Provide More Opportunities for
Outdoor Activity

Goal L2:

Improve Winter Transportation for
Pedestrians, Cyclists and Public
Transit Users

Winter Design

Goal D1:

Incorporate Urban Design Elements
for Winter Fun, Activity, Beauty
and Interest.

Goal D2:

Design Our Communities for Winter
Safety and Comfort

Winter Economy

Goal E1:

Increase the Capacity and
Sustainability of Edmonton's
Winter Festivals

Goal E2:

Develop a Four-Seasons Patio Culture

Goal E3:

Become a World Leader in Innovative
Winter-Related Business/Industry

Our Winter Story

Goal S1:

Celebrate the Season and Embrace
Daily Living in a Cold Climate

Goal S2:

Promote Edmonton's Great Northern
Story Locally, Nationally and
Internationally

Goal S3:

Kickstart and Lead Implementation of
Edmonton's Winter City Strategy: Apply
a 'Winter Lens to Our City

In order to reach the goals, 64 actions were identified in the implementation plan. The development of the winter design guidelines is considered a key foundational action in the Winter Design pillar.

1.4 How We Came Together to Create These Guidelines

The Winter Design Working Group, a subcommittee of the WinterCity Advisory Council, is dedicated to completing the actions of the Winter Design Pillar. The group is made up of a diverse set of volunteers from the public and private sectors, educational institutions and not-for-profit organizations, including the Edmonton Federation of Community Leagues. The individuals were chosen because of their expertise and interest in urban planning, urban design, architecture, transportation, engineering, landscape architecture and land development.

A core project team was formed to support the Winter Design Working Group. The team co-ordinated, managed and completed project tasks, as directed by the working group. The core team included City staff from the Sustainable Development Department and the WinterCity Office.

Guiding Principles

The Winter Design Working Group developed the following guiding principles, which align with the overall WinterCity Strategy Guiding Principles. These principles were referred to throughout the guideline development process.

Authentic

- Design with our particular northern/winter context in mind, and contribute to our own uniquely-Edmonton story.
- Use neighbourhood, street, public space and building design that is optimal for our climate.
- Enhance daily life for Edmontonians.

Attitude-changing

- Emphasize the potential for winter design to improve our quality of life.
- Provide innovative, interesting and more functional approaches that support desired winter activity/life.

Sustainable

- Design with priority for pedestrians and cyclists of all ages and abilities.
- Ensure design considers on-going maintenance and operations.
- Be environmentally responsible.

Design Dens

The core project team organized three main workshops, called Design Dens, to collaborate with broader stakeholder groups. The Design Dens served as an opportunity to share information about winter design with community builders, provide updates on the development of the guidelines, and gather strategies, ideas and actions from participants.



▲ Participants at one of the Design Dens



1.5 Framework and How to Use the Guidelines

The design guidelines themselves have been organized into two areas. The first area focuses on streets, which are the main public spaces of our cities, and the second on parks and open spaces. Each area has a goal and two desired outcomes, as described below. (Note: the numbers correspond to the document sections.)

The Streetscape

Goal: Design our communities for winter comfort, safety, access and aesthetic appeal.

Outcomes:

2.1 Built Form and Public Realm Interface: Buildings are designed to create a better microclimate and a more vibrant and inviting public realm.

2.2 Streetscape Elements and Linkages: Streets are vibrant and attractive people-places in all seasons.

Open Spaces

Goal: Design elements for winter fun, activity, beauty and interest.

Outcomes:

2.3 Site Design: Parks and open spaces are used and enjoyed year-round.

2.4 Winter Infrastructure: Public spaces support outdoor winter programming, recreation and everyday winter life.

These guidelines establish a common language and a robust winter lens for urban designers and city-builders in Edmonton. All users of the guidelines should identify opportunities to integrate winter design into land use policies, regulations, bylaws, and development.

The goals and outcomes in the guidelines are of paramount importance. All other points and ideas are intended to serve as a resource for city-builders, providing recommendations to consider, and possibly balance, with other priorities.

Key Audience

The guidelines are intended to be used by all city-builders: landowners, developers, planners, architects, designers, engineers, community leagues, and their respective consultants; and, City Council and administration when setting policy, reviewing development applications, etc. Community groups are also encouraged to use the guidelines when developing their facilities and parks, as are residents when designing their homes and gardens.

Where the Guidelines Apply

While many of the images, especially in The Streetscape section, seem to focus on downtown and central areas, the guidelines do apply to all parts of our city, including the developing suburbs. All relevant winter design outcomes are to be addressed in the planning and design of any new land development proposed throughout Edmonton. All development proposals must demonstrate how the winter design goals and outcomes will be achieved, and how the associated rationale is being addressed. This includes, but is not limited to: Area Structure Plans, Neighbourhood Structure Plans, Area Redevelopment Plans, Corridor Plans, LRT Station Area Plans, Special Area Zones, direct control zoning and development permits.



HOW TO APPLY THE GUIDELINES

1. Review the goals, outcomes and relevant guidelines to inform the planning and design of a neighbourhood, site and/or building.
2. Clearly demonstrate how the goals and outcomes will be achieved with your submission.

1.6 Aligning with Other Strategic Plans and Policies

The Way Ahead and The Ways Plans

The spirit and content of these guidelines are aligned with the four guiding principles of the *City of Edmonton's Strategic Plan, The Way Ahead*: integration, sustainability, livability and innovation. Adherence to the guidelines will have a direct impact on people's sense of well-being.

The Winter Design Guidelines support the Strategic Plan's companion *The Ways* documents. The following are a few examples of goals and objectives that are supported by the Winter Design Guidelines.

- The goals of creating healthy and livable communities, and the specific policy of encouraging urban design which reflects that Edmonton is a winter city, allowing residents to enjoy the city in all seasons. – *The Way We Grow*
- The strategic objectives to create a walkable and cycle-friendly city. – *The Way We Move*
- The strategic objective to have barrier free infrastructure. - *The Way We Live*
- The goal of Edmonton being a vibrant livable city, one that boasts a high quality-of-place experience. – *The Way We Prosper*
- The objectives of creating a built environment that encourages active modes of transportation, and enhancing the recreational benefits of parks and open spaces. – *The Way We Green*

Other Alignments

The Winter Design Guidelines have connections to many other City documents; however, strong alignments occur with the Complete Streets Policy and the Light Efficient Community Policy. See Appendix for a list of statutory and non-statutory documents that should be reviewed in conjunction with the Winter Design Guidelines.

1.7 Integrating Land Use and Transportation

Streets are the most visible and plentiful part of our shared public realm, and are critically important for creating a comfortable, safe and beautiful winter city. Historically, transportation systems have been designed based on roadway classification, with the primary focus of connecting automobiles to destinations. However, many streets also function as social spaces and should be considered places in their own right.

CULTURE SHIFTS OVER TIME

Winter cycling is not our culture? Remember that culture shifts over time. If we are going to mainstream cycling in all seasons, then we cannot go halfway with cycling infrastructure. Painted lanes are first-generation infrastructure. A more mature approach is to build protected bike lanes that can be properly maintained in winter.

WINTER DESIGN AND HEALTH

Urban design is an essential tool for combating the most pressing public health problem of our time – obesity and its related chronic diseases. Creating inviting and comfortable spaces in the wintertime not only encourages people to be more active in the winter, but it also invites more social interaction. Both physical activity and social interactions can have a positive impact on mental health, and can help combat social isolation often described as the ‘winter blues’.



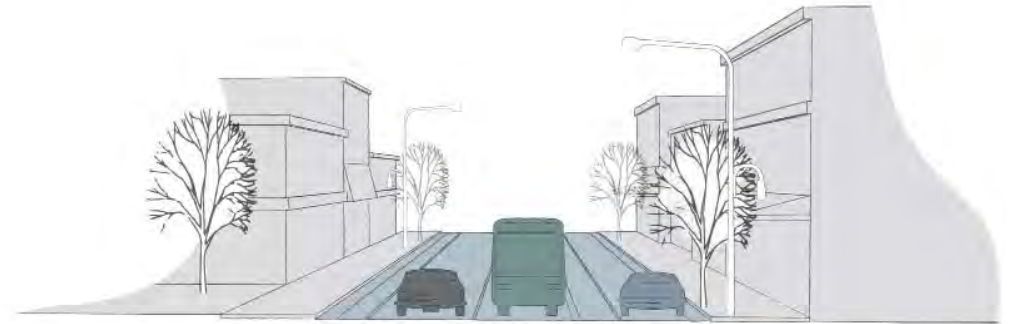
▲ Winter cycling

Complete Streets

The City of Edmonton has adopted a Complete Streets approach to planning and designing Edmonton’s transportation system. This includes integrating transportation and land use, and encouraging active transportation in all seasons. The Complete Streets Guidelines provide details on various streetscape design elements and should be used as a companion to the Winter Design Guidelines. More information can be found at www.edmonton.ca/completestreets.

Complete Streets planning considers roadways to be both links and places. Roadways are recognized as links because they facilitate the movement of people, but roadways are also places because streets themselves can become destinations. Designing for all modes, with both link and place considerations, is critical to helping the city transition to a transportation network that is safer and more sustainable. It will also provide public spaces that are inviting for people and supportive of local businesses.

The Winter Design Guidelines support the Complete Streets approach, designing streets with place considerations, and planning for better infrastructure. The physical elements of the streetscape – lanes, sidewalks, curbs, furniture, landscaping and utilities – all perform important functions and can help to create an outdoor living room, even during the cold months.



▲ Contrast between a street designed as a roadway for vehicles and a street designed for all modes of transportation, as well as for people.



MODAL PRIORITY NETWORKS

With planning and design, it is important to define the modal priorities for a particular street. The modal priority networks are defined in the Complete Streets Guidelines. The following is a list of examples of modal priorities. The Winter Design Guidelines frequently refer to pedestrian, transit and bicycle priority areas, and provide specific guidance for them in particular.

Pedestrian Priority Network

Existing and future Pedestrian Commercial Shopping Street Overlay areas

Roadways identified for pedestrian priority in the Downtown Plan

Transit Avenues

Transit Oriented Development Areas

Transit Priority Network

(LRT routes and high-frequency Bus Corridors)

Bicycle Priority Network

(Refer to the City of Edmonton Bicycle Transportation Plan)

Main Streets Map

N.B. Modal Priority Networks continue to be updated as the city grows and evolves. Stakeholders should refer to the Complete Streets Guidelines for additional information.

1.8 Implementation, Monitoring and Future Amendments

Implementing the Winter Design Guidelines will require the collaboration and investment of many organizations and agencies. This includes the full spectrum of the planning and development processes, from high level strategic plans right down to a development permit on a single site.

As a winter city, it is important that we design for our dominant and defining season at all levels of city building. Monitoring and evaluating urban design, particularly across an entire city, is no simple task. The Next Steps section of the document specifies a range of implementation opportunities, including new development and construction standards that will enforce winter design, and continuous learning and recognition programs to communicate and share leading-practice design and innovation in Edmonton. Some implementation opportunities are achievable in the short term, while others may take years and be ongoing.

Ultimately, applications for new development and redevelopment will be required to demonstrate how the five winter design principles are incorporated, and how the applicable outcomes are addressed.

The guidelines may be periodically amended to remain consistent with statutory policy, and to evolve both with lessons learned through implementation and with emerging leading practices.

2

Winter Design Guidelines



The Streetscape

WHAT IS THE PUBLIC REALM

The public realm is any publicly accessible street, pathway, right of way, park, school site, open space, or publicly accessible civic building/facility. The quality of our public realm is essential to creating environments that people want to live, work and play in. Streets are the predominant public space in our cities. More than just transportation corridors, streets can be places in their own right.

GOAL:

Design our communities for winter comfort, safety, access and aesthetic appeal

Improving the Public Realm

The following section provides practical and tactical urban design guidelines for urban and suburban spaces. It speaks to the interrelated components of the streetscape: built form and public realm interface, streetscape elements, and linkages.

Street design involves quality place-making that supports livability, urban vitality and sustainability. The overall intent is to improve the public realm to support an active, attractive streetscape that serves as a link and place year-round.



▲ Typical urban mixed-use street cross-section

2.1 Built Form and Public Realm Interface

The Streetscape Outcome 1:

Buildings are designed to create a better microclimate and a more vibrant and inviting public realm.

Rationale:

There is an interrelationship between buildings and the public domain. Buildings frame public spaces, and their design has a huge impact on the vibrancy of our city. Building design, massing, surrounding structures and site exposure all have a direct impact on microclimates and pedestrian comfort at the street level. Even moderate breezes can be accelerated to speeds that become uncomfortable or detrimental to the enjoyment and success of outdoor spaces, such as patios, restaurants and recreational areas.

Sunshine, especially on cold winter days, makes people feel warmer. In fact, capturing direct sunshine and blocking wind can make an outdoor public space feel 10°C warmer (Environment Canada). The use of colour and the creative use of lighting can also add to the visual aesthetic to make a place more beautiful and inviting.



▲ Compact, mixed-use streets reduce travel distances to work, shopping and activities during the winter months

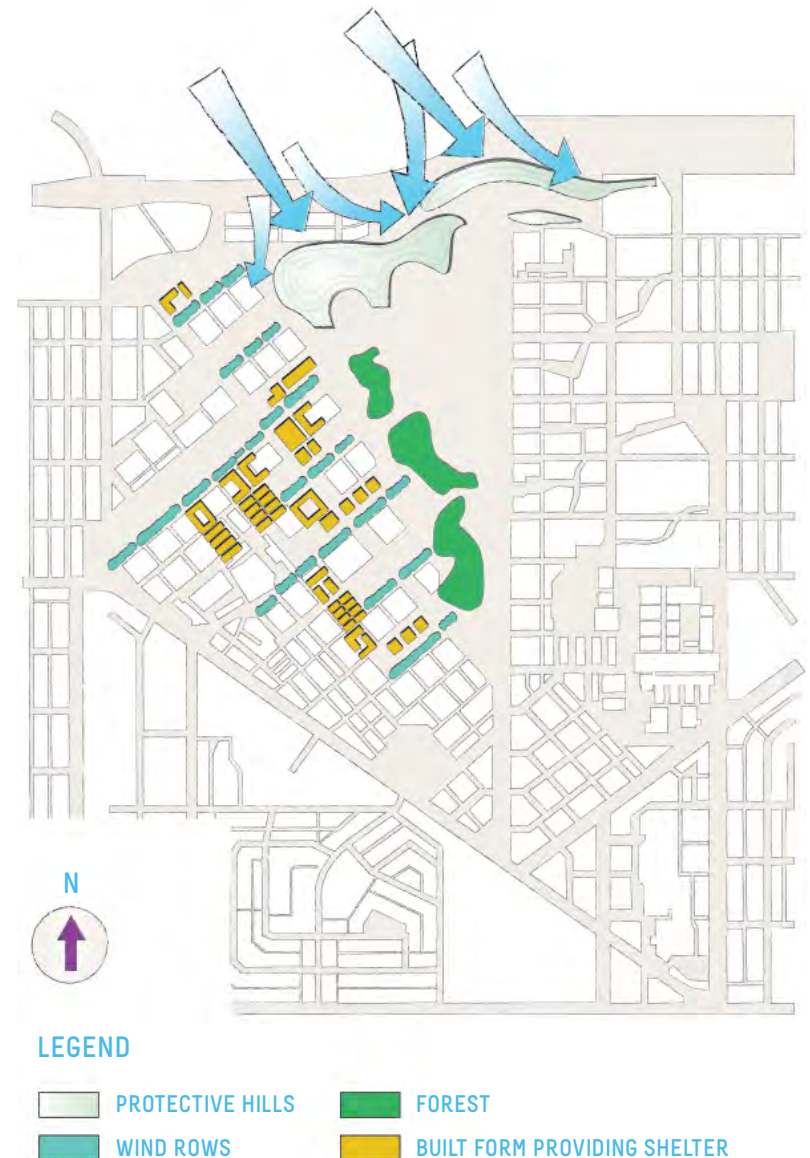
2.1.1 Neighbourhood-Level and Large Site Planning

- A. Consider weather patterns and seasonal conditions when designing streets, buildings and open spaces.
- B. Design the street network and pedestrian routes to support small blocks and/or mid-block pathways and crossings, offering multiple route choices and quality street frontages.
- C. Provide a street pattern and orientation that impedes prevailing winds, and public spaces that are framed and sheltered by surrounding development with blocks and parcels oriented to optimize solar access.

THE PHYSICAL DESIGN OF A NEIGHBOURHOOD DETERMINES HOW EASILY AND SAFELY RESIDENTS CAN GET TO DESTINATIONS

In a winter city, design should consider factors such as snow, ice and snow storage. Good design ensures safety and security by allowing people of all age groups, especially children, the elderly, and those with physical disabilities, to function more independently within their communities. Ensuring accessibility to services and utilizing universally accessible design are key elements of high quality urban design.

- *The Way We Grow: Edmonton's Municipal Development Plan*



▲ Climate Responsive Design at Blatchford Redevelopment in Edmonton, AB



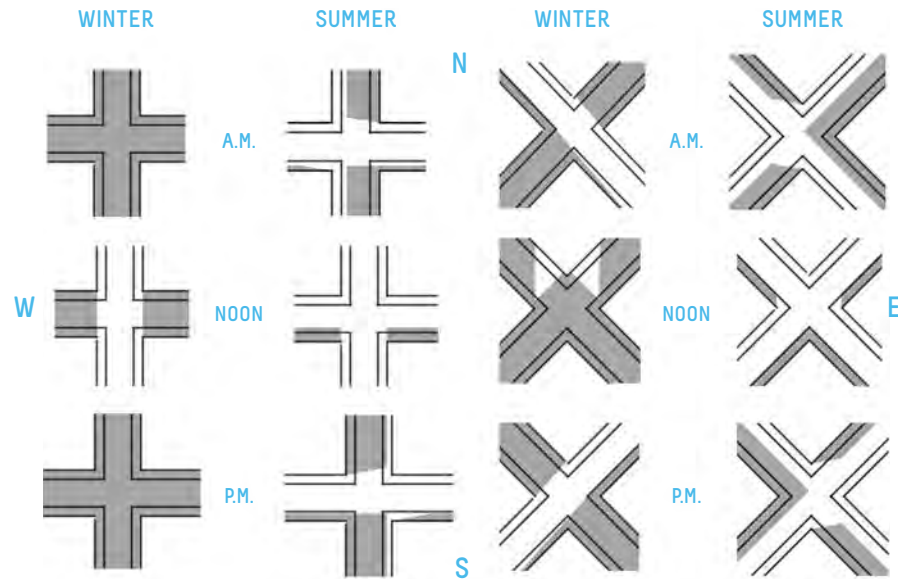
Open space design takes advantage of building placement to block winter winds and create pleasant south-facing seating areas. ▲

- D. In order to provide a more inviting walkable realm in winter, provide more compact development that is fine-grained (e.g. small blocks, narrow frontages, frequent storefronts), with uses that are street-oriented.
- E. Consider opportunities for mid-block accessways and/or block-breaking with alleyways. Small shops and restaurants that front along the alleyways should be encouraged, as the alleyways may develop into active pedestrian routes, especially if they provide protection from the weather.
- F. Plan for smaller snow storage areas with solar access, rather than one large shaded area, as the snow will melt faster. Balance the need for local snow storage with other considerations, such as walkability, aesthetics and parking. Consider the neighbourhood context, scale of proposed development and interface with adjacent sites. Site drainage plans should account for the run-off during freeze-thaw cycles.



WINTER DESIGN GUIDELINES

Built Form and Public Realm Interface



Shadows cast during Winter and Summer Solstice in Edmonton, with three-storey (10m) ▲ buildings and a building-to-building distance of 15m, for demonstration purposes

HIGH-RISES TEND TO CREATE WORSE MICROCLIMATES

It is important to mitigate the negative impacts of towers on the street level and their surroundings; this document suggests ways to do so. In some great winter cities, high-rise buildings are actively discouraged in order to allow for more sunshine on streets and public squares, and to minimize wind turbulence at the base of buildings.

SUN RHYTHM FORM

In his book *Sun Rhythm Form*, Ralph Knowles explains that "streets that run east-west in a built-up area will tend to be shadowed during all of a winter day. The streets thus remain dark and cold". As can be seen in the image, the north-south streets receive sunshine only around mid-day. However, streets that are laid out on an angle will receive sun either in the morning or in the afternoon during winter; all streets, therefore, get some sunshine.



▲ Shadows cast by high-rises are extremely long during winter in Calgary, AB

2.1.2 Streetwall Height, Massing and Orientation

- A. Consider designing the street wall, or podium for medium and tall buildings, to be no higher than the width of the road, ideally creating a 1:1 ratio. Street trees may be used to help provide a similar sense of definition and enclosure in areas with lower heights and less dense buildings.
- B. Consider solar access in the placement of buildings and outdoor spaces. Building massing and siting should create minimum shade onto open spaces that are, or could be, used in the wintertime.
- C. Accommodate taller structures on the north side of streets to avoid excess shadow-casting over sidewalks, patios and outdoor spaces.

THE PEDESTRIAN REALM IN WINTER

Good design principles, such as appropriate streetwall heights and pleasing materials at the pedestrian level, contribute to a year-round comfortable space. Adding awnings, canopies and arcades provides colour, interest, texture and weather protection to pedestrians.



▲ Pedestrian-oriented shopping main street



WINTER DESIGN GUIDELINES

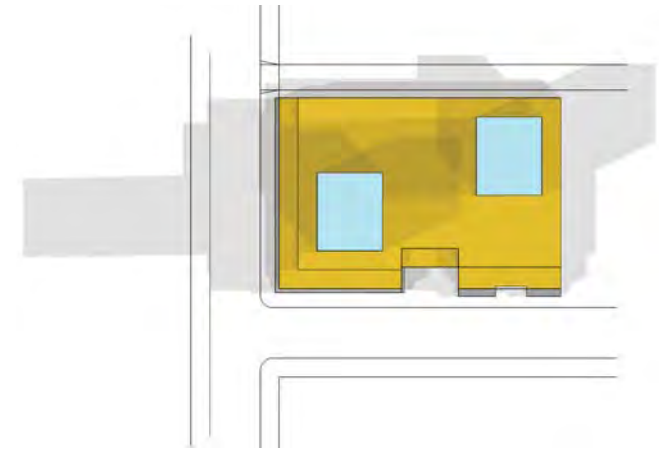
Built Form and Public Realm Interface

- D. Determine optimal site orientation and massing to reduce wind speeds at the street level. The use of stepbacks or tiered (doubled) podiums at the base of a slim tower(s) is a useful strategy to dissipate downdrafts. The consultative services of a microclimate specialist or a building designer may be required to assess contextual wind, snow and shadows for the development of structures over six storeys. Use open spaces on podiums for landscaping and amenity spaces.
- E. Vary building heights along a block length to reduce ground-level wind speeds. Where appropriate, one- or two-storey variations are preferred for low- and medium-rise developments.
- F. Retrofit buildings or design street installations to reduce wind tunnels and improve pedestrian comfort, particularly in Pedestrian and Transit Priority Areas.

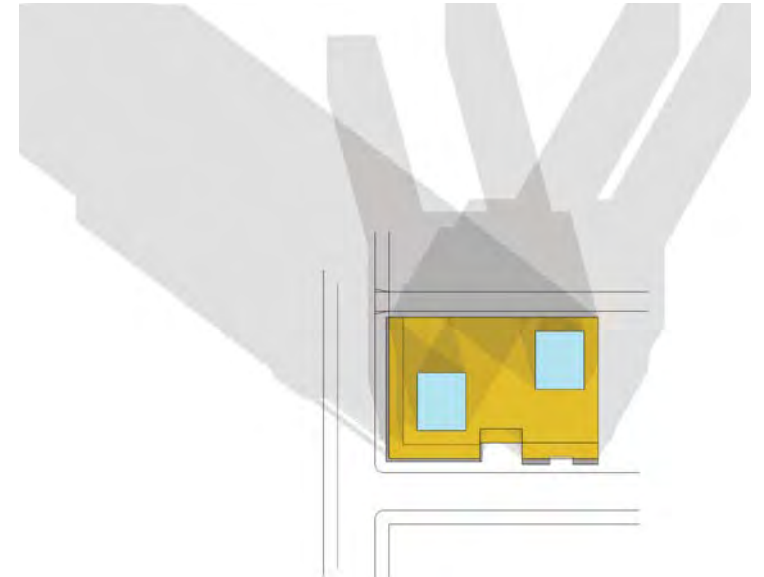
SUN/SHADOW STUDIES ILLUSTRATE HOW A DEVELOPMENT IMPACTS THE AMOUNT OF DAYLIGHT THAT REACHES ITS SURROUNDINGS

In winter, shadows are long and reduce the opportunity for sunny public spaces. A number of simulation tools and programs are available to help visualize, or quantify, how a building affects sunshine and shadows on its own site and on neighbouring properties over a period of time. This is commonly referred to as a butterfly, or shadow diagram. Typically, sun and shadow studies that are submitted for review in Edmonton reflect conditions at 0900, 1200 and 1500 hours Mountain Standard Time (MST) on March 21st, June 21st, September 21st and December 21st.

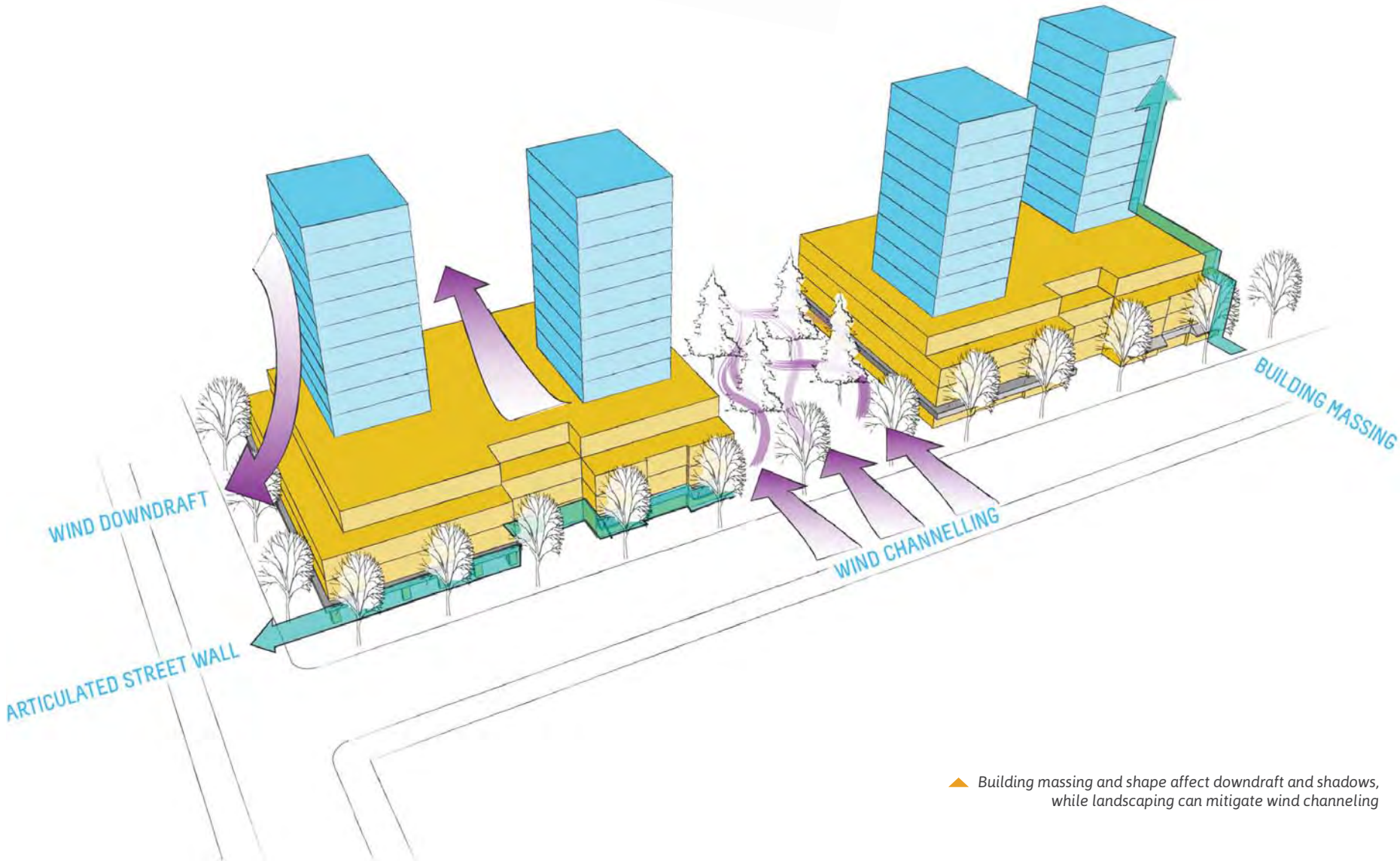
3-D modelling software tools are also available, and can produce a more detailed picture of how a building's shadows affect its surroundings. For example, a 3-D model may reveal an area that does not receive any sunshine at a given time of year.



▲ Shadow Diagram: Summer Solstice 0900, 1200 and 1500 hours MST



▲ Shadow Diagram: Winter Solstice 0900, 1200 and 1500 hours MST



▲ Building massing and shape affect downdraft and shadows, while landscaping can mitigate wind channelling



WHAT IS A MICROCLIMATE?

A microclimate is a local atmospheric zone where the climate differs from the surrounding area. In urban settings, tall buildings create their own microclimates, both by overshadowing large areas and by channelling strong winds to ground level. Airflow patterns can vary greatly from block to block in a city, based on a number of contributing physical and climatic factors.

In Edmonton, very cold winters, warm summers and variable daylight hours throughout the year contribute to the complexity. Technical studies and analysis by a specialist will assist with applying microclimate principles to create a more comfortable experience for people at the street level not only in winter, but also year-round.

2.1.3 Roof Design

- A. Design roofs to prevent falling ice, snow and discharge of roof leaders onto entrances and walkways.
- B. Assess complex roof shapes against pedestrian accesses and/or exterior amenity areas to reduce ice and snow hazards. Elements to consider include slippery-sloped surfaces, barrel vaults, roof steps, tower and podium interactions, and the direction of shedding snow loads.
- C. Design light wells and roof orientation to increase solar access to building interiors and covered outdoor spaces.
- D. Consider metal roofing as a durable cold weather material. The metal allows snow to shed with ease, so the direction of roof slopes must be evaluated. Snow guards help prevent snow and ice overloading at gutters and suddenly releasing from the roof.



Variable roof shapes deflect falling snow and ice away from entrances, walkways and stairs, like at the Art Gallery of Alberta in Edmonton, AB ▲



▲ Snow guards hold snow on a wind-drifted cornice at a retail entrance



Designing with a winter lens should reduce the need for this type of signage ▲

HAZARDOUS ICE AND FALLING SNOW

The risk of ice and/or snow falling, sliding or being windblown from a building cannot be eliminated under all possible winter conditions. It is important for building owners and managers to provide maintenance staff with operational protocols and winter maintenance plans to deal with ice and snow formations.

Pedestrian safety at the street level must be a priority.

Accumulation of icicles and snow may be indicative of building envelope problems, such as heat loss or leakage. Designers and builders should retrofit accordingly when the opportunity arises.

2.1.4 Architectural Design, Materials and Colour

- A. Design building surfaces to help reduce wind speed. This can be accomplished by incorporating balconies, softened corners, tapered/stepped-back façades, and even porosity, openings and irregularities into a building's exterior.
- B. Vary architectural details to support a sense of pedestrian scale and to distinguish between different building volumes and uses.
- C. Use contrasting or saturated colour palettes on building façades to highlight pedestrian-scaled building massing and entrances, and to improve the visual interest of streets. Consider incorporating dense materials, such as brick and stone, to absorb and retain heat.
- D. Design façades to sensitively reflect light onto streets, north-facing neighbouring buildings and/or into open spaces. Lighter colours on south-facing walls also passively reflect light.
- E. Use high-quality materials that will withstand the freeze-thaw cycle and conserve energy.
- F. Assess areas where snow and ice can accumulate on façade surfaces. Incorporate design features to minimize heat loss and the build-up of snow and ice.



▲ *The Mountain, by BIG Architects, combines south-facing terraced apartments over a porous metal parkade façade in Copenhagen, Denmark*

COLOUR MASTER PLANNING

In Norway, the town of Longyearbyen has adopted a colour master plan for all buildings. This combats monotony in the urban winterscape, while providing a pleasing colour palette that adds vibrancy.



A mix of durable materials and colours give a large building a more pedestrian-scale feel ▲



▲ The appearance of a city can be changed significantly with colourful buildings, such as The Venetian in Edmonton, AB



Bright and diversely-coloured houses contribute to a beautiful winterscape in Reykjavik, Iceland ▲



▲ Colourful illuminated façade of Palais des congrès in downtown Montreal, QC



A strong street interface supports a lively public realm in winter ▲

2.1.5 Public Realm and Street Interface

- A. Locate major glazing areas and transitional indoor and outdoor spaces, including patios and porches, on the south-facing side of the lot to benefit from the penetration of heat and sunlight. Add sun shades to receive the best combination of winter warming, summer shading and daylighting potential.
- B. Determine suitable building setbacks and variations in building frontages to enhance the pedestrian experience. Use setbacks to create sun traps and shelters from the wind. Reflected or radiated heat from surfaces within sun traps can provide year-round spaces for restaurant patios and retail.
- C. Incorporate transparent glazing into building façades for visual access to internal uses, as well as for passive surveillance and illumination between outdoor spaces and building users. A high degree of visibility through building windows and/or doors supports safe and active streets and urban parks or plazas.

STREET FRONTAGE

Shorter street frontages offer more opportunities for pedestrians to enter shops and warm up. Where retail is not viable at the street level, efforts should be made to activate the internal uses at ground level. Continuous windows at-grade, or the positioning of active internal uses, should be located along the street frontage.



Animate and activate streets by providing outdoor dining and retail opportunities to create pedestrian-oriented streets ▲



▲ Where possible, encourage business uses that will remain open during the day and into the evening to help animate streets and open spaces



The patio at Café Bicyclette is enjoyed year round in Edmonton, AB ▲

SOLAR EXPOSURE

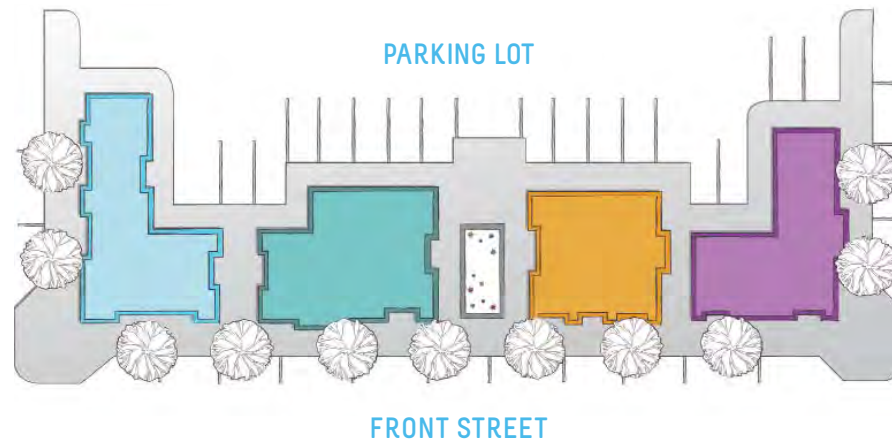
Passive solar design principles take advantage of the sun's rays to form part of the heating component of a building. South-facing windows allow for potentially high solar gains in most of Canada, particularly during the winter months when the sun is at a low angle and shines directly into many buildings. Simple solutions like opening curtains and blinds can passively heat a room, office or public space in the winter. Both winter and summer shading performance, as well as year-round comfort design requirements, can be determined in detail using the Passive House Planning Package (PHPP) design software.

2.1.6 Building Entries

- A. Strengthen the public realm interface by providing building entries along external spaces, such as plazas and urban parks. Create fine-grained development, e.g. buildings with narrow frontages and frequent storefronts. Main entrances to buildings should face the street, and have access from a sidewalk.
- B. Cover and protect ramps and stairs from ice and snow to ensure safe movement for all pedestrians, including those who use wheelchairs, walkers, canes and strollers. Consider heating options, where appropriate.
- C. Incorporate barrier-free transition areas, arctic entries, vestibule enclosures and grate drains at building entrances for patrons to shed snow prior to entering the building. This also prevents heat loss from buildings and reduces damage to escalators and flooring from sand and gravel.



▲ A fine-grained, mixed-use street is resilient and provides options



Main entrances face the street with off-street parking located at the rear of the site ▲



▲ Temporary sidewalk vestibules are becoming popular in the winter in New York City, USA

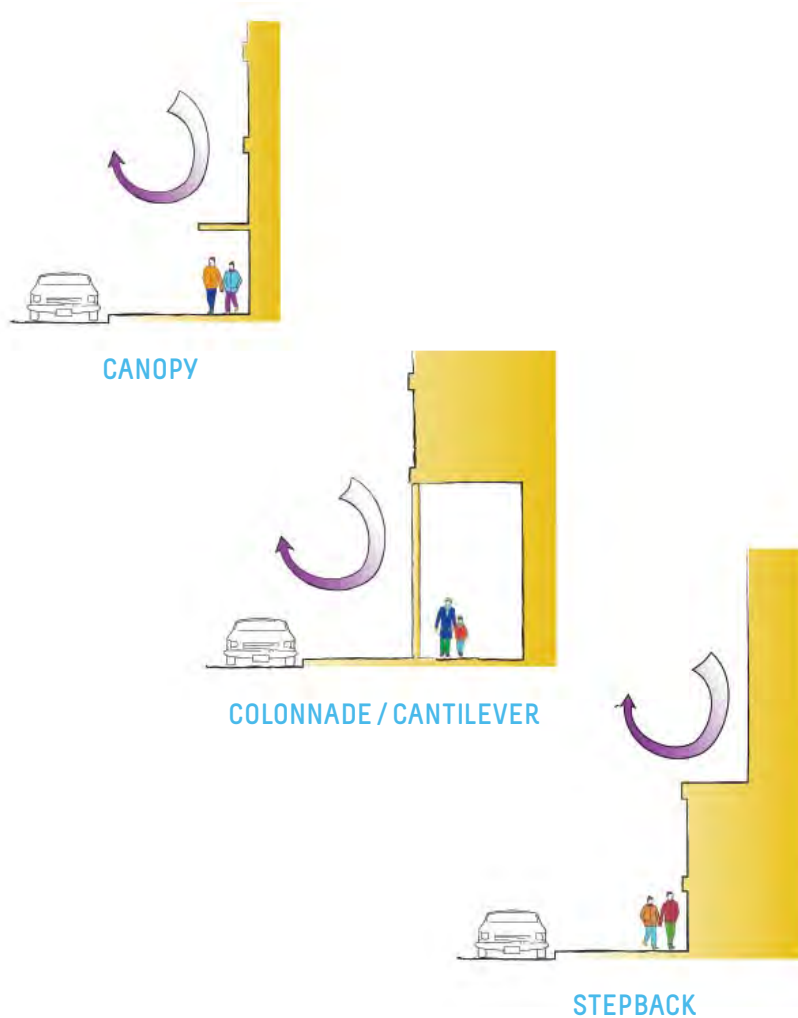


Barrier-free building entry in downtown Edmonton, AB ▲

- D. Provide a seamless-grade transition between commercial entrances and the sidewalk. Incorporate barrier-free design principles and consider changing seasonal conditions, such as snow or ice accumulation.
- E. Delineate the separation between public and private spaces, and provide room for snow storage with a grade separation between the sidewalk and ground floor level of residential units. This is also a good strategy for flood mitigation. Accessibility and barrier-free design should also be incorporated.
- F. Incorporate simple technologies for accesses to industrial and larger commercial buildings, such as bay door controls, air curtains and dock seals to prevent heat loss in winter.

UNIVERSAL, INCLUSIVE AND BARRIER-FREE DESIGN

Snow, ice and darkness change our landscape, presenting extra mobility and safety challenges for everyone. Applying universal, inclusive and barrier-free design practices will make our environment more usable and accessible for all people, regardless of age or ability. Planning and design of buildings, streetscapes and open spaces must not only employ universal and inclusive design principles, but must also consider all four seasons in order to minimize barriers and ensure a better winter experience for everyone.



Building façade projections and recesses to reduce downwashing effect ▲

2.1.7 Awnings, Canopies and Arcades

- A. Design strong indoor-outdoor relationships between buildings and their surroundings so that people who need to warm up can still be connected to the outdoor activities. Windows should be clear glass rather than frosted or tinted, should be clear of clutter such as posters and signs, and should allow for users to clearly see into and out of the building.
- B. Use colour and lighting on awnings to add interest and character on all types of buildings, including apartments, office towers and retail.
- C. Connect pedestrian spaces with elements such as treed arcades, awnings or canopies to moderate the impacts of winter weather, particularly where pedestrian traffic is present or desired.



▲ Awnings add colour and texture to the street, even when covered in snow



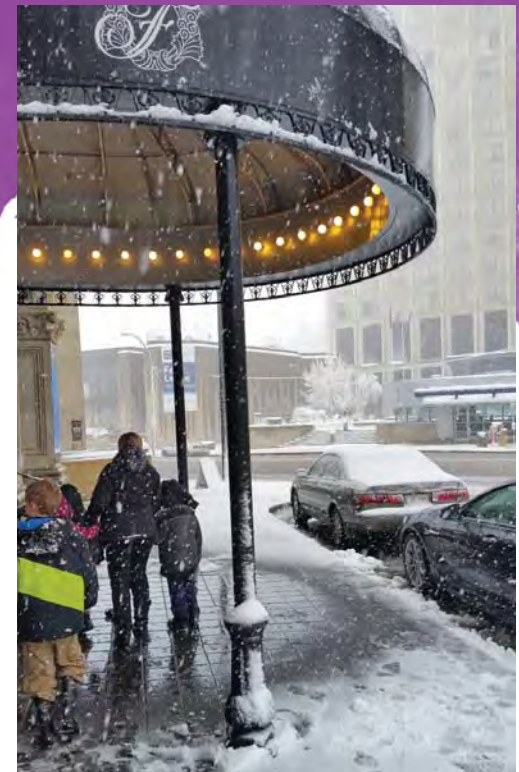
- D. Provide weather protection along building frontages wherever possible, including ramps and stairs. Canopies and arcades provide protection from the wind as well as falling snow and ice.
- E. Incorporate arcades or overhangs on key retail streets, where possible, to enhance pedestrian comfort.
- F. Consider the use of transparent materials to allow the sun to penetrate through awnings and canopies.
- G. Accentuate primary entrances to multiple-unit residential buildings through the use of entrance colonnade structures, awnings, canopies, marquees, portes-cochère and other architectural elements.



Durable, transparent materials allow for natural lighting. Canopy installations may require winter maintenance during the snowy season ▲



▲ Arcades provide weather protection, identity and decoration



▲ This canopy offers a combination of shelter and glare-free light

WINTER MAINTENANCE

Ice lenses may form under the edges of awnings, canopies and arcades. Extra maintenance may be required in winter to keep areas clear for pedestrians. Where possible, include design features to minimize this.

2.1.8 Building Lighting

- A. Integrate fixtures into building façades to allow for temporary or permanent specialty lighting, such as seasonal or creative lighting. Feature lighting is one of the most effective ways of creating a special winter atmosphere. Where possible, use downward-facing fixtures to reduce light pollution.
- B. Design building lighting to enhance visibility, aesthetics and safety for building users and pedestrians. Lighting choices should minimize glare, uplighting and light trespass, while still enhancing architectural details. Designs should feature subtle contrast, colour, and in some cases, gentle undulation.



Programmable RGB lights illuminate Stanley A. Milner Public Library in Edmonton, AB ▲



▲ Architectural lighting at the Alberta Legislature in Edmonton, AB

CREATIVE LIGHTING AND DARKNESS

Creative lighting makes places more inviting, magical and memorable, and can have a huge impact on our sense of place, identity and pride. Creative lighting does not have to use more energy or light, it just requires a shift to different forms, colours and shapes.

Darkness is a palette for lighting, and is required for creative lighting to be effective. Creative lighting must be designed to minimize light pollution both to protect our dark skies and to contrast with the surrounding darkness. Refer to the City of Edmonton Light Efficient Community Policy and Creative Lighting Master Plan for more information.

- C. Seek to coordinate seasonal and permanent building lighting designs to create a unified aesthetic for the night skyline. Encourage ways to create unique identities for other districts, areas and/or neighbourhoods, as well as civic buildings.
- D. Incorporate lighting to ensure pedestrian and vehicular entrances are easily distinguishable from the building façade at night to aid in wayfinding.
- E. Add visual interest to streets by considering creative, gentle lighting on signage and beneath awnings and canopies for residential, mixed-use and commercial buildings.
- F. Design lighting to take advantage of delicate levels of contrast that are possible under a dark sky. Where feasible, reduce ambient light levels to allow for contrast with feature lighting.



Entrance to the Aurora housing development by Melcor Developments in Edmonton, AB ▲

2.1.9 Building Signage

- A. Design building signage to promote building identity and wayfinding.
- B. Illuminate signage after sunset, and dim as the sky becomes dark.
- C. Use clear fonts and contrasting colours to increase visibility and interest.



▲ Fort Edmonton Park's Capitol Theatre in Edmonton, AB

2.1.10 Site Landscaping and Vegetation

- A. Select vegetation for landscaping near roadways that can withstand exposure to gravel, sand, salt and ice melters. Vegetation should be able to withstand snow loads, wind and require little maintenance throughout the year.
- B. Give preference to native plants, grasses, shrubs and trees that are colourful and/or look attractive covered with snow. There are also many non-native plants that offer winter interest and may be suitable.
- C. Set plant material back from sidewalks and parking spaces to accommodate temporary snow storage. Plant landscaped areas surrounding buildings to withstand excess snow and ice from roofs, as well as increased snowmelt. Also consider spring maintenance, site and soil restoration, and vegetation growth.



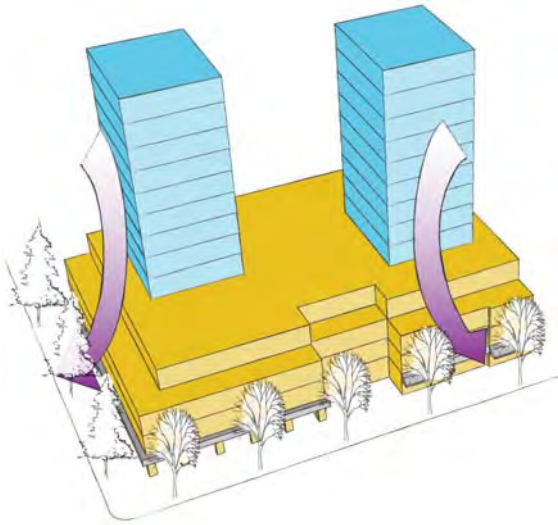
Some plant species depend on snow cover to protect them from cold air and to help them survive through the winter ▲



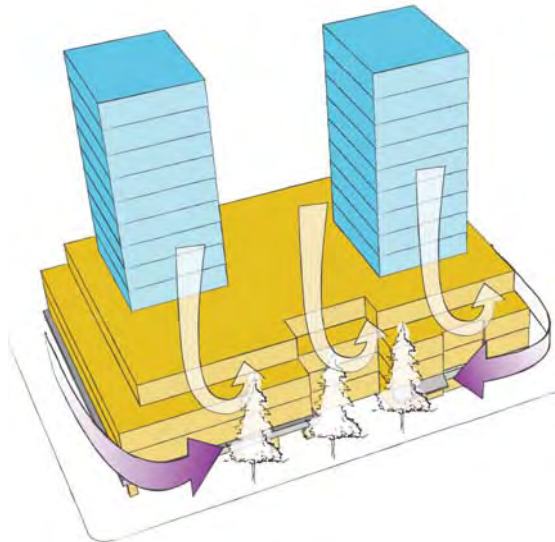
▲ Trees that retain their berries or fruit in winter add beauty and will attract winter birds



▲ Native trees and shrubs are sturdy, and are beautiful covered in snow and lights



Wind downwashing effect reduced and redirected ▲
by using trees, based on wind-study modelling



Wind corner acceleration effect reduced through ▲
the use of trees, based on wind-study modelling

- D. Use planting beds surrounded by curbs to lessen damage due to snow-clearing equipment. Raised beds can also protect plants from salts and gravel, but this can also be addressed through careful site grading.
- E. Give preference to deciduous trees on the southern face of a building or outdoor area. Deciduous trees will provide shade in the summer when leaves are present, but will allow sunlight to filter through in the winter, when leaves have fallen.
- F. Give preference to coniferous vegetation on the north and west sides of open outdoor spaces to protect areas from prevailing winter winds. Coniferous trees can also create snow drifts in some conditions, so designers must carefully consider the site context. Hedges will also modify the extent of a snow drift based on their porosity. Dense planting should be carefully placed relative to walkways and shared use paths in anticipation of snow drifting patterns.
- G. Reduce wind speed in open spaces by planting dense vegetation along the edges and against any blank walls to reduce wind acceleration.
- H. Use soft landscaping to filter and screen views into private dwelling units, while ensuring views to the street or open spaces are maintained for surveillance.

2.1.11 The Pedway System

In recent years, revitalization in downtown Edmonton has resulted in an expansion of the pedway network, to the delight and dismay of many. The pedway issue is a complex, if not inflammatory subject, not only in Edmonton, but also in other cold climate cities with pedestrian bridge and/or tunnel systems.

In winter cities, many residents find the elevated systems practical, as users are protected from cold, wind, snow and ice. On the other hand, bridges and passages have a tendency to accelerate wind speeds at the street-level, creating a harsh street environment for pedestrians and users of other active transportation modes, and for businesses that rely on foot traffic.

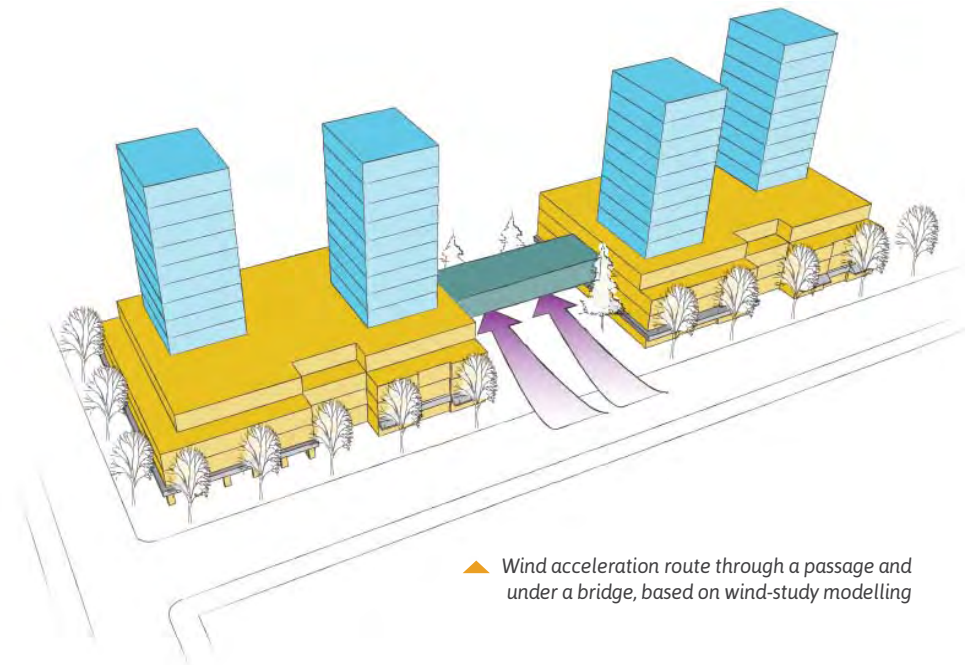
Elevated and underground systems pose a unique challenge in our urban centres by dispersing people over different levels at different times throughout the day. Danish architect and public space expert Jan Gehl has noted that skyways violate the first law of successful city-building: keeping people together in a critical mass. Instead, a social hierarchy is created, with wealthier classes in quasi-private spaces at certain times, and poorer citizens occupying public spaces at all hours. Generally, elevated systems are considered bad for civic life, bad for retail business and bad for culture, but very good for office towers.

If cities are defined by the vitality of their street life, and elevated systems are seen as a significant detractor of street life, the City of Edmonton should consider limiting or prohibiting the creation of new pedways, and critically analyze the impacts of the pedway network.

**A PEDWAY IS NOT A BUILDING;
IT IS ATTACHED TO A BUILDING.**

**A PEDWAY IS NOT A STREET;
IT IS BUILT ABOVE OR BELOW A STREET.**

**A PEDWAY IS NOT OPEN TO ALL,
ALL OF THE TIME;
IT IS OPEN TO SOME,
SOME OF THE TIME.**



▲ Wind acceleration route through a passage and under a bridge, based on wind-study modelling

2.2 Streetscape Elements and Linkages

The Streetscape Outcome 2:

Streets are vibrant and attractive people-places in all seasons.

Rationale:

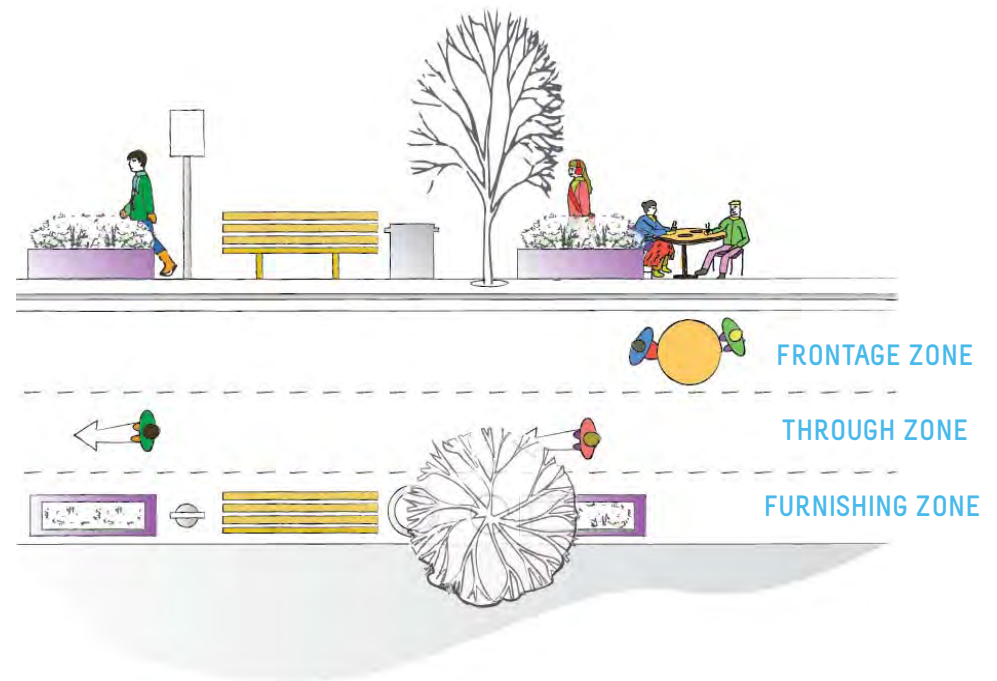
Good street design begins with an understanding of street context. Different streets have different conditions and require different design solutions. However, all great winter cities not only support active transportation, but give greater design consideration to the infrastructure needs and maintenance requirements needed to support pedestrians, transit users and cyclists in winter. As well, our streets are an important place for civic definition, that is, for social and commercial interaction. The physical elements of the streetscape – sidewalks, furnishings, landscaping and utilities – all perform important functions, helping to create an outdoor living room, even during the cold months.



▲ Street-oriented architecture and urbanism support lively, public spaces

2.2.1 Sidewalks and Boulevards

- A. Design wide sidewalks in Pedestrian and Transit Priority Areas to provide a clear, barrier-free pedestrian through zone. Adequate space for street-cleaning and snow-clearing equipment must be considered in the design.
- B. Give preference to boulevards over monowalks. Boulevards are an important snow-storage area, and result in reduced operational snow removal costs. They also act as a buffer to protect pedestrians from road spray. Use of monowalks must be justified.
- C. Provide furnishing zones on commercial-pedestrian sidewalks. Furnishing zones may be designed as a landscaped strip or paved as a hardscape with tree wells to maximize the pedestrian through-area. Street context must be assessed to determine if snow storage or removal is most appropriate.



▲ For additional all-season streetscape design details, accessibility and amenities, please refer to the Complete Streets Guidelines

SNOW REMOVAL POLICY

As a winter city, Edmonton's specified standards for snow clearing are key to ensure mobility and safety of all users of the transportation system. The Snow Removal Policy approved by City Council outlines expected performance outcomes.

– **The Way We Move**



Shop entries and pedestrian through zone are clear of snow, ice and pooled water along this street in Calgary, AB ▲



Boulevards are an important snow-storage area and act as a buffer to protect pedestrians from road spray ▲

- D. Ensure any furniture that is placed in the frontage zone has a clear edge that can be easily cleared of snow to assist with mobility.
- E. Ensure grading directs snowmelt towards roadways, and away from building entries and pedestrian zones, to avoid slippery conditions during freeze-thaw cycles. Potential contaminants from snowmelt (i.e. salt, ice melters and sand) should not drain into creeks, rivers or natural areas.
- F. Select paving materials that are durable enough to withstand the harsh impacts of winter snow management and the corrosive effects of salt, as well as freeze-thaw cycles, while still being safe, slip-proof and easy to maintain.
- G. Apply colour, pattern variation and decorative paving bands in Pedestrian and Transit Priority Areas. Variations in colour or material will add visual interest and can indicate circulation in the pedestrian through zone, and in particular in curb cuts. Decorative paving bands along the curb-side serve to align fixed objects such as trees, street lights, parking meters, bicycle rings, waste and recycling receptacles.

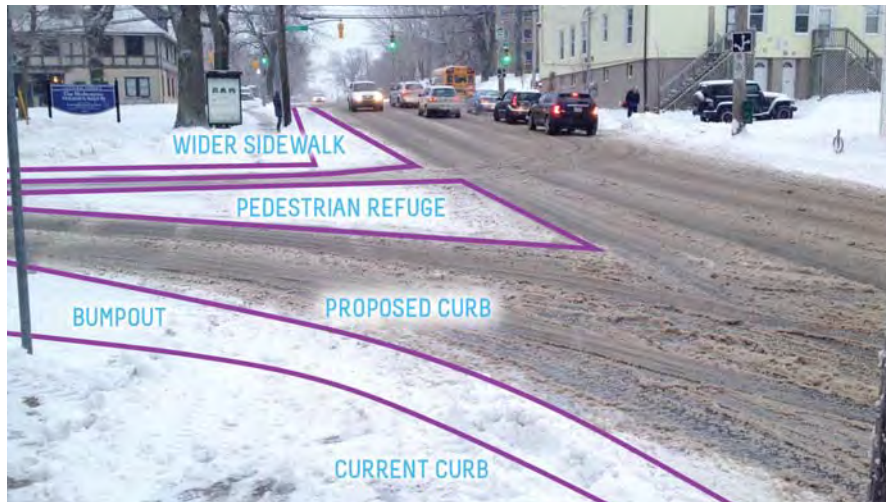


WINTER DESIGN GUIDELINES

Streetscape Elements and Linkages



Bioswales beautify the streetscape in summer, could provide snow-storage areas in winter, and support healthier waterways year-round ▲



Sneekdowns reveal how and where pedestrians and vehicles use roadway space in Halifax, NS ▲

- H. Provide landscaped, permeable surface areas on or near roadways to provide a natural filter for snowmelt and heavy rainfall, reducing pressure on the drainage and water network. These landscaped features could also be used as design opportunities to introduce traffic calming to a street and to improve crosswalks on wide streets.
- I. Reduce automobile lane widths in Pedestrian, Transit and Bicycle Priority Areas. Narrow lanes result in less road surface to clear of snow during the winter, and extended sidewalks with shared-use paths accommodate a variety of active transportation modes. Consider how any reallocation of space or roadway redesign would best accommodate all modes safely in all weather conditions. Needs of municipal maintenance, operation and emergency vehicles must always be taken into account.

DESIRE LINES AND SNECKDOWNS

Winter provides a unique opportunity to see how people really use street spaces. After a snowfall, desire lines and sneekdowns (curb extensions caused by snowfalls) appear. Examine footprints and vehicle tracks to learn about opportunities for sidewalk extensions and roadway redesigns to improve safety and comfort for pedestrians.

2.2.2 Street Crossings

- A. Install lit or reflective crossing signs and surface markings to increase visibility of crosswalks during reduced daylight hours in winter, especially in school zones.
- B. Program all crosswalk lights and audible signals at intersections to work concurrently with traffic signals. Pedestrian-actuated (on-demand) crossing lights tend to increase pedestrian wait times and, therefore, exposure to the elements.
- C. Adjust signal light timings to prioritize active transportation modes, such as for cyclists on minimum grid routes and pedestrians in high-pedestrian areas.



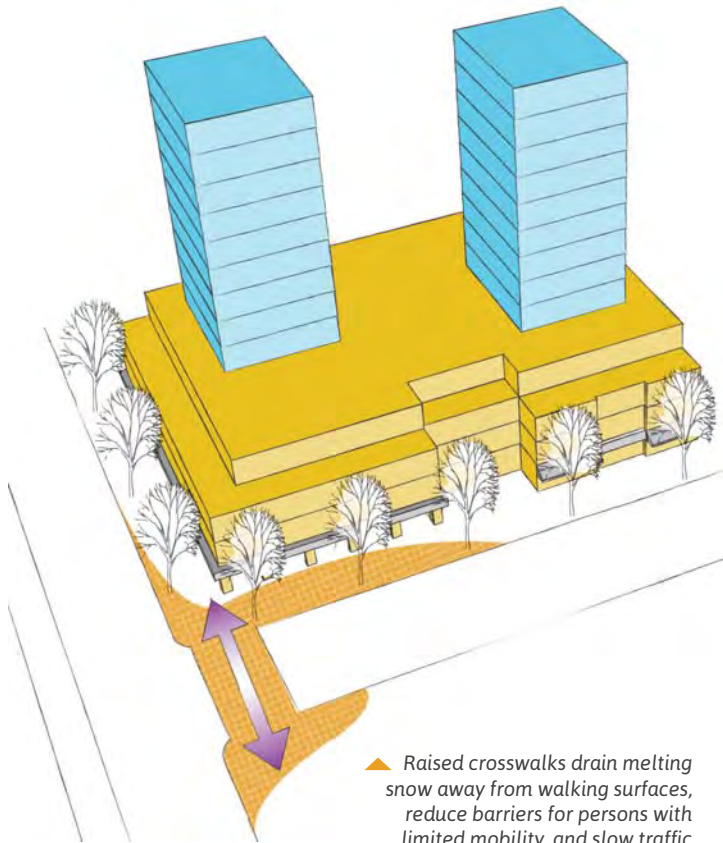
▲ Immediate on-demand crosswalk lights allow pedestrians to cross without waiting



▲ Thoughtful design should prevent pooled water at intersections

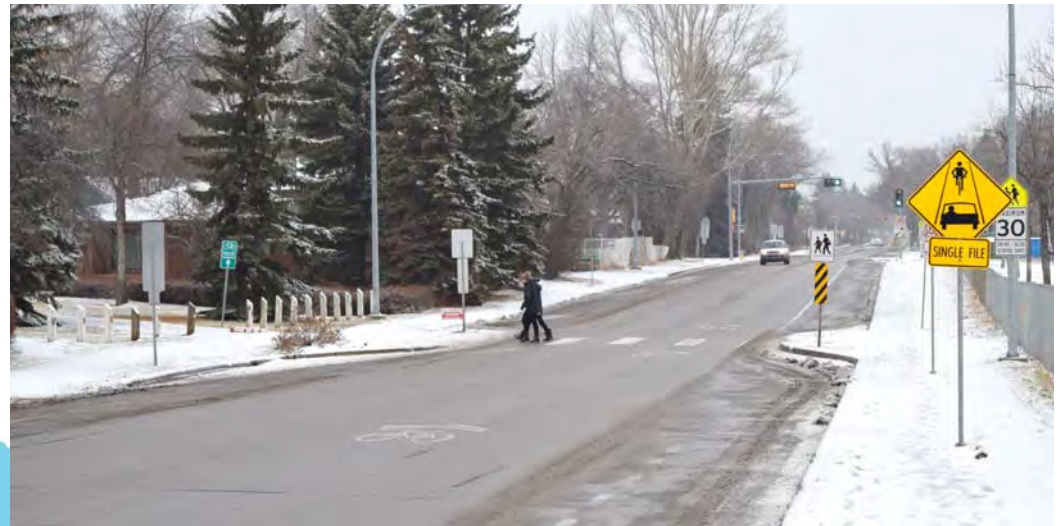


Reflective zebra-striped street crossing, with appropriate coloured road surface markings, clearly indicates a speed table and pedestrian crossing area ▲



▲ Raised crosswalks drain melting snow away from walking surfaces, reduce barriers for persons with limited mobility, and slow traffic in pedestrian zones

- D. Locate catch basins for surface runoff away from pedestrian crossings and bus stops. Pooled water at crosswalks may splash onto pedestrians from vehicles during warmer temperatures. During freeze-thaw cycles, freezing runoff water will create a slip-and-fall hazard.
- E. Prioritize pedestrians with short traffic signal cycles and pedestrian-actuated crosswalks to reduce waiting times and exposure during extremely cold temperatures where possible.
- F. Provide mid-block crossings with curb extensions on long blocks to reduce long distances pedestrians must travel to reach their destinations. Curb extensions that minimize pedestrian crossing distances are recommended where curbside parking lanes exist.
- G. Research, test and evaluate innovative street design features. For example, pedestrian platforms, that is raised street crossings, aligned curb cuts, and/or heated sidewalks and crosswalks are commonly found on pedestrian-oriented streets in other winter cities.



▲ Mid-block crossings with curb extensions not only reduce travel distances for pedestrians, which is important in cold and icy conditions, but they also slow traffic and provide opportunities for streetscape enhancements

2.2.3 Street Lighting

- A. Provide decorative, pedestrian-scaled lighting. Focus illumination towards the ground to reduce light pollution. Use fully shielded fixtures to eliminate glare.
- B. Include electrical outlets in tree wells and/or on street lamp posts to allow for additional seasonal feature lighting, such as tree wrapping. Well-lit focal points and landmarks can aid in orientation and help people find their way.
- C. Reduce street lighting where possible to compensate for, and emphasize, seasonal feature lighting. Also consider controls to dim or turn off decorative and street lighting during off-peak times.
- D. Assess, provide and test visibility after sunset, particularly in Priority Pedestrian, Bicycle and Transit Areas to ensure safety, comfort and interest for active transportation modes. The colour and intensity of lighting, as well as the amount of glare, affect how a street is perceived and used.

THOUGHTFUL LIGHTING DESIGN

The difference between a pedestrian-lit street and a highly-illuminated highway automatically signals drivers that they have entered a new and different zone, and compels them to slow their driving speed. The canvas of natural darkness can be used as a backdrop to accentuate a full spectrum of lighting designs, including the gently beautiful, the playfully twinkly, or even the wildly whimsical!



▲ Pedestrian-scale lamps on a residential street in Edmonton, AB



▲ Decorative street tree wrapping on 104 Street in Edmonton, AB

E. Beautify the streetscape with creative passive lighting. Several types of materials can be added to surfaces, such as streets and sidewalks, to diffuse, differentiate, direct, increase or refract the amount of light already produced. Keep in mind that snow reflects light, therefore not as much light may be needed in the wintertime.



Illuminated traffic bollards produce good visibility, and their light ▲ reflects warmly off the snow at a roundabout in the United Kingdom

F. Optimize roadway signage for low glare and good visibility in snowy conditions, as well as for aesthetic benefits. Look for opportunities to improve orientation, safety and perception of distances and space in snowy conditions with roadway traffic signal installations.



▲ Seasonal street lights, designed by Lavola, produce beautiful illumination by attaching metal mesh to existing street lights, without using any additional energy in Barcelona, Spain



Giant lampshades, designed by Lightemotion, in Quebec City, QC ▲

CREATIVE LIGHTING

Creative lighting is not about more lights! Creative lighting is only effective with darkness as a backdrop. Ambient lighting needs to be reduced in general, and the use of selective, creative lighting interventions needs to be strategic. Solar and LED lights are encouraged to help reduce greenhouse gas emissions. For more information on the benefits of using creative lighting, refer to the Creative Lighting Master Plan.

2.2.4 Street Furnishings

- A. Provide comfortable, protected and, preferably, south-facing areas for outdoor seating and dining. These areas could include overhead protection, decorative boxes with coniferous plants, and architectural and snow walls.
- B. Consider ease of snow-clearing maintenance, particularly for benches. For example, it is easier to clear snow from around a bench with a central pedestal than from around a traditional bench with four legs.
- C. Select materials that are durable, comfortable and aesthetically pleasing. For example, metal can get very cold or hot, and neither extreme is particularly comfortable.
- D. Provide a variety of styles of both fixed and flexible street furniture to improve comfort. This will allow users to choose to sit in or out of the sun, alone or near others, or even near street features, such as trees.
- E. Incorporate wind screens, lighting, gas fire pits and other heating features to improve comfort in seating and dining areas. Having blankets and seat cushions available for use will further improve the experience.
- F. Arrange street furnishings for ease of winter maintenance. The placement of fixed furnishings should be carefully planned to avoid obstructing emergency vehicle access.



▲ Round, wooden benches in an urban plaza in Bilbao, Spain



▲ An outdoor winter living room in Denver, USA



EMBRACE A FOUR-SEASON PATIO CULTURE

Encourage restaurants and cafés to clear the snow from their patios and clean off their outdoor furniture. Outdoor seating opportunities and furnishings during both the winter months and the shoulder seasons contribute to street activity.

This south-facing patio is comfortable in February with wooden chairs and overhead heaters. Cushions, awnings, blankets, heaters and lighting are great additions.



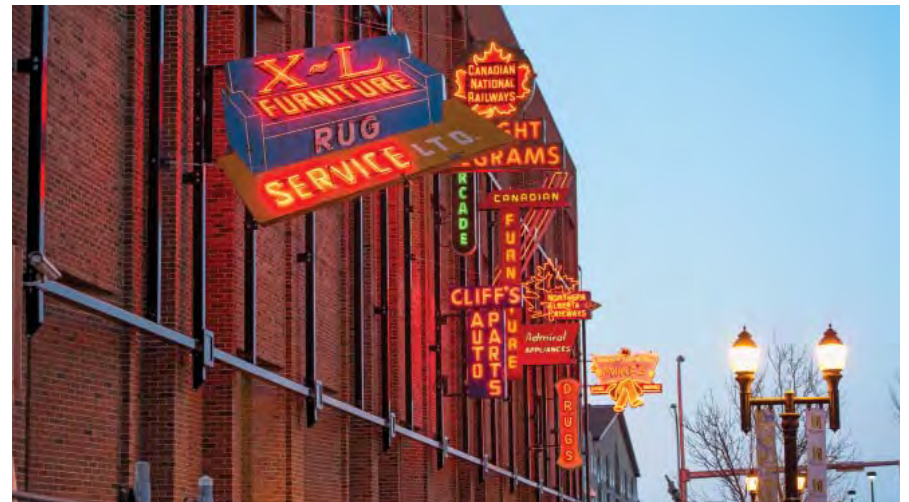
An outdoor café in Amsterdam, Netherlands ▲

2.2.5 Public Art in the Streetscape

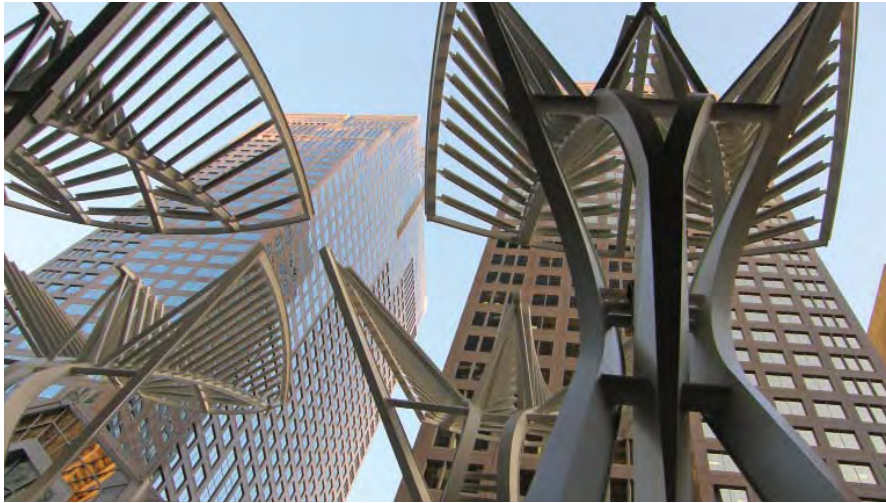
- A. Create a welcoming environment that enhances the outdoor experience through embellishments such as landscaping, sculptures, furniture, lighting, and even fountains, which can be turned off and lit creatively in winter.
- B. Support opportunities to incorporate public art for beauty, interest, animation and weather protection in urban streets and plazas.
- C. Provide supporting infrastructure to install art that can illuminate otherwise dark urban areas and plazas, or locations not suitable for street trees or plantings. Use low-contrast illumination that minimizes glare and up-lighting.
- D. Consider temporary construction fences as locations for attractive winter shelter, lighting, wayfinding and colorful artwork.



▲ Winter Garden in New York City, USA



▲ An otherwise blank wall is used to display the Neon Sign Museum in Edmonton, AB



The Galleria Trees, by Cohos Evamy Partners (now DIALOG), were designed to reduce wind gusts outside Bankers Hall in downtown Calgary, AB ▲



▲ Sonic Bloom, by artist Dan Corson, is an interactive, solar-powered sculpture in Seattle, USA



Giant holiday ornaments on Sixth Avenue in New York City, USA ▲



▲ Urban Umbrella, designed Young-Hwan Choi, Sarrah Khan and Andres Cortes, is artistic, yet functional, construction hoarding made out of recycled steel, translucent plastic panels and LED lighting in New York City, USA

2.2.6 Wayfinding

- A. Incorporate a signage and wayfinding system as part of the planning process, with design considerations for winter conditions. For example, approximate walking, cycling or cross-country skiing times, in addition to distances.
- B. Design adaptable and seasonal wayfinding strategies to support changing uses and functions throughout the year; digital or automated systems are preferred. For example, changing signage at a park pond that displays ice skating conditions in winter.
- C. Use blank walls that do not get covered in snow to display signage, public information or to generate solar power.
- D. Provide signage along cycling routes that are prioritized for snow removal or grooming in winter. This could be as simple as a snowflake logo added to existing wayfinding elements to let users know that the routes will be maintained and/or cleared of snow on a regular basis throughout the winter.
- E. Optimize wayfinding signage for low glare and good visibility in snowy conditions, and for aesthetic benefits.

WAYFINDING

Wayfinding can be defined as spatial problem-solving. It means knowing where you are in a building or an environment, knowing where your desired location is, and knowing how to get there from your present location.



▲ Illuminating information and mapping not only looks attractive, but also helps residents and visitors to quickly discover where they want to go next



▲ Clear, durable and high-quality wayfinding signage in Calgary, AB

2.2.7 Bus Stops

- A. Provide real-time information for all transit routes through digital media, e.g. apps and electronic signs, to improve user experience in cold weather.
- B. Retrofit existing high-use bus stops to improve winter weather protection.
- C. Consider using creative lighting and light therapy, or phototherapy, in bus stops to increase security and to help reduce Seasonal Affective Disorder.
- D. Consider provision of heated shelters. Ensure design does not obstruct sightlines for oncoming vehicular traffic.
- E. Design bus shelters for ease of snow-clearing and to minimize ice hazards.



Doors and user-automated heating are now available in bus shelters in Fort McMurray, AB ▲



▲ Edmonton Transit apps provide up-to-date information to transit users on the go in Edmonton, AB

2.2.8 Light Rail Transit Stops and Transit Centres

- A. Design barrier-free LRT station platforms and transit centres with features such as shelters, roofs, canopies and overhangs to provide maximum weather protection.
- B. Provide covered walkways at station entries to reduce snow and ice on walks, ramps and stairs. Include design features, such as expansive grate drains, to reduce mechanical damages and costs caused by the build-up of gravel and sand in escalators.
- C. Install heaters, preferably motion- or user-activated, at shelters and transit centres to improve comfort for transit riders. Review potential snowmelt and drainage patterns caused by the addition of a heat source to avoid creating icy conditions.
- D. Provide opportunities and infrastructure for multi-modal trips, such as secure and covered bicycle parking or Nordic ski storage.



▲ A covered tram stop provides weather protection in Berlin, Germany



Skiers at the Gornergrat train station near Zermatt, Switzerland ▲



▲ Convenient access to the tram, shops and shelters in Istanbul, Turkey



Ski2LRT lockable rack for Nordic skis, designed by Shauna L. Rae and Alayna Dornbush, at the Century Park LRT Station in Edmonton, AB ▲



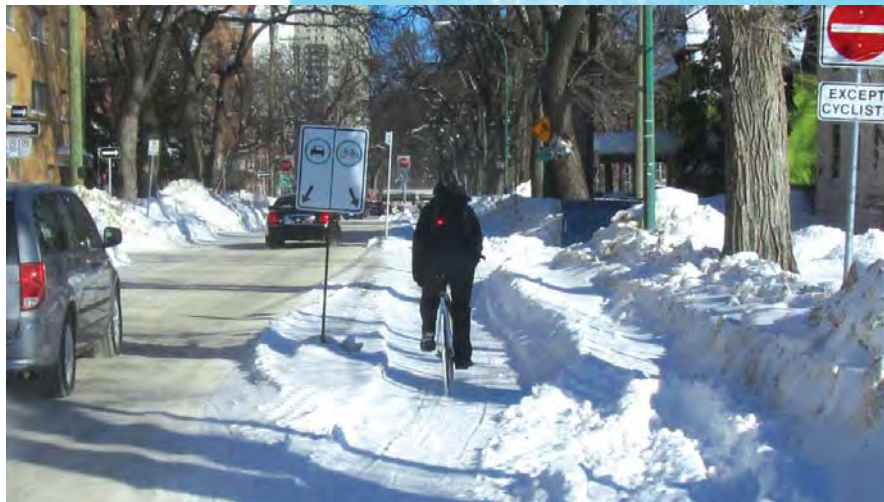
▲ Winnipeg Transit provides outdoor storage lockers for cyclists in Winnipeg, MB

2.2.9 Bicycle Routes and Storage

- A. Prioritize higher volume corridors with cleared and dedicated routes to provide a safer environment for cyclists year round.
- B. Consider covered bicycle racks and storage lockers in Pedestrian, Bicycle and Transit Priority Areas.
- C. Connect existing and new bicycle routes through community hubs and larger sites, such as schools and district parks, to provide the most direct route for winter cyclists.
- D. Provide real-time information to let cyclists know which routes were cleared of snow, and when, so that cyclists can plan their trips accordingly.



▲ A group of winter cyclists in Winnipeg, MB



Winter cycling is growing, and is encouraged by protected bike lanes ▲

WHAT IS THE MAIN DETERRENT TO WINTER CYCLING?

It may be a surprise to many, but research shows that it is not the cold. In fact, cycling in other winter cities drops off only when the temperature drops below -20°C . In Edmonton, the average highs for December, January and February are -5°C , -7°C and -3°C respectively – not exactly intolerable weather for cycling. So why don't more Edmontonians cycle in the winter?

The main deterrent to winter cycling is concerns about safety, which are tied directly to infrastructure and maintenance. Winter is the best argument for protected bike lanes; good urban planning and design form the bedrock for winter cycling.

2.2.10 Bridges

- A. Provide pedestrian-scaled lighting and signage along shared-use paths.
- B. Consider decorative lighting opportunities, where appropriate.
- C. Review snowmelt and drainage patterns onto roads and pedestrian areas to prevent hazardous, icy conditions.



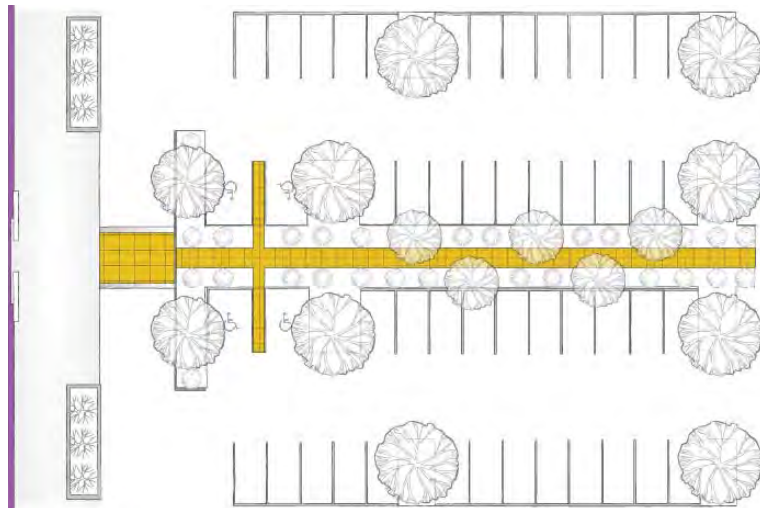
▲ The High Level Bridge lit up in support of various events such as Edmonton Oilers home games



Edmonton's High Level Bridge sports a state-of-the-art programmable lighting system with 60,000 LED bulbs, crowdfunded through the Light the Bridge campaign ▲

2.2.11 Parking Considerations

- A. Explore seasonal parking bans where on-street parking would be limited to one side of residential streets during the winter.
- B. Work with the province to select locations to test back-in angle parking due to the many benefits it provides over other parking types, including better vision of cyclists, pedestrians, cars and trucks, and better maneuverability on snowy days.
- C. Provide a landmark feature at the main entrance of parking lots to help guide drivers and pedestrians, especially when the ground is covered in snow.
- D. Provide pedestrian lighting and direct pathways between parking lots and connect paths to the main entrances of buildings.
- E. Design parking lots to facilitate snow removal and maneuverability of equipment and fleet vehicles. Where possible, divide large parking lots into smaller areas, separated by planted islands.
- F. Designate space in parking lots for on-site snow storage in areas that maximize sunlight and melting, while being mindful of drainage considerations.



Parking lot designed with pathway to minimize pedestrian-vehicular interactions, as well as planted areas to store snow and absorb snowmelt ▲



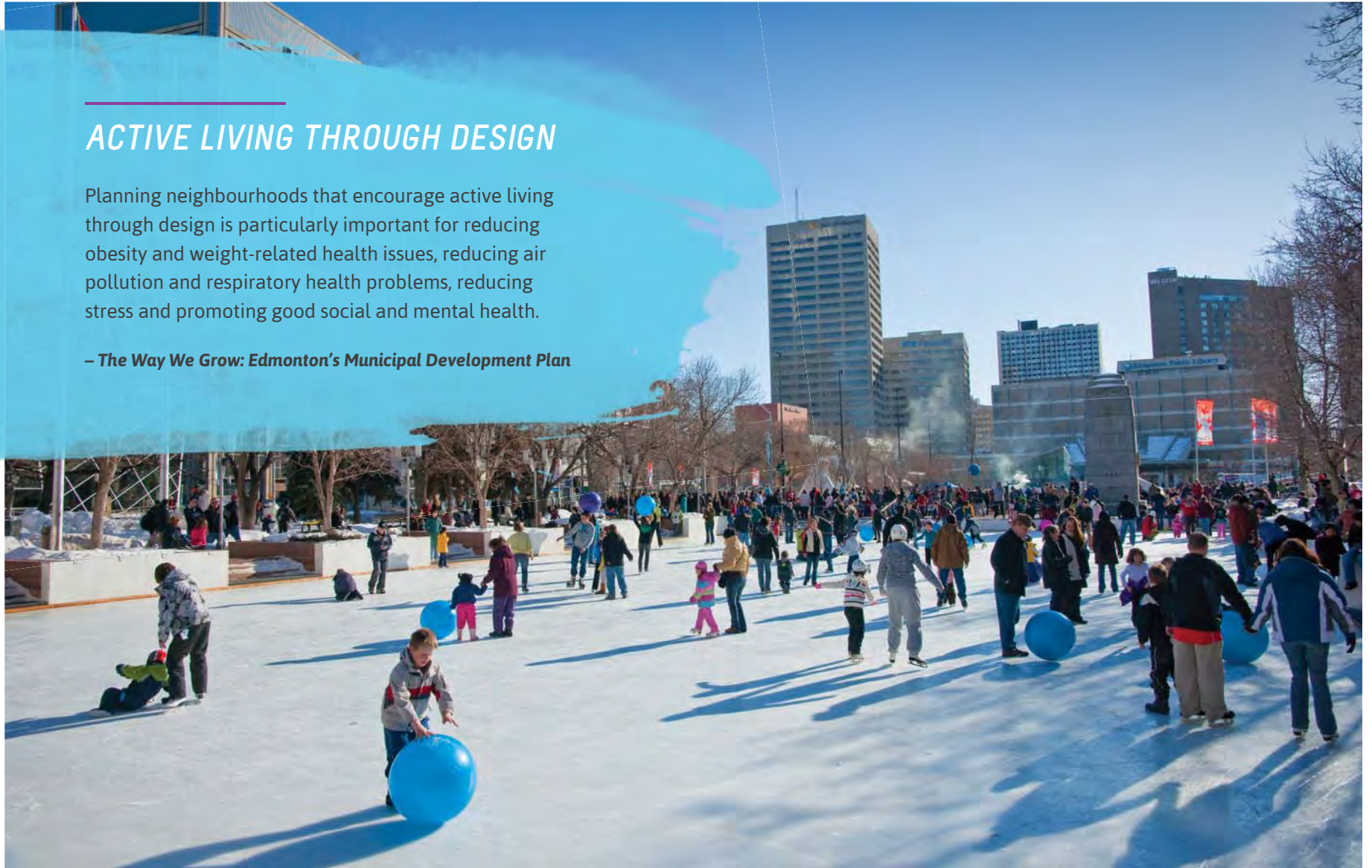
▲ Parking lots can provide great spaces for seasonal events such as the All is Bright on 124 Street festival in Edmonton, AB



ACTIVE LIVING THROUGH DESIGN

Planning neighbourhoods that encourage active living through design is particularly important for reducing obesity and weight-related health issues, reducing air pollution and respiratory health problems, reducing stress and promoting good social and mental health.

– *The Way We Grow: Edmonton’s Municipal Development Plan*



City Hall ice rink in Edmonton, AB ▲

Open Spaces: Embracing the Outdoors

GOAL:
Design elements for winter fun,
activity, beauty and interest.

Embracing the Outdoors

The following section provides design guidelines and recommendations to enhance and embrace our experience outdoors in the wintertime. It speaks to the interrelated components of outdoor winter design and planning, site design and winter infrastructure.

All Edmonton parks, squares and open spaces should be high-quality, attractive and durable for all seasons. Quality public spaces that are animated and delightful year-round support meaningful social interaction — they even improve physical and mental health.





PARKS BREATHE LIFE AND SUSTAINABILITY INTO AN ACTIVE EDMONTON

Parks are complex elements of a city. They can serve scores of different users, may be specialized in their function, and can simply provide visual appeal for residents. However they work, parks act to define the shape and feel of a city and its neighbourhoods. They also function as a conscious tool for revitalization.

– City of Edmonton Urban Parks Management Plan

2.3 Site Design

Open Spaces Outcome 3:

Parks and open spaces are used and enjoyed year-round.

Rationale:

Parks and open spaces vary greatly in size, form and function across Edmonton. The landscape and design of all of the city's public parks and open spaces should be attractive, of high quality and durable for all seasons. Quality spaces available throughout the city can help support social interaction in a meaningful way. There are many different kinds of public and private spaces in a city that provide gathering places for residents, reduce social isolation, and contribute to a sense of community. A quality public space is welcoming and barrier-free, gives people a reason to visit, is accessible, and provides a sense of safety and comfort that will encourage them to linger.



▲ The Edmonton Freezeway skating trail pilot project, Winter 2015/16, conceived by Matt Gibbs, and creatively lit by Dylan Toymaker, in Victoria Park, Edmonton, AB

2.3.1 Site Planning and Design

- A. Design our parks and open spaces for a multigenerational and multicultural population. Special attention must be given to making spaces completely accessible and barrier-free for all users in the wintertime.
- B. Consider the distribution of events and activities throughout the year, who is participating, and how to optimally design and arrange available spaces.
- C. Identify alternate uses for community gardens, outdoor pools, dry ponds and spray parks during the winter months at early stages of planning.
- D. Look for opportunities to develop winter activity hubs in geographic quadrants of the city and in the river valley. For example, tobogganing hills, skating areas, cross-country ski loops and servicing for facilities.
- E. Block prevailing winds and create sun traps with structures or landscaping, so that outdoor spaces will feel warmer and be usable throughout the year.
- F. Maximize solar access onto play and seating areas in order to improve comfort in winter conditions. Reduce shadows cast from schools, facilities and buildings over playgrounds and adjacent seating areas.
- G. Place glazing and openings in buildings to face an outdoor activity area to allow for interaction, supervision and observation.



▲ Pick up shinny in a community league rink in Edmonton, AB

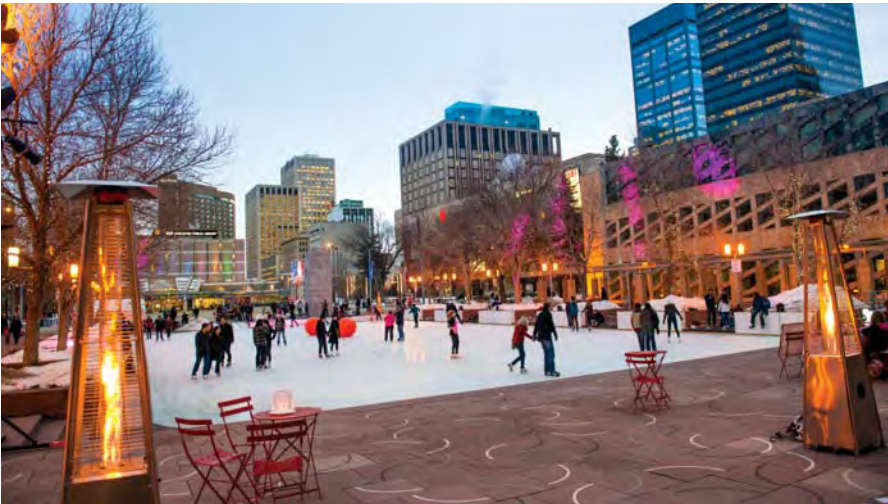


▲ The Alfred Savage Centre has great solar access and provides good indoor-outdoor interactions that support a variety of activities in winter in Edmonton, AB

- H. Look for opportunities to keep clean, uncontaminated snow on site, so that it can be used for play.

- I. Account for spring run-off from snow storage areas in the site's drainage plan. Ensure that snow storage and contaminants (i.e. salt, ice melters, sand and soot) drain away from creeks, rivers and natural areas.

- J. Refer to The Streetscape section of this document for more guidelines around site planning of buildings, walkways and open spaces, in particular for interfaces between the built form and parks, open spaces, shared use paths and furnishings.



▲ Civic Plaza outside City Hall in Edmonton, AB



Ice skating loop at the Meadows Recreation Centre in Edmonton, AB ▲



▲ River valley parks on the edge of downtown offer easy access to winter recreation in Edmonton, AB



PARK MASTER PLANS AND LANDSCAPE PLANS

Master plans need to address all four seasons, and should outline how the site will be used in winter. Snow-clearing and snow-storage plans should be included, as well as a maintenance schedule identifying priority snow-clearing areas.

Areas of dense evergreen vegetation can serve as a “wind sponge”, protecting people from the wind’s chilling effects.

Design of outdoor rooms should be balanced with Crime Prevention Through Environmental Design principles.

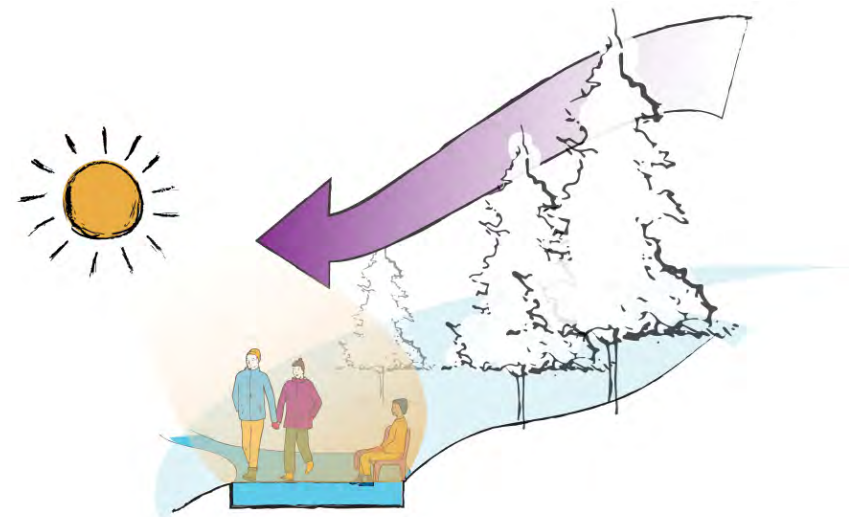
A park’s natural topography can provide opportunities for tobogganing areas, but pathways should be designed away from the slide-out areas.

2.3.2 Landscape Design, Planting and Vegetation

- A. Use grass mounds, berms and vegetation to define spaces and block winds.
- B. Use grass mounds and berms to create tobogganing areas.
- C. Create outdoor rooms using trees and vegetation to shelter areas from prevailing winds. Dense coniferous vegetation on an area's north-west side will help to block wind, while an open southern exposure will maximize solar access, warming the area.
- D. Use the natural topography and playground elements to create a hub of winter activity for the surrounding community. For example, slopes and hills for tobogganing, flat fields for snow furrows, snow sculptures and fort buildings, and pathways for running and sliding between garden beds.
- E. Consider low-intensity, pedestrian-scaled lighting along pathways to preserve night vision and visibility into surrounding areas. Use motion sensors and adaptive controls to save energy and minimize environmental harm. Also consider solar-powered options.
- F. Use landscaping to stop snow from drifting onto public walkways or trails. Berms and vegetation can also help to direct snow drifts away from building entrances, reducing the frequency of snow removal.



▲ Dense trees and homes block northwesterly winds from a south-facing park slope



▲ South-facing benches and wind blocks, such as coniferous trees or buildings, create comfortable, inviting spaces to linger in in winter



WINTER DESIGN GUIDELINES

Site Design

- G. Use living snow fences, such as trees, plants and shrubs, to protect shared use paths and seating areas from blowing and drifting snow. These vegetative wind blocks are easier to maintain and have a longer life than snow fences and other man-made wind blocks. Plantings can also cause snow to drift, which may or may not be desired in a park setting.
- H. Select plant species that offer attractive or useful winter characteristics such as colour, fruit or tolerance to salt. Choose native or non-invasive species that will create interesting landscapes year-round, including tall grasses and hardy greens. Trees that have colourful bark or retain their fruit in winter will attract winter birds and add additional colour and texture.
- I. Consider the use of temporary winter elements in spaces where annual flowers are planted in summer.
- J. Select appropriate landscaping for snow-storage areas. Grassed or landscaped areas that are used for snow storage are subject to damage and poor growth due to compaction and pollutants, and possibly poor drainage.
- K. Balance winter considerations for sun and wind with summer considerations, like summer breezes, urban heat island effects, shade and westerly sun exposure. In light of climate change, monitor changes in plant communities.



Birds are the unsung heroes of winter gardens, adding beauty and life ▲



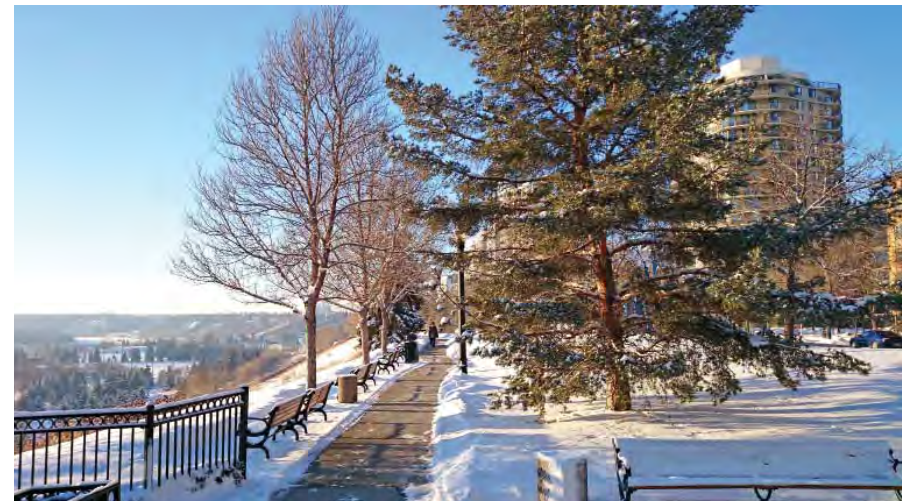
▲ Colourful bark and leaves provide contrast to white and gray

2.3.3 Pathways and Access

- A. Design walkways and pathways with clear and direct routes, anticipating desire lines to reduce exposure to elements on extremely cold days.
- B. Locate park and pedestrian pathways on the sunny side of streets and buildings, if they are only to be on one side.
- C. Consider the full range of users, ages and physical abilities early in the design process, particularly for access routes to and throughout park spaces. Provide handrails for all public walkways on slopes, especially where visitors, residents or patrons may have mobility challenges.
- D. Ensure that snowmelt run-off drains away from pathways into order to prevent hazards due to freeze-thaw cycles.
- E. See Section 2.3.2 for guidelines about snow drifting onto walkways and building entrances.



▲ *Compacted snow on a walkway in an urban park*



▲ *Deciduous trees along the south edge of the promenade allow sunlight to filter onto the walkway and benches in the winter. The bench seats are wooden, which is a warmer material for users, and the benches face south to capture sunlight*

2.3.4 Recreation

- A. Develop methods to adapt existing park features for winter activities, such as ice skating, skiing, tobogganing and snow tubing.
- B. Consider including adapted recreation spaces with barrier-free access to support adapted activities such as sledge hockey.
- C. Situate activities in close proximity to retail locations whenever possible, to provide opportunities for warm-up breaks, and to contribute to the local economy.
- D. Allocate suitable areas in parks and in the river valley for temporary, unique and playful exhibits, such as ice sculptures, ice castles, snow benches and designs in the snow.



Skating pond and building with skate change area, washrooms and concession in Edmonton, AB ▲



▲ Ice Castles in Edmonton, AB

MANAGING RISK

Many winter activities have higher risks associated with them due to the likely presence of ice and snow. The City of Edmonton is encouraging a culture of shared responsibility.

2.4 Winter Infrastructure

Open Spaces Outcome 4:

Public spaces support outdoor winter programming, recreation and everyday winter life.

Rationale:

The right infrastructure can help to create vibrant winter places that encourage and enable people to gather and be outdoors longer. Infrastructure, creative furnishings and art can bring people together, provide visual interest, illumination and weather protection.

A public meeting place that is comfortable and delightful has the power to energize and animate our city. It can serve as an informal gathering place and encourage social interaction. The physical and social activities that take place in our public spaces contribute to improved physical and mental health year-round, as well as increased community identity and pride.



▲ A family tries snowshoeing for the first time in Edmonton, AB

2.4.1 Shared-Use Paths and Open Space Connections

- A. Identify, prioritize and clear shared-use paths of snow and ice for all pedestrians, runners and cyclists with a focus on gathering areas and routes used by active transportation commuters.
- B. Design complementary networks for cross-country skiers, snowshoers and kick-sled users. Ensure appropriate grooming (track-set or compacted) to accommodate different snow sports. Incorporate signage and design features along ski trails to discourage other users such as walkers from damaging the set tracks.
- C. Look for opportunities to increase connectivity between groomed cross-country ski trails in order to create a more complete network and to support active transportation.



▲ Friends pushing each other on kick-sleds



▲ Cross-country skiers in Gold Bar Park, Edmonton, AB

- D. Incorporate trails from recreation areas and associated equipment storage facilities into overall transportation network.
- E. Provide lighting and clear wayfinding signage along priority trails (those used for commuting). Consider educational signage for trail etiquette that will discourage other users from damaging groomed trails.
- F. Develop an open source winter circuit map to establish high use routes for winter active transportation modes.
- G. Designate suitable areas for kiosks to sell hot drinks and food to commuters and recreational trail users in order to create destinations and to attract people. Include consideration for seating areas.
- H. Consult with community partners when designing new trails to understand the variety of potential users and preferences.



▲ Segway users enjoying a sunny winter day on a maintained multi-use trail



A multi-use trail in Edmonton, AB ▲



▲ Maintained routes encourage active transportation modes in winter

2.4.2 Shelters and Structures

- A. Design shelters that provide protection from the elements, and include passive solar design and warm materials for seating and lighting. To absorb and radiate heat over a longer period of time, use dark colours over light ones.
- B. Provide shelters or wind blocks in areas that serve as outdoor gathering spaces, particularly where transit stops are located. Design destination nodes around the city with services for sheltered cafés.
- C. Install barrier-free warming huts and winterized public washrooms along trails and in park sites to give users spots to rest or enjoy lunch, while also providing weather protection.



▲ Hygge House, one of five 2013 winners of Warming Huts: An Art + Architecture Competition on Ice in Winnipeg, MB



▲ Warming hut, designed by Danielle Soneff, in Edmonton, AB



Winter market huts, designed by Arthouse Residential, in Edmonton, AB ▲



▲ Skis outside the 2014/2015 Winter Chalet sponsored by EPCOR in Edmonton, AB

- D. Consider the day and evening functions of the area where the shelter will be located, as well as any specific needs, such as lighting or electricity. Design necessary lighting to minimize contrast and glare. Utilize controls to dim or turn off lighting when not needed.
- E. Look for opportunities to use reflective surfaces, such as mirrors, in places with no direct solar access.
- F. Incorporate views to the outdoors in small warm-up areas, such as in a vestibule within public washroom facilities. Design public areas to allow for outdoor-indoor interactions, so that people who are outdoors can see and gesture to those who stay indoors.
- G. Create unique, protected areas with moveable walls, baffles or landscape planters that can be reconfigured to different spaces.

2.4.3 Signage

- A. Include information about up-coming winter activities, events and uses on park signage.
- B. Include colorful wayfinding information on park banners to celebrate winter. Clearly mark active transportation routes (cycling, skiing and walking/running) that are priority for snow grooming and clearing routes to support safer and more enjoyable navigation.
- C. Consider opportunities for signage that also provides wind and weather protection; for example, fabric banners.
- D. Post trail etiquette and directional signage to encourage trail users to respect groomed trails for cross-country skiing. Advise that foot, paw and bicycle prints damage ski tracks.



▲ Skate rental entrance sign in Chicago, USA



▲ Trail information post in Fort Collins, USA



WINTER RECREATION AREA



SNOWSHOEING



C.C. SKI TRAIL



ICE SKATING



SLEDDING



DOWNHILL SKIING

◀ Examples of signage for winter activities

2.4.4 Furniture

- A. Orient seating and gathering places in public spaces to maximize sunlight and offer some wind protection. Consider comfort in all four seasons.
- B. Choose materials that are warmer and more comfortable in winter. For example, wood is warmer than metal, which can get very cold or hot. Materials should also be durable, comfortable, colourful and aesthetically pleasing.
- C. Position benches and cluster seating near shrubs and coniferous trees, where possible, for protection from the winter weather.
- D. Provide a variety of styles of benches and tables that are moveable, so people may choose to group with others or sit alone. This also allows visitors to respond to different weather conditions.
- E. Place seating, shelter and rest areas along trails and adjacent to play spaces that are accessible to all pedestrians.
- F. Create an iconic Edmonton winter symbol that can be used on railings and furnishings; for example, a stylized snowflake.



▲ Enjoying hot chocolate on a winter patio at City Hall in Edmonton, AB



▲ A bench overlooking a tobogganing hill in Edmonton, AB

2.4.5 Other Infrastructure

- A. Provide supporting infrastructure for outdoor rinks, including ovals, ice ribbons or skating pathways.
- B. Provide safe public fire pits in barrier-free gathering areas near skating rinks, other recreational activity areas and informal gathering places.
- C. Consider outdoor heat lamps where supervised facilities exist; for example, an outdoor courtyard, patio or plaza.
- D. Create barrier-free spaces that encourage public events, such as outdoor winter markets, by providing electrical outlets, indoor washrooms and direct vehicle access on hard-surface paths (for vendors and performers). Electrical infrastructure should consider the high amp-load necessary for electric heaters for market vendor huts.
- E. Consider operating and maintenance costs, environmental impact, and safety requirements when selecting permanent and temporary heating infrastructure.



▲ A couple warming up by a public fire pit outside City Hall in Edmonton, AB



▲ Children playing tin-can curling in a park in Edmonton, AB

WINTER EVENTS HAVE DIFFERENT NEEDS

We know from winter festival producers that winter events require infrastructure for lighting, heating elements, and fire. Including the required supporting infrastructure in the initial design of public spaces will make animating our spaces in winter much easier and more cost-efficient.

2.4.6 Lighting

- A. Provide electrical infrastructure for the creative use of light. Refer to the Creative Lighting Master Plan and the Light Efficient Community Policy..
- B. Establish and prioritize possible lighting of high-use parks and trails for nighttime use. Exercise extra caution when considering new lighting features in natural areas and river valley parks.
- C. Use on-demand lighting, motion sensors, and/or adaptive lighting to improve visibility when needed, and to preserve the natural state of an area when it is not in use.
- D. Minimize light pollution and glare from all light fixtures, especially from community rink lights.
- E. Consider ways to make use of summer park features, such as water spray parks or fountains, with a temporary lighting installation.



▲ Low, soft ribbon of lighting in a neighbourhood park



Soft winter lighting at a skating oval with clubhouse in Montreal, QC ▲



▲ A fountain with LED lighting in winter at City Hall in Calgary, AB

2.4.7 Public Art in Public Spaces

- A. Provide opportunities for the installation of outdoor public art to provide colour and illumination in public spaces.
- B. Support and encourage the incorporation of functional public art in high pedestrian traffic areas that may provide seating and weather protection.
- C. Encourage winter-themed art installations as winter is a core part of our city's identity.



▲ Vaulted Willow, by Marc Fornes & THEVERYMANY, in Borden Park, Edmonton, AB



Mygloo, by Carly Moore, Olivia Fung, Heather Vander Hoek ▲ and Amy Wowk, at illumiNITE 2013 in Edmonton, AB



▲ Lunchbreak, by J. Steward Johnson Jr., in Churchill Square, Edmonton, AB



3

Next Steps: Implementation



Implementation of Guidelines

The Winter Design Guidelines provide a robust winter lens for urban planners and city builders. We expect elements of the guidelines to be incorporated into a number of other city policies, regulations, standards and guidelines over time as those documents are either created or updated. Indeed, as opportunities arise, we expect to see continuous improvement in how a winter lens is integrated into all that the city does.

As the various city regulations, standards and guidelines are updated, the opportunity to develop performance measures will be examined. In many cases, winter design performance measures do not exist, or are not used or widely accepted by other winter cities. Going forward, Edmonton should strive to develop its own where it can.

Many of the points in each outcome will have operational implications and may call for more diverse infrastructure to be managed and maintained. As a result, budget requirements and operational cost implications must be considered. In addition, all city departments should consider new and/or collaborative ways to fund the operation and maintenance of winter design elements.

Where the Winter Design Guidelines conflict with other city policies and guidelines, a careful examination of the friction points is warranted. These competing interests should be dealt with on a case-by-case basis, but in many cases, we believe a balance will be found. However, the two goals and four outcomes should be paramount in all cases; there is flexibility only when it comes to the many points listed under each outcome.

3.1 City Regulations, Policies and Guidelines

These next steps relate City of Edmonton planning policies, guidelines and regulations that inform urban design and development.

Next Steps	Estimated Time Horizon	Lead Sponsor
Incorporate Winter Design Principles into Direct Control Provisions	Ongoing	• Sustainable Development Department
Revise Zoning Bylaw to support the Winter Design Principles outlined in this document	Short to medium term. Ongoing	• Sustainable Development Department
Integrate into Breathe: Edmonton’s Green Network Strategy	Underway	• Sustainable Development Department
Revise and update Complete Streets Guidelines Review, and update Active Transportation Policy	Short term	• Sustainable Development Department
Revise and update TOD Guidelines	Long term	• Sustainable Development Department
Develop Creative Lighting Master Plan and Program	Underway	• WinterCity Office and Advisory Council • Sustainable Development Department
Require adherence for City of Edmonton development and redevelopment	Short term	• WinterCity Office • Integrated Infrastructure Services Department



3.2 City Development Standards

These next steps relate to City of Edmonton engineering, construction and design standards.

Next Steps	Estimated Time Horizon	Lead Sponsor
Revise and update Roadways Design and Construction Standards	Short to medium term	• Sustainable Development Department
Revise and update Landscape Design and Construction Standards	Completed	• Sustainable Development Department
Revise and update lighting standards	Short to medium term	• Operations Department • Integrated Infrastructure Services Department
Review and update maintenance and operations standards	Medium term	• Operations Department

3.3 Partnerships, Collaboration and Continuous Learning

These next steps relate to partnership and advocacy with other agencies, service providers, orders of government, governance bodies, and non-governmental organizations that have direct and indirect impacts on designing for winter; new recognition initiatives for pilot projects and innovative winter design; and, ongoing learning within the City of Edmonton administration, as well as outreach education to its partners and the public.

Next Steps	Estimated Time Horizon	Lead Sponsor
Monitor application of, and collect feedback on, the Winter Design Guidelines	Short term	<ul style="list-style-type: none"> • Sustainable Development Department • Private industry and communities
Pilot a winter design project or installation	Short term. Ongoing	<ul style="list-style-type: none"> • Sustainable Development Department • Citizen Services Department
Develop a recognition program for developers whose projects (e.g. buildings and new communities) incorporate winter-friendly features	Short to medium term	<ul style="list-style-type: none"> • Sustainable Development Department
Organize formal learning opportunities and symposia	Short term. Ongoing	<ul style="list-style-type: none"> • Sustainable Development Department
Communicate with, and educate stakeholders about, the Winter Design Guidelines (e.g. e-learning modules and the City's Planning Academy)	Short term. Ongoing	<ul style="list-style-type: none"> • Sustainable Development Department • WinterCity Office and Advisory Council • University of Alberta • Grant MacEwan University • NAIT
Produce brochures on leading winter design practices for the general public, community leagues, and general commercial owners/operators	Short term. As required	<ul style="list-style-type: none"> • WinterCity Office • Sustainable Development Department

4

Appendix



4.1 Acknowledgements

This project was led by the City of Edmonton's Sustainable Development department and was co-chaired by the Current Planning Branch and the WinterCity Office in Community Services.

Consultation and stakeholder feedback was sought throughout the guidelines development process and incorporated into this document by the Project Team.

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Light-Efficient Communities Coalition

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Winter Cities Shake-Up Conference

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4.2 Other Reading

This section contains a variety of documents supporting the Winter Design Guidelines, organized into two parts: The Way Ahead, and Other Relevant Documents.

The Way Ahead section describes how each of the six City of Edmonton municipal Ways plans relate to the Winter Design Guidelines.

Other Relevant Documents provide further details on city planning initiatives and policies, and how they relate to the Winter Design Guidelines.

4.2.1 The Way Ahead

The Way Ahead

The Way Ahead document outlines Edmonton's bold, citizen-led vision for Edmonton in 2040. It establishes six ten-year strategic goals to achieve the vision, and directs long-term planning decisions to transform Edmonton into an increasingly vibrant and sustainable city. The accompanying series of six detailed directional plans, known as The Ways, were developed to help realize the strategic goals. Collectively, The Way Ahead and The Ways form the City of Edmonton's Strategic Plan. Each of The Ways plans supports the use of winter city design in Edmonton.

The Way We Grow

The Way We Grow: Municipal Development Plan (MDP) encourages urban design that reflects that Edmonton is a winter city, allowing residents to enjoy the city in all seasons (Policy 5.1.1.8). The plan encourages a more compact, transit-oriented and sustainable city. In particular, it calls for a greater proportion of new development to occur within mature and established neighbourhoods. In addition, The Way We Grow establishes that medium- to higher-density residential, employment and retail development should be focused around LRT stations and transit centres.

The Way We Move

The Way We Move: Transportation Master Plan establishes the framework for how the City of Edmonton will address its future transportation needs. The plan calls for an interconnected, multi-modal transportation system that is integrated with land use. It envisions a system where citizens can walk, bike, ride the bus and/or take the train efficiently and conveniently to their desired locations in all seasons. It recognizes that transportation infrastructure shapes our urban form, impacts our economic well-being, and is a primary determinant of our city's environmental, financial and social sustainability.

The Way We Green

The Way We Green: Environmental Strategic Plan encourages the renewal and densification of mature neighbourhoods to ensure superior living experiences that include opportunities to enjoy winter and experience the full potential of a winter city. This plan calls for a shift away from current patterns of outward growth and development in Edmonton as they will result in greater automobile dependency, and will negatively affect our environment through higher energy consumption, greater pollution, traffic congestion, and increased health costs.

The Way We Live

The Way We Live: Edmonton's People Plan redefines local government as a caring entity that creates a diverse and inclusive city by connecting people, creating communities where people can age in place, and actively nurturing an arts, culture and athletic community. One of its strategic policy directions is to promote and celebrate winter and Edmonton's status as a winter city. Because the season can present challenges for connecting with others and keeping healthy and active, residents look to the city to play an active role in inspiring Edmontonians and creating opportunities to be engaged in winter activities.

The Way We Prosper

The Way We Prosper: Economic Development Plan explains that while the dominant energy and resource sectors are well established, opportunities are growing in emerging industries such as clean technologies. Edmonton's economic

competitiveness will benefit from opportunities to export unique knowledge and expertise to new global markets, particularly in cold-weather construction and post-secondary research. Support to grow cultural and sports events, the arts, winter festivals, vibrant street life, and an active river valley will enhance the tourism experience and engage Edmontonians.

4.2.2 Other Relevant Documents

The following guidelines, policies and resources should be reviewed for guidance on new development goals and design, where applicable. This list is not exhaustive.

Accessibility to City of Edmonton Owned and Occupied Buildings (C463)

The City of Edmonton, as an employer and provider of public services, is committed to providing access to all City of Edmonton owned and occupied buildings. The city has committed that all persons will have reasonable access to City of Edmonton owned and occupied buildings. Reasonable access should be provided to all persons, including persons with disabilities. This applies whether a person is an employee, citizen, visitor, official or other. (Note: This policy is being updated.)

Active Transportation Policy (C544)

Active transportation includes any form of human-powered transportation, the most common modes being walking and cycling. The purpose of the Active Transportation Policy is to optimize opportunities to walk, roll, and cycle, regardless of age, ability, or socio-economic status; to enhance the safety, inclusivity and diversity of our communities, and to minimize the impact of transportation activities on Edmonton's ecosystem.

Business Revitalization Zone (C462B)

The Business Revitalization Zone structure is a mechanism for organizing business interests, resources and opinions within a commercial district comprised of a diversity of business types and numbers. The City encourages and will facilitate the efforts of a business community to improve and promote its economic and physical well-being through the creation of a Business Revitalization Zone Association.

Community Group Led Construction Projects Guide

The Community Group Led Construction Projects Guide is intended to support not-for-profit organizations such as community leagues and other community organizations when developing or redeveloping community amenities. It outlines the steps required to obtain approval to make changes or improvements to City of Edmonton parkland or facilities.

Community League Grants (C502A)

The City of Edmonton values the contributions of community leagues in creating community hubs and strengthening neighbourhood connections. Community leagues provide a variety of recreation, sport and other locally-based program and activities, develop community leadership, empower citizens to build strong and caring communities, and support other not-for-profit and multicultural groups with program space. The purpose of this policy is to provide limited financial assistance for programs, services and infrastructure, among other initiatives.

Complete Streets Guidelines

These guidelines will help the City implement The Way We Move: Transportation Master Plan by integrating transportation and land use, and encouraging active transportation. Complete Streets is a new approach to planning and designing Edmonton's transportation system. The idea is based on designing a street that reflects the surrounding area's context, land use and users. A complete street is designed to integrate all road users safely in all seasons, including pedestrians, cyclists, motorists, truck drivers, and public transportation users of all ages and abilities.

Conserving Edmonton's Natural Areas: A Framework for Conservation Planning in an Urban Landscape

The City of Edmonton will encourage the conservation and integration of as many environmentally-sensitive areas and significant natural areas into Edmonton's future urban environment as are sustainable and feasible. The City's challenge is to form cohesive action while balancing the interests of government, the public, development, and environmental non-government organizations. This framework outlines strategies for conserving Edmonton's natural areas and for facilitating broader community discussions.

Crime Prevention Through Environmental Design (CPTED)

Crime Prevention Through Environmental Design (CPTED) helps make communities safer through neighbourhood planning, development, and maintenance. CPTED deters criminal activity through natural surveillance (e.g. visibility, positive social activities), natural access control (e.g. entry and exit points, fences), and natural boundaries (e.g. clear ownership, clearly marked private spaces).

Designing New Neighbourhoods: Guidelines for Edmonton's Future Residential Communities

Guiding the preparation of new Neighbourhood Structure Plans in urban growth areas, this document applies a performance-based approach to new neighbourhood designs in Edmonton. Twelve specific outcomes and principles guide the design of new neighbourhoods, and provide specific guidance on year-round design and the street network in new neighbourhoods.

Edmonton Design Committee

The Edmonton Design Committee (EDC) reviews presentations from both civic departments and the public in regards to major developmental applications, direct control rezoning applications, and public projects, city-wide with a pre-determined geographical area. The EDC meets in public, and is designed to review submissions in order to provide advice to City of Edmonton development planners, with a goal of improving the quality of urban design in Edmonton.

Façade Improvement Program Policy (C216B)

The City of Edmonton supports the revitalization of main street commercial areas in need of added support. The purpose of the policy is to encourage property owners of existing street-level retail and/or commercial buildings located with Business Revitalization Zones and other areas to invest in the improvement of their building's storefront and/or façade. Improvements must enhance the interface between the public pedestrian space and commercial activities, and have a positive aesthetic impact on the existing street.

Green Building Policy (C567)

The Green Building policy provides a framework and various actions aimed at improving the environmental, health, and socioeconomic performance of all types of buildings.

Light Efficient Community Policy (C576)

The Light Efficient Community Policy guides the City of Edmonton in providing high quality roadway and outdoor lighting that includes proper lighting for pedestrians, cyclists and motorist. Engineering guidelines and standards are included to ensure safety while minimizing light pollution, power consumption and greenhouse gas generation.

LRT Design Guidelines

The LRT Design Guidelines provide information and direction to the City of Edmonton staff, consultants, and contractors who are involved in the design of Edmonton's LRT system. They outline standards governing the designs of various elements on Edmonton's LRT System.

Main Streets Guidelines

Main streets are important places and important transportation links. Both functions need to be in balance when considering main streets. This document lists Edmonton's main streets, and provides detailed guidelines for enhancing the streetscape. The Main Street Guidelines are part of the Complete Streets Guidelines.



Measuring Up Toolkit

The City of Edmonton is committed to improving livability for people of all abilities and backgrounds, developing facilities and infrastructure that are accessible to all, and improving accessibility throughout the city by enforcing municipal bylaws. The Measuring Up Toolkit provides a self-assessment guide and resources to help you or your organization become more accessible and inclusive.

Neighbourhood Renewal Program

The Neighbourhood Renewal program is part of the Building Great Neighbourhoods Initiative. It outlines a cost-effective, long-term strategic approach to renew and rebuild roads, sidewalks and streetlights in existing neighbourhoods and collector roadways. The program balances the need to rebuild in some neighbourhoods with a preventive maintenance approach in others.

North Saskatchewan River Valley Area Redevelopment Plan (ARP) Consolidation (Bylaw 7188)

The River Valley ARP is a comprehensive plan which envisions the major portion of the River Valley and Ravine System for use as an environmental protection area and for major urban and natural parks. It establishes policies and development approval procedures for projects that fall within the North Saskatchewan River Valley and Ravine System boundary. (Note: This ARP is being updated.)

Percent for Art to Provide and Encourage Art in Public Areas (C458C)

This policy provides and encourages art in public areas to improve the livability and the attractiveness of Edmonton. The City of Edmonton will dedicate 1% of qualifying construction budgets to cover the costs of implementing the program. The approved public art will be in close proximity to publicly-accessible municipal projects.

Road and Walkway Lighting Design Standards

This design manual defines road and walkway lighting requirements specific to the City of Edmonton. The document is a supplement to the Transportation Association of Canada (TAC) Guide for the Design of Roadway Lighting, and shall be referenced with the TAC Guides and processes specific to the City.

Snow Removal Policy

This policy ensures that roadways are maintained to minimize economic loss to the community, prevent or reduce accident and injury, and facilitate the handling of emergencies by the emergency responders and police services. The purpose is to provide for a safe and reliable transportation network while protecting the environment and providing excellent service to the community.

Transit Oriented Development Policy (C565) and Guidelines

Transit Oriented Development (TOD) is an approach to building a city which concentrates housing, shopping and employment along a network of walkable and bikeable streets within a five minute walk of transit stations – or 400 metres in any direction. TOD supports the City's vision of a vibrant, sustainable city with attractive, livable and more compact communities.

Urban Forest Management Plan

This plan provides strategic direction for Edmonton's entire urban forest. It is a strategy for sustainably managing and enhancing our diverse urban forest so that it will continue to serve this community for generations to come.

Urban Parks Management Plan

The Urban Parks Management Plan (UPMP) guides the acquisition, development, maintenance, preservation and use of parkland. It provides strategic direction for all river valley and ravine parkland as well as all school and park sites outside the river valley. (Note: this plan will be replaced with *Breathe: Green Network Strategy* when it has been completed.)

4.3 References

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