

PEDESTRIAN MOBILITY IN WINTER

By Patrick J. Coleman, AICP

INTRODUCTION

Since the beginnings of the Winter Cities movement in the early 1980s, a growing network of communities, large and small, have benefited from networking, research and promotion of solutions to common problems. Awareness has been raised about the unique issues and opportunities of northern cities. Participants in winter cities conferences have become inspired to take positive action to improve winter livability in their communities.

While great improvements have been made to improve the planning, quality of life, the economy, snow management and transportation in participant cities, much work remains to be done to overcome the challenges of living in, and managing the winter city. There has not been widespread acceptance of the principles of winter city management. Many cities remain in denial of winter by planning and implementing projects without full consideration of the winter season.

For this reason, it is important to continue the winter cities movement through the conferences, research, publications and other efforts, so that citizens of northern cities around the world may enjoy an enhanced quality of life and so northern cities can remain attractive for investment, business and as places to live.

One of the keys to being a “good winter city” is to question and reconsider all municipal actions relating to the winter season. It is imperative for cities to seek out and implement new or different ideas for improving services, infrastructure, public spaces, and the environment. There has been considerable attention, resources and energy devoted to improving urban infrastructure, transportation facilities for automobiles, the environment and urban design in the winter city. Some winter cities have addressed winter pedestrian conditions by completely sheltering pedestrians from the cold and snow in underground passages or above-grade walkways. Outside of these interventions, little has been done to influence pedestrian conditions in North American winter cities. This paper will describe the problems of pedestrian mobility, and identify some innovations, approaches and projects that can improve pedestrian conditions in winter cities.

WINTER AND THE PEDESTRIAN-THE PROBLEM

Winter greatly affects the mobility of pedestrians in northern cities. Cold, snow, and the decreased light levels in the north all influence not only the ability of people to walk in winter, but also the desire to walk. Cold weather is not so bad by itself, as one can wear the right clothing and be comfortable. When cold is combined with wind, walking can be very uncomfortable, if not dangerous. Snow and the condition of the walking surface itself are major factors with mobility. A packed snow surface actually is one of the best walking surfaces. Four centimeters of fresh snow and walking becomes more difficult. If the snow is old or has thawed, and the surface is icy, then walking again becomes difficult and dangerous, especially when combined with a sloped surface.

Decreased light levels also influence walkability. Pedestrians are more susceptible to auto collisions under decreased light levels. It becomes difficult to see ice and obstacles. People are not always comfortable walking at night, unless the walkway is well-lighted.

Among winter cities, one also finds a variety of winter climatic conditions. Conditions range from very cold with little snowfall, to moderately cold with much snow. The latter conditions, such as experienced in Aomori, Japan and Marquette, Michigan, are the most difficult to create good pedestrian conditions consistently and requires more responsibility by the city government and citizens to become a walkable city.

Fashion, particularly ladies shoe and boot fashions, has been clearly out of step with winter. Most women's boots have smooth soles, not suited for walking on slippery surfaces.

Recently, I reviewed literature relating to pedestrians and slip and fall accidents, including the book *Slip, Stumbles and Falls: Pedestrian Footwear and Surfaces*, by B. Everett Gray. This book was published by the American Society for Testing and Materials (ASTM). There was no mention of winter and its effects on pedestrians and walking in this book. Was this an oversight and winter was merely forgotten? Or, perhaps it is just another example of winter and its challenges being left out in the cold.

It is generally recognized that most northern cities were not designed for the winter climate. This affects the pedestrian directly. Older city development patterns, such as the grid system, frequently have walkways. However, in snowbelt areas, the space used for the walkway becomes important for snow storage. In newer suburban areas, walkways were frequently not constructed at all.

If the city were to be designed for the pedestrian, the walkway would take on more prominence, with separation from traffic, windscreens using earth forms, evergreen trees, and adequate snow storage along streets.

During winter, walking becomes more difficult and often uncomfortable. This is a simple fact. If we, as winter cities, desire to make our communities more walkable, then we must consider all these environmental and psychological factors in our infrastructure and maintenance. The problem is, these factors are not considered, in fact, the prevailing thinking is that people do not or will not walk in winter no matter what.

CULTURAL BARRIERS TO PEDESTRIAN MOBILITY

In the auto-oriented culture of Canada and the United States , many northern cities have ignored the pedestrian in winter time, with most attention and resources devoted to keeping streets and highways clear of snow and ice for the automobile. In fact, in many cities, neighborhoods, even entire suburban communities can be found without walkways. Most suburban commercial developments are constructed without pedestrian connections or any means of walking between businesses, much less walking to the commercial development from a neighboring residential area.

The auto-oriented culture further compounds the problem of pedestrian mobility. We have become so dependant upon cars, and related roads and parking facilities, that the needs of parking and roads outweigh the needs of the pedestrian. Parking requirements for public and private facilities, often legislated by the city government's own zoning and land use controls, have created unrealistic perceptions by the public that walking is undesirable. An architectural pundit might say that the new rule of design is "form follows parking".

People expect to be able to park by the front door of their destination; anything further is inconvenient. This perception further erodes the economic viability of the traditional

downtown shopping district, where parking is often in ramps and distant surface lots, in favor of the malls and big box retail centers located at the urban fringe.

This total dedication to the auto is changing, however, as more persons are choosing to walk in winter cities and demanding better pedestrian conditions. This change is primarily driven by the need and desire of many to walk for health benefits. Walkability also influences a city's ability to attract new investment in business, jobs and residents to the central city, as more people desire to spend less time commuting and to live near where they work.

Creating a good walking environment requires a commitment to maintain the walking surface for pedestrians. This of course is much easier in cities with light or sporadic snow events, as compared to areas that receive more snow. City governments in snowbelt areas generally have been reluctant to commit to walkway maintenance because of cost, and the belief that "people do not walk in the winter". It is simply a matter of priorities!

In some winter cities, the burden of sidewalk winter maintenance is left to the property owner. Some communities have ordinances or bylaws relating to maintenance of walkways, however, these are not always enforced consistently.

The whole question of liability also limits winter maintenance of walkways. Our society today is much more litigious than in the past. It seems someone else is always to blame for misfortunes, and slip and fall accident claims are common in the courts. If it is the city's responsibility for maintenance, then the city government may be liable for injuries due to accidents, slips and falls. Many local governments are reluctant to assume this perceived liability.

There is of course, a recognized cultural barrier and bias against winter in the fields of city planning and engineering. While great strides have been made in the awareness of winter problems, most northern cities continue to plan and construct city developments without regard for the dominant season of winter.

SOLUTIONS FOR PEDESTRIAN MOBILITY

In winter cities around the world, we find a wide disparity in the commitment to create good pedestrian conditions, and a variety of positive solutions and techniques to create better pedestrian mobility.

At the dawn of the winter cities movement, much attention was focused on the winter needs of the central business district and to link various buildings together to reduce the need for people to walk outside. A number of northern cities created indoor and elevated pedestrian movement systems in the central business districts.

Minneapolis/St. Paul, Minnesota and Calgary, Alberta, Canada are great examples of winter cities that were pioneers in linking buildings together to create an indoor walkway system. Skyways, skywalks, and plus 15's are words describing the pedestrian bridges that are the arteries of these systems. Today, one finds these elevated walkways in many cities, including Duluth and Rochester, Minnesota, and Edmonton, Alberta .

In Houghton, Michigan, a small city (population 7,000) in the Lake Superior snowbelt, a system of overhead walkways and "doors between stores" was created in the mid-1980's. This project won an award for urban infrastructure at the 1988 Edmonton Winter Cities conference for its creativity and adaptability to large and small towns everywhere.

Toronto and Montreal, both major population centers in Canada, have linked vast areas of the central city underground with walkways that double as shopping arcades and malls.

While underground, above-grade and through building arcades and walkways have benefited the downtown areas of cities, some question their value. The primary criticisms are that they often reduce street level animation and life, and create negative impacts on street level retail establishments. Retail becomes focused inward, rather than making the street an interesting place. And it is widely recognized that street animation is a vital component of a healthy downtown.

Much can be learned about pedestrian mobility from the cities of northern Scandinavia. Here we can find positive examples of both a physical and cultural bias in favor of the pedestrian. It is here where pedestrians are given some priority and favor. I believe it is because culturally, the pedestrian is more important, and also because winter is an important part of the life of this region.

Traffic calming improvements, such as raised crosswalks at street intersections, are employed to slow down vehicles and provide a dry walking surface for the pedestrian to cross the street. In Lulea, Sweden, much of the main shopping district is free from cars, with a total pedestrian orientation.

In Kiruna, Sweden, major traffic changes some years ago resulted in a one-way street system. This was designed to favor the traffic flowing uphill, resulting in a 30% decrease in auto emissions in the city. More importantly, the traffic improvements allowed the narrowing of major streets to provide more space for pedestrians in the centrum (central business district).

In both Kiruna and Lulea, much care is taken to provide the pedestrians with a good consistent-walking surface. No salt or de-icers are used, rather, small diameter gravel is used for an abrasive to improve traction. Walkways are scraped clear of loose snow, leaving a packed snow surface, perfect for walking.

Traditional kicksleds, or sparks, are used by many persons in northern Scandinavia to assist with walking in winter. Consisting of a chair mounted on long steel runners, the kicksled has been used for over 100 years and remains an important transportation mode of travel. They are especially favored by older persons and mothers with children. The kicksled provides stability and support on the winter walking surface. They can be ridden on downhill grades, or propelled by standing on one runner and kicking the snow surface. Small parcels may be carried on them and the chair provides a place to sit and rest.

Scandinavian communities consider the kicksled when maintaining walkways. When spreading the gravel abrasive, clear lanes are left for the sleds. There are even special parking places for the kicksleds in Kiruna.

Some northern cities in North America do take special measures for the pedestrian. In Marquette, Michigan, hosting a winter cities conference in 1997 resulted in increased awareness of winter problems and opportunities. The City of Marquette has made winter livability a priority in many areas of public works and facilities.

Key walkways through neighborhoods are plowed for pedestrians. Walkways leading to schools are priorities.

In the historic downtown district, it was recognized that winter conditions, as well as steep grades, were a major barrier to downtown's competitive advantage over outlying shopping area. A program was developed to improve this situation.

Winter maintenance of downtown walkways and parking areas is now a priority of the city's downtown development authority. This group took over this responsibility from the city public works department. Linkages between parking areas and the retail street have been designed for comfort in the winter season. A new elevator/stair tower will remedy the steep grade between parking and the main street while providing a more direct, convenient and weather-sheltered route for downtown patrons.

The downtown development authority clears snow from the sidewalks using a small tractor with sweeper, rotary and blade attachments. It leaves the walkway in pretty good condition. Property owners may elect to scrape and do further maintenance if desired. Sand and/or de-icer is spread for icy conditions. The maintenance includes opening areas in the snow windrow along the curb left from street plowing. This provides more convenient access from on-street parking. While not entirely perfect, the attention to winter maintenance has improved attitudes among downtown office workers and retail patrons in Marquette. Constructing these links, however, is expensive, both to construct and to maintain.

Anchorage, Alaska, has developed a multi-use, non-motorized trail system linking various parts of the city. One can walk, run, ski, and ride bicycle on this trail in the winter. Marquette, Michigan is also considering maintaining a bike path in winter for multi-use. Once again, cost is a consideration. Special equipment must be purchased and used in order to pack and prepare the snow surface for multi-use.

This public cost of building and maintaining walkways for winter use must be compared to the value the community places on winter pedestrian mobility. Many will argue that pedestrian mobility in winter is not an achievable goal, or that the desire to walk in winter among citizens is not there. In the not so distant future, multi-seasonal access and mobility will have a far greater value, as more persons choose to live near where they work and forsake the traffic congestion and long commutes associated with many large cities.

About the author:

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