Winter Cities

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Winter Cities

FEATURES

DEPARTMENTS

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Winter Cities Association is dedicated to realizing the unique potential of all northern communities. Through publishing, networking, organizing conferences, facilitating research and other means. The Association seeks to make available solutions and to promote awareness of opportunities associated with the winter season.

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Winter Walking

Universal multi-season access is
the prime underpinning to the making of quality Winter Cities.

Change provides opportunity. At this time in many parts of the world "KING CAR" is being deposed. Are winter communities ready with better successor options? Northern hemisphere communities have their work cut out if they are to take advantage of this opportune moment to establish more balanced, humane and humane movement infrastructures authentically responsive to local "multi -season needs".

> "Engineers do not design railway bridges using good weather and baby carriage load criteria".

So, we too should design and manage our communities, for our most challenging conditions, the dark winter time, and for the most affected of our citizens, the disabled, seniors and young.

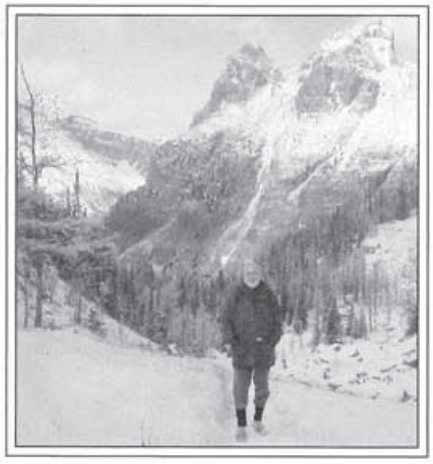
To our credit, the WCA with its affiliates have consistently supported universal multi-season access through research, forums, publications and the preparation of development guidelines.

This WC issue features some new insights on winter walking which add to the growing inventory of cold facts, necessary to shape locally appropriate solutions.

I look forward to seeing you in Yellowknife Canada at the Winter Cities Forum 93.

Harold Hanen

Publisher.



BANFF AWARDS

The famous Rocky Mountain resort town of Banff confirmed the team of Landplan/Design, Trans nova, Harold Hanen Associates, Robert McILhargery and Flesburg, Holt & Ullevig as winners of the competition for their downtown revitalization project.

The Downtown Enhancement design contract includes the redesign of streets, sidewalks, and open spaces for full multi-season use in Banff's downtown core. Construction is scheduled to begin in 1994.

Brent Baker, Chairperson of the Downtown Enhancement Project, says "All competing teams came up with exciting ideas for our downtown streets. However the successful team came up with more ideas and it has a proven team record."

ART NORTH

The Yukon contemporary arts Centre is now open in Whitehorse.

CJP Architects designed the $9 million dollar project for the Government of the Yukon, with consideration for the harsh climate and for the scale and form indigenous to the north.

The result is a simple, unadorned exterior consisting of wood siding on the lower elements and acrylic stucco on the higher elements. Forest green metal roof sections are reflected in the interior color scheme of green and rose, blending to provide a simple, classic identity to the building.

WINTER SOUTH

For a little taste of Antarctica, why not go to Texas? San Antonio's Sea World, the world's largest marine life park, has re-created a sub-arctic habitat complete with 200 penguins, as one of its attractions.

WEATHER CANADA

In a survey conducted by the Angus Reid Group, people from 15 countries were asked what they thought was the most positive or appealing thing about Canada. Their responses included the wide-open spaces, beautiful scenery and a clean environment.

The worst thing? The number one response was the weather!

ZURICH FLOWS

Public transit and pedestrians have gained new status in Zurich. Through rebuilding sections of roads to better segregate transit and cars, and giving transit vehicles and pedestrians priority at traffic signals, the city has greatly reduced the volume of private cars using the roads within the city. The average usage of public transit in Zurich is twice the European average at 470 rides per citizen per year.

FINE TUNING

Zeidler Roberts Partnership Architects is designing additions and renovations to Commerce Court in Toronto's financial district. Steel and glass pedestrian links will be added between the four buildings surrounding an inner court and fountain to alleviate the uncomfortable wind conditions. There will also be a sculptural skylight added, opening from the court down to the underground retail level. Other additions and renovations are also slated.

WINTER VIEWS

The University of Northern British Columbia has been awarded a grant from the Social Sciences and Humanities Research Council for a two-year research project to study how humans adapt to winter in northern Canada.

A main theme of the research will be an investigation into the view that Canadians cope with winter by denying it's reality.

Bill Morrison, the University of Northern British Columbia's Dean of Research and Graduate Studies, points out that Canadians appear to be more import dependent on designs and attitudes from more southern climates while Scandinavians condsider the harsh northern climate in their design and planning of automobiles, homes and attire more consistently.

NEW NUNAVAT

Canada will have a third territory in the year 1997. Nunavat, which means "Land of the People" will be carved out of the Eastern Arctic, presently part of the Northwest Territories.

The resident Inuit will maintain the right to hunt, fish and trap anywhere in the new territory and receive title to 350,000 square kilometers of land. In exchange, they will surrender their aboriginal claim to two million square kilometers of the Central and Eastern Arctic.

Nunavut's proposed system of public government will be similar to other Canadian legislatures where everyone has a right to vote and run for office. Controversy over the deal has risen because the natives' right to control the territorial government is not entrenched should the Inuit become a minority group within the population.

With the threat of aboriginal claims removed, the federal government hopes major capital-intensive developments such as mining, oil and gas will be more likely to go ahead.

NORTH-TECH

Pat McMahon, mayor of Yellowknife and president of the WCA, claims the development of a user-friendly technology is needed for life in northern climates. Obstacles to use of southern-designed technology include a short season for transportation over land, soil conditions,extreme temperatures, environmentally

sensitive land, and disruption of communications by magnetic storms and the Aurora Borealis.

Some examples of the research and development which is needed for northern communities include:

- pipe material with a high insulating factor that is pliable, thin, durable and either monitors or senses a leak in water or sewer systems.

- proper sewage treatment facilities for both small and large communities, fine tuned to operate under arctic conditions.

- recyclable or compostable shipping materials.

- a road overlay or paving that expands, contracts, and works throughout extreme temperature fluctuations.

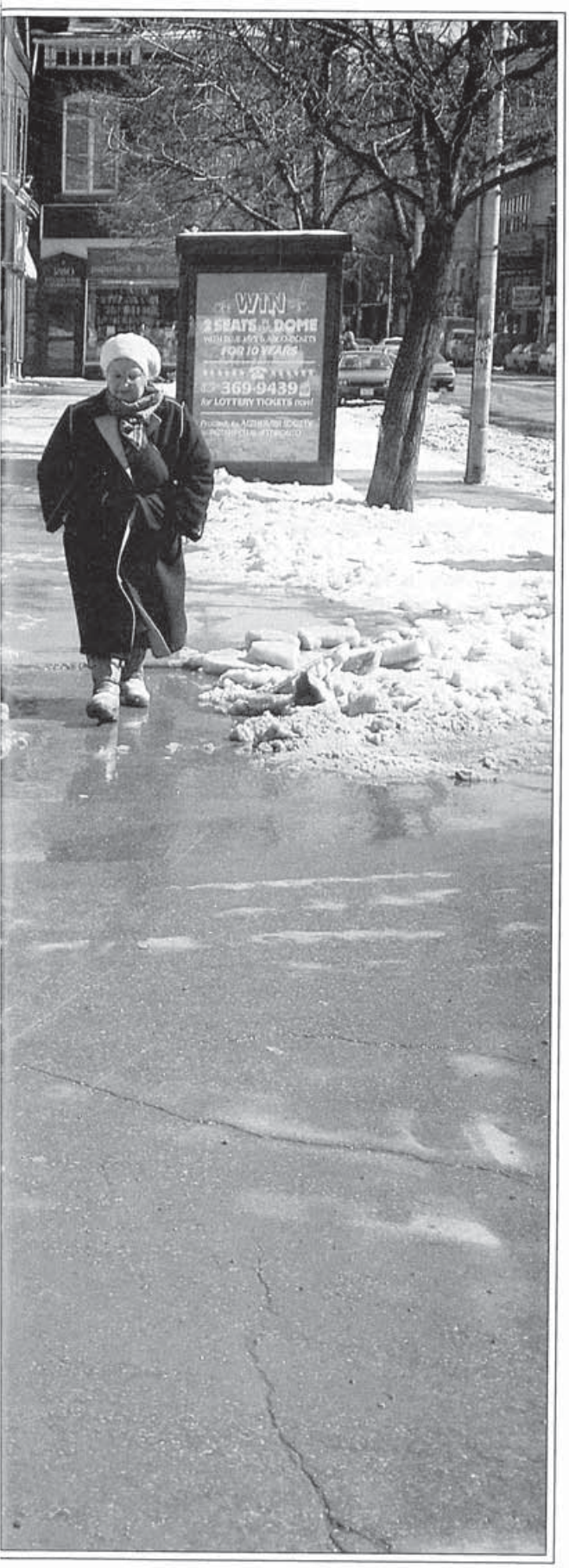
McMahon notes research is now being done in the Northwest Territories on a number of subjects. Projects range from the launching of the MSAT 1 communication satellite in 1994, to the exploration of native medicines. Cooperation of local communities in the north can help in testing and developing these products. Southern technology needs to recognize northern expertise in knowing their land, their environment, their people and their needs.

SIBERIA

A Yellowknife engineering and architectural firm, Ferguson Simek Clark, will be building 10 villages in Siberia, using technology developed for building in the Canadian North.

The Canadian technology is geared to smaller units, and lightweight, high strength wood construction. Yakutia's regional authorities want to move its people out of large, Russian-built concrete apartment buildings, and will be developing outlying regions with small populations.

The first village a farming town for about 150 people south of the regional capital Yakutskis is expected to be operational by October 1993. ❄



Older Pedestrians in Winter

Robert Dewar

Mobility is an important factor in the lives of older people in today's world. When it is reduced, due to inability to drive, difficulty walking, etc., older persons may become frustrated and depressed. Winter in circumpolar countries is an impediment to the mobility of many older people.

Much of the thinking and research done on transportation needs of the elderly fails to take winter conditions into account. This time of year presents a number of potential difficulties for the older pedestrian. The most obvious is problems in walking (poor footing, slower speeds) where there are icy patches, piles of snow and slush on sidewalks and roads. These conditions not only make walking difficult and dangerous, but also distract pedestrians' attention from vehicles on the roadway. One of the main fears among the elderly is falling. This fear is clearly justified when walking outside in winter conditions. The presence of snow also leads to ill-defined curbs and hides potholes and other small obstacles, increasing the chances of a slip or fall.

Another fear of the elderly is failing vision. Visual loss is an inevitable part of aging. The old eye is more susceptible to glare, has lower acuity and contrast sensitivity and, at the age of 65, receives only about 1/3 the amount of light as does the eye of the normal 20 year old eye. These deficits clearly increase the difficulty of seeing at night. Visual difficulties, beyond those typically experienced by older people under non-winter conditions include greater amounts of glare from snow and ice, poor contrast due to glare and light conditions, and more hours of darkness.

Nighttime conditions present difficulties not only of seeing hazards on the sidewalk and street, but also of being seen by drivers. Pedestrians are much less conspicuous to drivers, who also lack adequate visual information (e.g. due to headlight glare the tendency of many older pedestrians to wear relatively dark clothing in winter). While reduction in the effectiveness of the visual sense is a primary factor in pedestrian accidents, it is important to note that

even the information provided by sounds (vehicle noise which can be a cue to their distance and speed) may be reduced in the presence of snow on the ground.

Simply having to move about outside in very cold weather presents additional problems for older pedestrians, who are more susceptible to cold than are younger people. They are more likely to try to hurry to escape the unpleasant conditions in which they find themselves. Perhaps the most difficult walking situation in winter is blowing snow. The need to wear heavy clothing, especially footwear, can also make walking more cumbersome.

One of the phenomena commonly associated with winter is a mood change called seasonal affective disorder (SAD), the main symptom of which is a feeling of depression. This disorder may be due in part to a lack of natural light and the reduced ability or motivation to travel outside one's dwelling place under winter

conditions. The latter greatly reduces social and recreational activities. SAD could well contribute to lower levels of attention, a factor in traffic accidents among drivers of all ages and probably among pedestrians as well.

Surveys with older pedestrians indicate that many find the time available to cross the road at signalized intersections to be inadequate. The assumed walking speed of 4 ft per second, used by design engineers to determine timing of pedestrian signals, is certainly too fast for many older pedestrians. This problem is magnified under many winter conditions, for the reasons mentioned above.

A survey of 473 older pedestrians involved in accidents in the United Kingdom provides some insights into the perceptual/cognitive and motor difficulties encountered. Failure to see, or to see in time to take evasive action, the vehicle that struck them was reported by 63%. About 2/3 of those who saw the vehicle that struck them saw it only when it was within 30 yards of them; for 17% it was not more than a car length away when it was seen. These data are powerful indicators that these older people did not perceive the hazard in time. Reasons why these difficulties might be increased in winter include inattention, distraction and the reduction in contrast between light-coloured vehicles and snow backgrounds.

It is clear that winter conditions magnify the traditional problems of the older pedestrian. Unfortunately, designers and managers of our urban movement systems tend to ignore the multiseasonal needs of the older pedestrian. ❄

Slippery investigation

Greg Liburd

Snow and ice are ideal for some means of locomotion, such as skiing or skating, but to the winter pedestrian they are an unwelcome challenge. A pilot investigation by Thomas M. Nelson, Terrence J Lipovski and Robert C. Schmidt examined the causes of slippage on icy surfaces and proposed preliminary recommendations.

They found that substantial injuries and fatalities occur each year due to slipping. In most cases slipping was most likely to occur during the heel strike phase or walking or when the toe pushes off the surface; the former being more serious as the victim fall backwards. To this end, the study involved analyzing different types of anti-slip footwear used to cross both dry and icy surfaces. Generally, the better footwear, the less time and steps it would take to cover a distance and the higher comfort and convenience would be rated. Whole foot covers, especially the Canadian strap on foot cleat, rated the highest; Swedish toe cleats followed in effectiveness; Norwegian heel spikes were next; and wool socks pulled over the footwear, once a popular traction enhancer, were the least effective.

In addition to initial findings, it was noted that, with practice, the different footwear increased the level of effectiveness and perception of security. The authors wished to continue this line of research with further studies involving other variables such as inclined icy slopes, and aspire to examine such other factors as age and winter pedestrian personality traits. Encompassing all of this future study would be the consideration of the mechanical properties of the pedestrian, the mechanical properties of the walking surface and the goals of the behavior. ❄

Problems of Winter Walking

Chris Bradshaw

We are all pedestrians; all trips require some travel by foot in public or semi-public areas: parking lots, sidewalks, streets, foyers. Most of these areas are exposed to the winter perils: accumulations of snow and slush, standing water after a rain or thaw, cold temperatures, strong winds, extended periods of darkness, ice on walking surfaces which themselves are often slick, bulky clothing that makes it harder to move agilely and to see and hear easily.

Seniors, children, the disabled, and the poor travel mostly by foot. Their problems are greater not only because of the greater periods spent walking, but also because they travel in more isolated areas where their presence is not expected: sidewalks are not cleaned as well, drivers are not pedestrian-wary. The conditions can be so foreboding as to cause some of these disadvantaged people to simply not venture outside for large portions of the colder months (even children, who are more agile, are barred at times from walking by parents afraid for their well-being). Without proper pedestrian environments, these persons are prisoners of winter.

The Problems:

Most open public areas - parks and paths - are not kept cleared by public authorities during the snowy season. In Ottawa, The National Capital Comission (or "NCC", as it is locally known) actually bars access to stairways in its Central Park in the popular downtown neighbourhood of the Glebe, rather than keep them cleared. This limits access to only the most hearty and able. Like most municipal recreation departents, they expect citizens to hibernate during the winter. The standards of municipalities for clearance of snow and ice from sidewalks is significantly lower than that for cars.

Pedestrians are at the bottom of the travel heirarchy

To wit:

☐Although sidewalks along all streets are plowed, clear pavement is rarely achieved, and only on a heavily traveled area managed separately, like Sparks Street Mall, are additional efforts made to achieve this standard.

☐At corners, where sidewalks are curved to accommodate turning vehicles, plows do not turn with the curve, but run only in straight lines, leaving the corner section unplowed and forcing pedestrians waiting for traffic and turning the corner to get in the cars' way.

☐Sidewalk plows, despite their efficiency, do not properly clear snow from sloped sections at driveways or at curb drop-offs at corners. Also they are a threat to pedestrians while they are in use, with their fast speeds and sharp edges, and often simply miss sections that are too narrow for them.

☐Neither salt nor sand, both of which are used on Ottawa sidewalks, is satisfactory. Salt ruins leather boots and stains clothing; sand is also dirty and often sends up in boots of pedestrians unless they wear their pants on the outside.

The snow clearance situation is complicated by several factors, including that pedestrians are at the bottom of the travel hierarchy.❄

Exhaust ➲ Melting

The exhaust air snow melting system is an economical method of melting snow without consuming our depleting fuel resources.

Accidents resulting from inadequate clearing of snow and ice from walkways and ramps may expose the building owner and tenant to liability. Pedestrian safety cannot be compromised, especially in cold climates where precipitation and temperature cannot always be predicted. Typical electric and hydronic snow and ice melting systems are seldom installed due to their capital and operating costs. Furthermore, many underground snow melting systems are prone to failure due to ground movement and corrosion. Repairs are seldom performed due to the inaccessibility of these elements embedded in concrete slabs.

All buildings must provide for air exchange to control the level of air contaminants and humidity. The exhausted air is typically discharged directly to the exterior and occasionally passes through a heat recovery ventilator to preheat the intake of fresh air or to preheat water. Another use of heat recovered from building exhaust is to melt snow and ice from walkways surrounding the building.

Tang G. Lee

Exhausted air from buildings is generally humid and may have air contaminants but the air is warmed, typically to around 25°C year-round. To melt ice and snow in the winter, the exhausted air need only to be around 5°C [Williams]. For various ambient temperatures, and for various airflow rates, the area of snow melting can be predicted.

Traditional snow melting systems are costly, particularly when heated with electricity. In addition, many of the snow melting systems which are buried in concrete are subjected to differential movement due to temperature [Chapman] and moisture cycles. Locating a break in the buried snow melting lines has become a tedious and expensive undertaking. The ideal snow melting system should have the following features:

- ☐ **inexpensive components**
- ☐ **easy to install**
- ☐ **economical to operate**
- ☐ **simple to operate**
- ☐ **reliable**
- ☐ **easily accessible for repair**
- ☐ **withstand ground movements**
- ☐ **has heat to melt snow and ice**
- ☐ **environmentally appropriate**

An innovative snow melting system was installed a few years ago on a barrier free access ramp at a Calgary medical clinic called The Dermatology Centre. Heat for the ramp was supplied by exhausted air thus eliminating the need for heating fuels. The exhausted air is ducted under the ramp using common corrugated plastic drainage pipes (tiles). The 100 mm diameter drainage pipe provides an excellent air passage for radiant heating using solar heated air. Laid parallel about 400 mm on centres, the ramp was heated to above freezing temperature through the winter. Although not installed in this project, the exhausted air also has the potential to preheat service water as seen in figure 1.

In cold conditions, air will hold less moisture than in warmer conditions. In the building exhaust snow melting system, warm air becomes cooler when migrating down the drainage pipe. Condensation and ice may form in the pipe if the ground is too cold or the length of pipe is too long. It is important therefore to maintain an above freezing temperature in the underground plenum to prevent the formation of frost. Condensation may form in the pipe but the perforated drainage pipe will permit water to seep into the ground. Nevertheless, an excess amount of vapour may congregate at the outlet and eventually flood the pipes. All of the pipes installed at The Dermatology Centre terminate at a storm drain. The storm drain was necessary to collect surface runoff

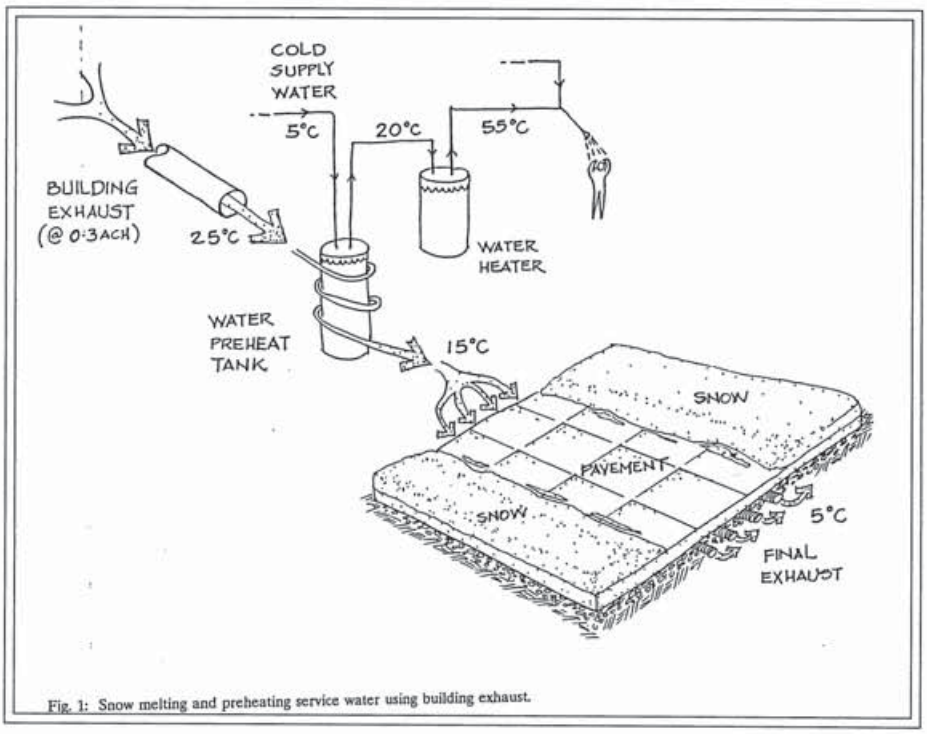


Fig. 1: Snow melting and preheating service water using building exhaust.

Fig. 1: Snow melting and preheating service water using building

from the parking area. As such, the cost of this termination was minimal. For other installations, the outlet can terminate in a simple drywell trench as shown in figure 2.

Periodic observations indicate the ramp was completely snow and ice free throughout the winter periods. This system has demonstrated the potential to utilize waste heat to reduce our energy consumption, reduce maintenance labour and increase safety. The snow melting system fullfills all of the ideal features identified above.

The temperature of an outdoor concrete slab is constantly changing due to the following environmental conditions:

- ☐ **wind speed and direction**
- ☐ **surface air film coefficient**
- ☐ **temperature and rate of fluctuation**
- ☐ **humidity**
- ☐ **sol-air effect**
- ☐ **radiative exchanges**
- ☐ **snowfall tempature rate & density**
- ☐ **surface dirt, etc.**

Each of the conditions will affect the rate of heat loss from the concrete slab and thus the time required to melt the snow.

The four primary atmospheric conditions affecting the heating requirement for snow melting are:

1) rate of snowfall,
2) air temperature,
3) wind velocity, and
4) humidity.

A snow melting system must provide sufficient heat to raise the temperature of snow to the melting point, melt it, and offset surface heat loss by evaporation, convection and radiation; heat loss to the ground from around and under the slab.

Installed capacity of snow melting systems is less dependent on specific environmental conditions, but local practises.

HEAT POTENTIAL FROM BUILDING EXHAUST

All buildings must have a certain rate of ventilation to remove moisture and dilute the concentration of air contaminants [Lee, 1990]. The National Building Code 1990 requires all residential buildings to have a ventilation rate of 0.3 air changes per hour [NBC]. Ventilation is also required for other buildings but the rate of ventilation is dependent on the occupancy load and type of activity. Almost every building will be exhausting contaminated air at temperatures around 25°C. Rather than exhausting the air directly to the outside, the air can be diverted to locations where its heat can be recovered or reused.

The amount of heat available from building exhaust is dependent only on the airflow rate since we will assume the air temperature is around 25°C.

The amount of heat available for melting snow is dependent on the airflow rate of the building exhaust. Since the exhaust is determined by the air quality requirement of the building, and the temperature is about 25°C, the designer of the snow melting system can vary only the configuration and material of the system. Given that most paths are constructed of cast-in-place concrete on top of a gravel drainage layer, the thermal conductance is 0.19 W/(m2.K), including the air film coefficient, and plastic drainage pipe as the air plenum. The 100 mm diameter drainage pipe, was found to be readily available, inexpensive and suitable as a under-slab radiant heating plenum. Due

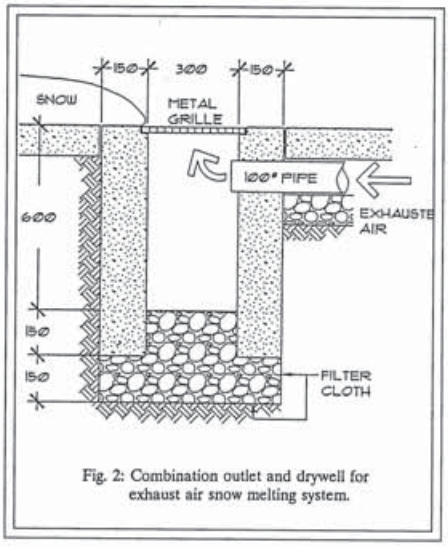


Fig. 2: Combination outlet and drywell for exhaust air snow melting system.

Fig. 2: Combination outlet and drywell for exhaust air snow melting system.

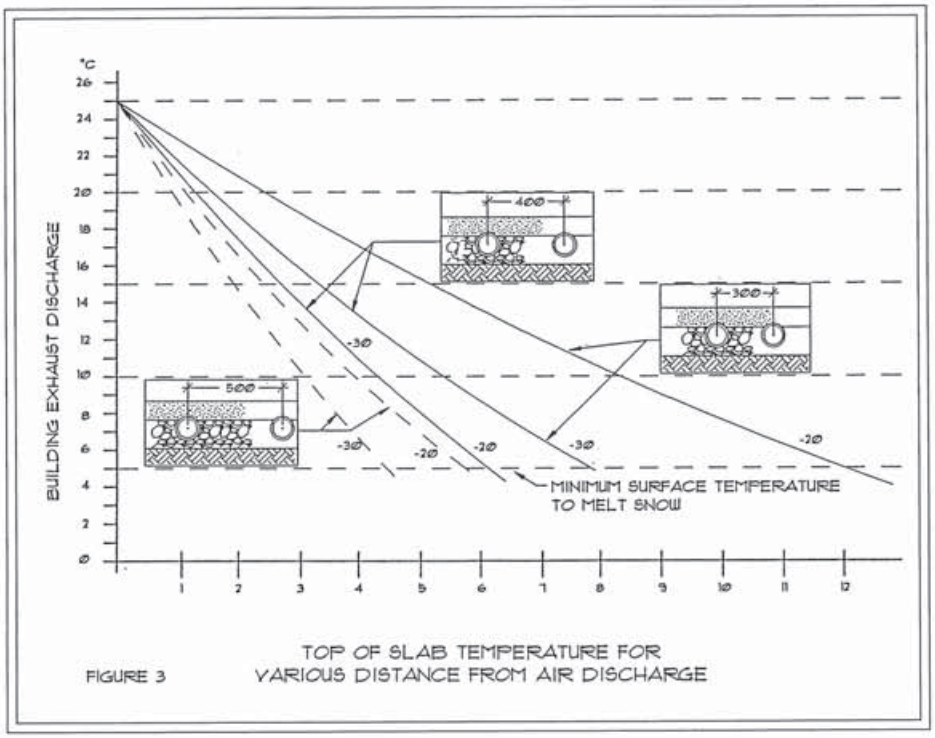


Fig. 3: Average temperature at top of slab for various distances from exhaust discharge.

to the frictional characteristics of the drainage pipe, an airflow rate of 20 l/s and a velocity of 2.5 m/s is optimum. The steady state heat loss of the slab is simply:

q = U x A (ti-to)

where:

q = Heat flow, W/m2
U = U-coefficient, W/(m2.K)
A = area of path to be heated, m2
ti = temperature of the exhausted air, °C
to = ambient air temperature, °C

However, the steady state thermal conduction of a buried pipe is given by:

$$Q\ cond = \frac{2L}{\ln(2d/r)}\ k\ (ti\text{-}to)$$

where:
d = depth at which the pipe is buried
r = diameter of the pipe
k = coefficient of heat conductivity
L = length of the pipe

Traditional snow melting systems will heat the ground slab when the ambient temperature drops to around 5°C. Rapidly dropping temperatures will require a snow melting system which responds quickly and with sufficient heat to melt the freshly fallen snow. The thermal mass effect of the soil and the ground slab will delay the response time. For the exhaust air snow melting system, the constant air supply of exhausted air at 25°C will heat the ground slab yearround whenever the ambient temperature is below 25°C.

The surface temperature of the ground slab is therefore dependent primarily on the spacing of the buried pipes and the air temperature. Using the above equations, the temperature of the ground slab can be determined depending on the spacing between the buried drainage pipes. Figure 3 shows the temperature of the ground slab for three different pipe spacings at temperatures -20°C and -30°C. As expected, temperatures closer to the inlet are higher. The lowest effective temperature of the ground slab for snow melting is about 5°C.

Since the temperature and airflow is constant, a better distribution of heat can be achieved by gradually closer spacing of the pipes towards the outlet. However, this will melt the snow in a trapezoidal area, tapering away from the building.

Figure 3 can be used to estimate the effective distance for a snow melting system using building exhaust. Increased ventilation rate will not lengthen, but can widen the area which can melt snow. Longer length is possible with a tandem configuration. An insulated plenum pipe is need to carry and maintain the heated air until it reaches the next segment to be heated.

Retrofitting the exhaust air snow melting system is a compromise between minimal excavation, and disruption of existing ground slabs. Figure 4 illustrates a simple 200 mm wide X 500 mm deep trench beside an existing slab. With three drainage pipes carrying exhaust air from a building, the slab can expect above freezing temperature up to one metre wide, depending on the ambient temperature. The insulation directs the heat towards the slab.

The exhaust air snow melting system is an economical method of melting snow without consuming our depleting fuel resources. As demonstrated under a barrier-free access ramp of a medical clinic a simple but effective series of drainage pipes were able to maintain a snow and ice free ramp throughout the winter. A more refined snow melting system using building exhaust is presently being constructed for an aircraft hanger at the Calgary airport. In this installation, the vast quantity of air exhausted out of the hanger will melt all of the concrete apron and much of the taxi runways and parking areas adjacent to the building. Also planned is to melt snow from the patios, walkways, entrance ramps and parking areas for a leisure centre and an interpretive centre in southwest Alberta. ❄

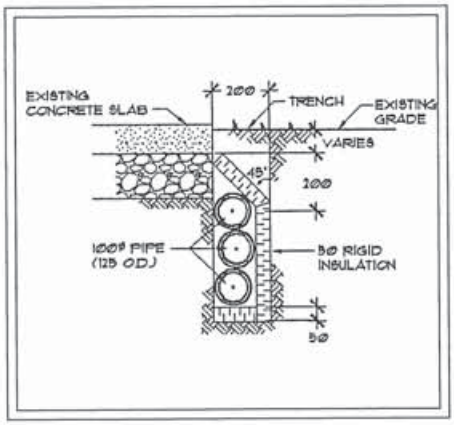


Fig. 4: Retrofitting an exhaust air snow melting system.

SPECIAL PULL-OUT SECTION !

WCA UPDATE

WINTER CITIES ASSOCIATION NEWSLETTER ISSUE NUMBER 5

WCA & ASIA

JILIN CITY

Jilin City, an old and inviting northern city in China is WCA's newest member in China.

Located at 43 degrees 47 minutes north latitude and 123 degrees 53 minutes east longitude, Jilin City lies in the region between Changbai Mountains and Northeast Plain. The highest point at the center of the city is 196 metres above sea level. The city experiences the continental monsoon climate, so winter in the area lasts as long as six months with temperatures reaching as low as 33 degrees below celsius.

Jilin is well known for its many international ice hockey and skating competitions. The biggest national ice sports centre and skiing fields are located in Jilin.

Qing Shan Skiing Fields, twenty kilometres away from the city is an area of 250 hectares. The altitude above sea level is 934.2 metres and the drop from the top to the bottom is 671 metres. The air around the skiing fields is very clear and temperatures usually stay at around 20-30 degrees below celsius. The skiing period each year lasts more than a hundred days, the area is served by a cross country ski trail five kilometres long and by China's only fifty metre skiing jumping platform is built according to international standards. The facility is also equipped with the longest round cableway in the country, a shooting range and a mountain sled site. We welcome Jilin into the WCA family and look forward to their active involvement.

TASHKENT & ALMA MATA

WCA Board member David Francis has been working with the high level officials and the Mayor of the City of Tashkent and Senior Ministers in Alma Ata in the CIS Republics of Uzbekistan and Kazahkstan

Both cities are capitals of their respective Republics and have populations of over 2 million people each. Tashkent is bidding for the Olympic

Games and is planning a new ski resort close to the city. Alma Ata already has the World's Highest International Speed Skating Arena.

These two cities have expressed interest in becoming members of the Winter Cities Association. They will be looking for the opportunity to share advice and technology as well as learn all about community management in the winter.

We look forward to their future involvement in the circumpolar network.

DAQING

Daqing-China has now become a full municipal member of the WCA and is actively working towards establishing itself as the Heilong-Jing Province regional affiliate and a Asian leader in the winter city movement. Daqing is just completing construction of a water treatement plant as a model of northern water treatment and building technology. Winter Cities: Daqing is now working with the Daqing Oil Company to develop a range of new northern building products and services and a model winter city economic development zone.

The Calgary Winter City Committee, an affiliate of the Winter Cities Assocition, with the City of Calgary, Daqing's sister city, are assisting Daqing in realizing their objectives.

WINTER PEDESTRIAN SAFETY

The Calgary Winter City Committee a WCA affiliate is also undertaking a study into Winter Walking: Safety and Enhancement. The objective of the study is to identify opportunities to improve the quality of all season, universal accessibility in a cost effective manner. The Committee's recommendations will be completed and presented in April 1993. For further information contact the WCA office.

PRINCE GEORGE NEW AFFILLIATE

Prince George, the gateway to Northern British Columbia, has approved the formation of the "Prince George; Winter Cities Committee" in affilliation with WCA. Prince George, because of its strategic location, new northern university campus and sensibility of its regional role, is a most welcome addition to WCA's growing affilliate family.

The Prince George " Snow Management Committee" recently completed an extensive one year study of snow removal operations which has effectively improved their levels of service. Their success was the result of a very inclusive process generated by the leadership of the city council and the enthusiastic efforts of city council alderman Martin and Fornari, supported by city manager George Paul.

DR. CHARLOTTE MATTHEWS
our good friend has died

Dr. Charlotte Matthews died recently of cancer. She brought the full flow of her warm constructive personality and powerful leadership to bringing public attention to the needs of the elderly.
Charlotte, known internationally for her work in gereontology, received numerous honors and wrote extensively, including a series for the WC magazine. Her

awards included Ontario's 1988 Sr. Citizen Recognition award and appointment to Canada's National Advisory Council on Aging, where she served as president for three years.

She has been a active member of the WCA since 1986, serving as board director, editorial consultant to the WC magazine and supervisor of WCA's major research project "The Elderly in Winter". Charlotte will be missed deeply by her many close friends in the Winter Cities Association and Winter Cities Movement.

ANNUAL GENERAL MEETING

At the WCA annual meeting in Calgary, Pat McMahon, Mayor of Yellowknife, NWT, Canada was elected President, Svein Kristiansen of Norway Vice-President Elect, Eva Jackson, Calgary Secretary/Treasurer and Harold Hanen, Calgary, Chairman of the Board.

It was agreed the Winter Cities Association should work to restructure its membership into regional affiliations which share a common geography. The groups could work towards improved winter communities in their regions specifically by holding regional conferences, workshops, festivals, etc. A goal for this year is to clarify financial and service agreements between WCA and the regional affiliates.

It was suggested that WCA should make people more aware that the Association serves smaller communities by having a bi-line on its letter-head and promotional material saying "servicing all winter communities".

Takeshi Itageki receives from the Emperor of Japan the Order of the Rising Sun

Takeshi Itageki, well known elder statesman and honourary lifetime member of the WCA, has received from the Emperor of Japan the Order of the Rising Sun, Gold and Silver Star. This high honour recognizes his visionary leadership in the International winter cities movement and the wisdom inherent in his 34 year stewardship of the city of Sapparo. The WCA is proud of our fellow member and added our congratulations to the many he recieved at a recent banquet in his honour attended by over 1000 of his peers.

Professor Barbara Hahn Publishes Winter City Planning in Canada Book.

A Long time member of WCA Professor Barbara Hahn, of the University of Mannheim in Germany has recently published a new book " Winter Cities - Planning for the winter in Canada's Largest Cities". The book is one of the most authoritative documentations of large city responses to their unique climatic characteristics. We will be reviewing this book in our upcoming issue of Winter Cities Magazine. For copies of the book please contact:

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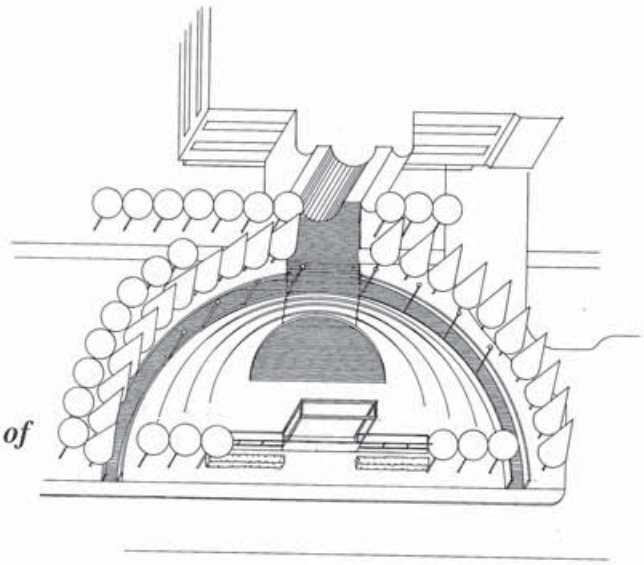
Northern Campus Design

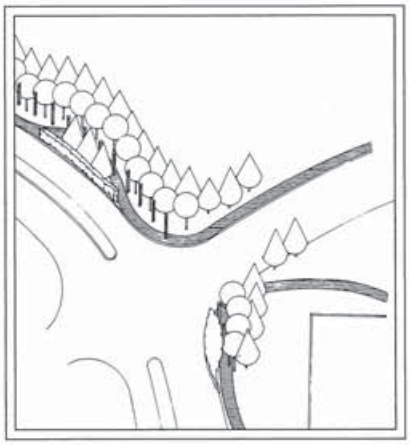


With the recognition of the uniqueness of northern places, exciting authentic northern campus design can happen.

Sue Hunter

To date, northern campus design has been a transposing of workable campus designs from milder, more temperate climates onto the wintry reality of northern landscapes. Merits of such designs become evident in summer campus strolls. On a cold winter's day, in a challenge of campus traverse against a vicious blizzard wind, summer aesthetics are buried.

With the recognition of the uniqueness of northern places, exciting authentic northern campus design is happening at the University of Calgary and the University of Northern British Columbia in Prince George, B.C.



University of Calgary

A student team from the Environmental Design faculty at the University of Calgary identified the current campus design as being inappropriate for Calgary's winter.

The 1985 campus development plan included expanding the present enclosed walkway system linking buildings. The environmental design team acknowledged the advantages of this system given Calgary's possibilities of severe winter conditions. In addition, however, the team highlighted, the need and value of complimentary outdoor walking.

The student team noted the expansive open landscapes resulted in exaggerated wind conditions. The team proposed a fundamental campus re-organization to reduce the scale of the open spaces. Specific mixed use developments (i.e. residential areas) were proposed to enhance the safety of public spaces through on-going public presence and surveillance. A hierarchy of streets would incorporate both vehicular and pedestrian movement and narrowed streets and tree-lined alleys would provide human scale.

Smaller scale site developments were also proposed to further reduce the present expansive scale of the existing tall buildings and large exposed spaces. Swan Mall, the geographical center of the University was to be provided shelter at a more intimate scale through developing a formalized sunken plaza with edges defined by conifer plants and a grove of trees.

Playing with the natural elements of sun and wind so characteristic of a Calgary prairie winter, the team suggested creating an "aelian fence" along an edge of an open field. This composition combines wind, pipes, and plantings into a sculptural wind shelter belt.

"... to be a prototypical example of a northern "circumpolar" University campus, ... academic programs and campus plan should reinforce the unique qualities of the University's mission."

To a passerby it provides a passage through a play of shadows, light and musical notes.

The University of Calgary study identified, through site specific analyses, both potential trouble areas, hostile to pedestrians, and opportunity areas sympathetic to pedestrians. Interventions were proposed from macro to micro levels considering localized climatic conditions. At the macro level, imposing an urban grid and increasing both the resident population and the diversity of services provided on campus were suggested as modifying present circulation patterns. At another level, students proposed positioning of new buildings and tree planting to best dissipate harsh winds while using winter's sun to best advantage.

University of Northern British Columbia

A second example of in winter campus design is found in the University of Northern British Columbia in Prince George. This campus is presently under construction. In both campus design and academic programming, this University wishes "... to be a prototypical example of a northern University campus, " Congruent with this philosophy, the campus research program also aims to clearly focus on issues relevant to the north. In building and site design considerations, preservation of the site's natural attributes and "winter city" design have been given top priority.

The Prince George site experiences cold winters with considerable snow accumulations. Given these conditions, consideration of wind shelter and snow accumulation in respect to pedestrian travel becomes significant. In an effort to assess site design plans, Rowan Williams Daries and Irwin Inc. of Guelph Ontario were contracted to conduct a snowdrift assessment. Meteorological data from a 13 year period was analyzed to determine wind conditions. Snow drifting on the site was simulated by action of sand particles carried by water in a flume over a 1:300 scale model of the site. Collected deposits of the sand replicated the collection of drifting snow. The snowdrift simulations approximated a large snowfall of several hours with strong winds. From the evaluation of severity of snow drifting at critical areas design modifications were recommended and localized landscaping plans were developed with Mr. Richard Pavelek, Landscape Architect.

> In both campus design and academic programming, this University has recognized strength in northern identity.

This simulation research provided valuable information in planning for landscaping, winter maintenance, potential drainage problems, and design.

Campus plans strove for integration of the campus into the natural features of the site. In designing for pedestrian circulation, optimal protection and choice was provided. All major facilities are to be connected through interior circulation connectors at below grade, overhead or a multi-level connecting system. A compact campus core was created in efforts to minimize length of connecting walking distances.

A unique northerly feature of the design is a continuous single story structure, the connective building/agora, which contains key common spaces and connects the academic core together at this main level. At the same time, the roof functions as a landscaped plaza providing outdoor circulation as choice of travel on pleasant days.

Further campus design features that enhance both pedestrian travel and northern identity include:

1) Providing a combination of long and short views.

2) Site planning organized to take advantage of the topography and sun and wind exposure.

3) Use of heated pavements on ramps.

4) Not allowing building heights to exceed the crown heights of existing conifers.

5) Restricting roadway grades to generally 5% to reduce dangers from slippery roads and,

6) Integrating existing natural vegetation to serve both as natural snow fencing and windbreaks,

The concerted focus on inter-campus connections and circulation in both these campus design recognizes the reality and importance of an animated campus during the entire year including the core winter months. ❄

A Good City All Seasons

Jan Gehl

It is my assessment that most northern cities do not work poorly in the winter; rather they work poorly in all four seasons. Based on this conclusion, it makes no sense to discuss winter problems and "winter cities" in isolation of the other seasons. We must discuss city quality in general and in relation to all four seasons. My vision is always for a good "around-the-year" city.

Cities have functioned traditionally as meeting and market places. The city's public spaces have served these two city functions, plus providing access and connection with the space allocated to access seen as "traffic places." When one examines a traditional city these three functions are often found in good balance.

In both of the above traffic and market city models, it is evident that the third traditional city function of the city as a meeting place suffers badly or is in the process of being entirely phased out. In winter cities this is unacceptable.

A good meeting place is one that allows a wide range of optional, social and recreational activities. In addition, a good meeting place must be democratic and allow citizens of different groups to meet and enjoy their city. The diverse activities of an Italian piazza, of Jackson Square in New Orleans and of Gransville Island in Vancouver can serve to describe the character, purpose and joy of a meeting place (Gehl, 1987; Whyte, 1988).

It is important therefore that a good winter city (like the city in any season) provide a good balance between meeting, market and traffic places. the need for the city to function as a meeting place is gaining new importance in present-day society, given a large number of social, cultural and economic changes. Smaller families, many single-person households and more leisure time all place new importance on the need for cities that can respond to the need for social interaction and a sharing of cultural and social experiences.

The City of Copenhagen has put a high priority on creating a good balance between meeting, market and traffic functions. It has worked very hard at maintaining and improving its meeting place function. Given these efforts, the use of the public spaces for social and recreational activities has tripled over the past 20 years (Gehl, 1989). As part of its "good balance" policies, Copenhagen has also managed to keep automobile traffic at 1972 levels. There has not been any extra traffic for 20 years!

We have learned in Copenhagen and other northern cities where good public spaces have been provided that citizens will use the city as a meeting place. The northern city as a meeting place is very closely related to the quality of that city in the good weather seasons. When discussing the northern city as a meeting place, it is important to note that while market and traffic functions are year-round functions, the meeting place function changes with the seasons. The city as a meeting place is very much a spring and summer activity. It is very much an outdoor phenomenon, where the northern citizens rejoice over the new season and the city simultaneously. The hectic, wonderful outdoor summer life in the city - the streets, squares, and parks filled with people enjoying the good season (after a long, grey and

dark winter) - is actually the highlight of any northern city. And this two-seasonal rhythm is one of the major characteristics and qualities of the northern culture.

In my view, a northern city must be a very good summer place. Summer is the all important season in the north, where people can participate in highly specialized patterns of outdoor activities. Most notable are the spontaneous and more lighthearted contacts that are especially related to the summer. In Danish residential areas, friendships and neighborhood networks are invariably formed during the summer period. That is when people meet. Let me quote a well-known Scandinavian proverb: "If the city works well in the summer, we can form the networks that will take us through the winter."

Having emphasized the importance of the meeting place functions and their special ties to the good season and the outdoors, some of the major problems of so-called "Winter Cities" become evident.

Most northern cities work very poorly in the good seasons, given traffic congestion, shade and wind caused by high buildings, narrow sidewalks and few or any high-quality urban spaces - problems that are only exacerbated in the winter season.

A Vision for a Winter Friendly City

There seem to be two well-known city types that are available to planners and politicians: the traditional outdoor city with the attitude of "let us pretend that winter does not exist" ; and the new indoor cities with the feeling of "let us pretend that the good weather days are not important". It ought to be possible to develop a third solution, the "winter friendly outdoor city" If I were a mayor of a northern city, I would use the following criteria to guide the development of a winter friendly city:

☐ a good summer city with a high priority placed on providing meeting place functions; and

> Scandinavian proverb: "If the city works well in the summer, we can form the networks that will take us through the winter."

☐ for the winter season I would introduce a number of "friendly gestures" to brighten and warm up the winter setting; I would make winter a special event in the city.

My action plan for a good season city could look like this:

☐ A reduction in the volume of car traffic and an improvement in walking conditions. Most cities will work well with less traffic, if the reduction is made gradually. (Copenhagen have taken three percent of the downtown parking away each year for the past 25 years).

☐ A prevention of further deterioration of the various micro climates in the city by outlawing buildings that take away sunshine and create turbulent winds in the important areas of the downtown.

☐ The provision of high-quality streets, squares and parks in the heart of the city. Traffic-reduction policies can reclaim space to create wide, high-quality sidewalks and a generally excellent walking environment under a gradual improvement plan.

☐ Preventing the development of alternative indoor networks that take people, energy and investment away from the four-season city.

I would improve winter conditions by:

☐ celebrating winter as a particular season with character and virtues by using such initiatives as winter festivals and sports;

☐ providing wide sidewalks that will allow space for trees, awnings or covered porticos (in some instances, it may even be possible to develop a special "winter coat" of glass for parts of the sidewalks);

☐ linking all indoor spaces directly to public spaces so that life can flow in and out throughout the year;

☐ looking at indoor meeting places, such as winter gardens linked to outdoor summer places, as places where new winter types of activities could develop. Architecturally they should be perceived as part of the public space where shopping is welcomed as a part of an integrated meeting/market place concept;

☐ using darkness and light to celebrate the city and winter by carefully worked-out public lighting schemes that include special light decorations, light events and light shows that will brighten the winter environment;

☐ including a number of tiny friendly gestures for the winter season in "my" city: in the summer we have ice cream vendors, but in the winter we would have special dark blue "winter kiosks" selling soup, pancakes and Scandinavian Glogg (which would bring the rosiness back to most cheeks!). Also we would manage to have a natural gas company sponsor a system of gas-stoves that would be "hot points" on many street corners; not to be outdone, the electricity company would donate semi-circular insulated and heated "warm-city-sofas" for some 16 persons. You would find these used all over my city.

Finally, this program for a four-season city is basically inexpensive and can be implemented gradually over a period of time. What more can one possibly expect from a caring city government.❄

FRENSOR

Climatronics, in association with the Swedish National Road Administration offers the Frensor, a dynamic device that can distinguish wet from dry pavement and predict icing by actually measuring the freezing point of minute quantities of moisture on the pavement's surface. It is a product specifically developed for bridge and highway use.

This will enable the Transportation Engineer to increase the safety of highways and roads by detecting the occurrence of hazardous (slippery and icy) road conditions. By detecting he will be able to warn the motorist of potentially hazardous road conditions ahead.

The Frensor can reduce the use of deicing chemicals, thus reducing material costs and environmental pollution, and reduce crew fatigue and operational costs by just-in-time schedules.

For further information contact: Nick Yaron, Project Manager, Climatronics at (516) 567-7300 or via facsimile at (516) 567-7585.

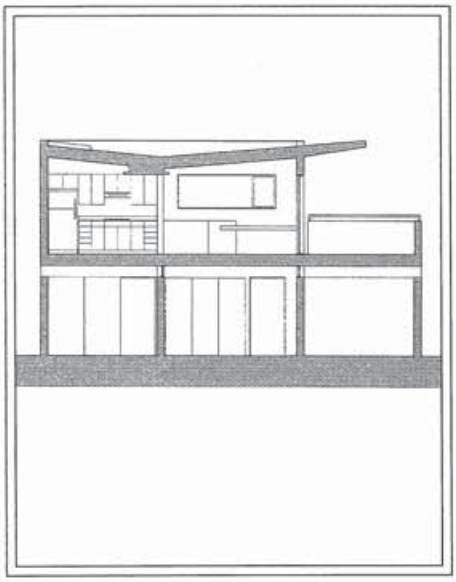
STREET OILS

Some home-grown technology of the Winnipeg-based Flax Council of Canada was recently showcased at the International Winter Cities'92 in Montreal. As part of a local contingent of prominent industry executives, government officials and university representatives, the University of Manitoba displayed results of a three-year study into the use of linseed oil as a concrete sealant.

The study indicated that linseed oil (which is derived from flax seed), when mixed with mineral spirits performed as well or better than other concrete sealants. Test results showed that the mixture was the most effective in reducing chloride intrusion, a major cause of concrete degradation. This project was jointly sponsored by the Flax Council of Canada and the National Research Council's Industrial Research Assistance Program. For more information call Professor, Sami Rizkalla, Univeristy of Manitoba 474-8506.

PRACTICAL HOUSING IDEAS

The Canada Mortgage and Housing Corporation announced the winners of their Healthy Housing Ideas Competition in March. The judging was based on the



environmental impact of everything from land-use, building form and construction material to interior finishes.

A nine member jury, chaired by Dr. Ava Friedman, chose 10 finalists out of 70 entries. Two top prizes went to Habitat Design Consulting Ltd. of Vancouver and Martin Liefbebber Architect Ltd. of Toronto.

In the new Vancouver unit the upper living area is basically open plan, with daylight on three sides, and with a deck looking away from the main home. On the lower level of bedroom between the car ports is acoustically and visually protected from the lane by a shallow, glass-block framed light-court.

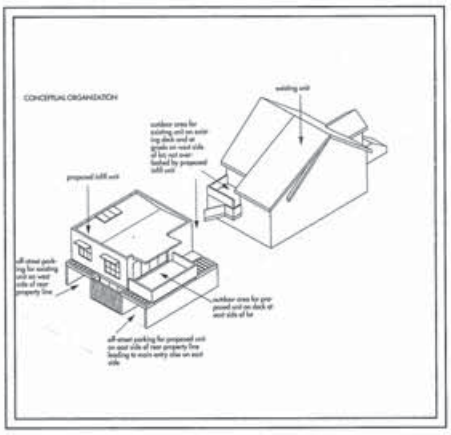
A highly efficient, filtered ventilation system ensures air quality, and high insulation levels and high-performance windows help prevent mildew and mould forming inside the building envelope. Numerous strategies were used for energy efficiency in the new unit, and when combined with an upgrade of the original home,total electricity, water, gas and sewer service requirements were kept at the original home's levels. Material selection resulted in up to 60% reduction in the embodied energy and 25% reduction in CO^2 emissions given off during their manufacture. By using Advanced Framing the structure saves 15% in lumber compared to conventional methods. The estimated cost of the 1,000 sq. ft. new unit is $129,000 without land.

The Toronto unit is a more drastic alternative intended for those who want to live in the city but don't want to add at all to the existing, already over-taxed, infrastructures. It brings together some extraordinary new technologies and products and was described by the jury as "revolutionary in getting off grids - gas electricity and water - yet coming in at a very reasonable cost."

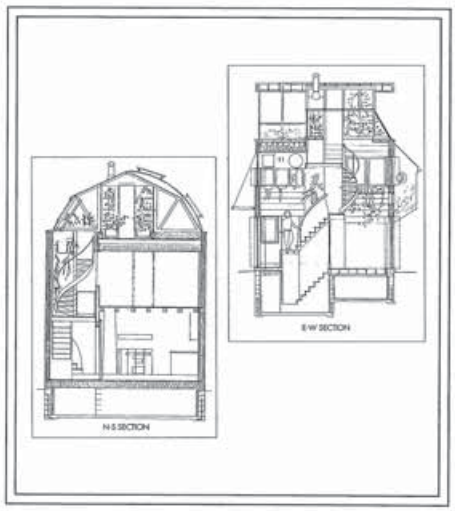
It is heated by a "biomass" masonry contraflow wood-burning cookstove on the ground floor,, by a heat rejection coil from the solar-heated domestic hot water tank, and by passive solar. Rooftop openings above the light-well promote cooling through stack effect, and an air-to-air heat exchanger above draws heat off to the hot water system. Vegetation provides shade.

Photovoltaic panels on the roof supply 900W all year round. A "thermopile" supplies electricity on cloudy, chilly days when the woodstove is used (connected to the woodstove, the thermopile works by thermo-electroc effect, using the temperature difference between junctions of two dissimilar metals). Power is stored in batteries.

The Water/Sewage System supplies 22,700 litres of water per year. Rainwater



is collected on the roof, filtered and stored in the basement. Greywater is treated, filtered through 24" plant beds on the roof greenhouse, mixed with rainwater and recirculated. Sludge is sent to a basement composting tank. Low flow fixtures include a foaming toilet that uses one cup of water per flush. The estimated cost is $118,000.



At last, with competitions such as this, we seem to be moving beyond the hype to a more constructive stage in the environmental movement. These homes show architects some of the real and concrete environmental options they should be considering.

Anyone who wants to follow up with CMHC on the technologies used in the winning schemes should call (613) 748-2367.

STONE MASTIC ASPHALT

U.S.A paving experts returned from Europe last fall impressed by the attributes of stone mastic asphalt (SMA), a durable and rut-resistant surfacing material that has been used extensively in several western European countries for more than 20 years. FHWA demonstrations of the material are now underway in three states.

North of the border, in Ontario, the first SMA pavement has been under traffic for several months and other stretches are being built near Toronto. The Canadians picked up the idea at a workshop in Sapporo last fall where Japanese highway authorities showed their successful SMA trials to the participants in an international workshop.

SMA is made of crushed stone chips interlocked in a mastic asphalt without the interference of fine aggregate, making for less deformation of the pavement under heavy axle loads. The increased resistance to aging and weathering comes from the polymers or fibers that make up the mastic which glues the stones tightly together. The SMA texture give good drainage to the road surface, resulting in less splash and spray, and it improves tire/pavement friction under wet driving conditions. At the same time, traffic noise is reduced and the high binder content makes the pavement less brittle and less likely to crack in low temperatures.

SCOOT

Present traffic signals in use in winter cities typically operate on a fixed time or traffic actuated technique. Stan Teply, Department of Civil Engineering, University of Alberta suggests the need for design solutions in traffic signal technology responsive to changing winter conditions.

One of the most important considerations involved is the length of the "intergreen period." The "intergreen period" includes the amber interval and a short "all red" period during which all signals at an intersection display red.

Though an increased intergreen interval seems the most likely and appropriate response - the answer is not as straight forward.

There is a definite increase in time needed by vehicles to slow to a stop approaching an intersection. However, there is also slower acceleration or start-up time of waiting vehicles than experienced in summer conditions, which also influences timing. Additionally, standard traffic flow rates used in calculation of signal timings may not apply in a winter setting. Traffic flow may be affected by lighting conditions and by lane width reductions due to drifting snow, or snow banks created by ploughs. Further, pedestrian comfort becomes an important design consideration with the potential of pedestrians "freezing" at street corners while waiting for the extended delays.

In response to such considerations, an adaptive computerized traffic control system "SCOOT" has been developed by British Transport and Road Research Laboratory and traffic signal manufacturers. "SCOOT" has been installed in Red Deer, Alberta - the first signal network system with automated capability for on line adjustments to be installed in North America.

SURPRISE! WALKING IS TRANSPORTATION

The Energy Probe Research Foundation of Ontario, Canada has just published a study that will be of interest to planners of local traffic systems. Titled "Why Ontarians Don't Walk More", the 95 page study, supported by the Ontario provincial government, includes numerous practical recommendations to improve walking as a form of urban transportation.

Energy Probe looked at walking, not from the usual standpoint of health and physical fitness but as a neglected form of transportation. It found that about three quarters of those questioned in larger cities would like to walk to work. Not surprisingly they don't do it either because it would take too long, or because of unfavorable environmental conditions that could, however, be modified to some extent by local intervention.

Walkers particularly dislike car exhausts, dangerous street crossings and traffic noise. The study found that the average person in Ontario spends about 2.4 hours a week walking, mainly randomly for leisure or exercise.

NEW NORTHERN LIGHTS

Government-supported Swedish research institutions and private sector firms are collaborating in an effort to develop non-glare car headlights and related applications. The non glare lights are expected to become available as standard equipment from Scandinavian car

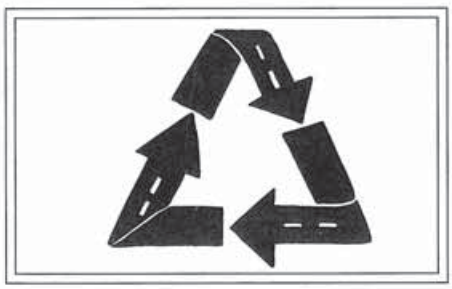
facturers over the next five years. The developer - Saab. The new product, now being readied for commercial application, consists of a light source containing UV light and additional fluorescent materials, invented by Lars Bergkvist, a researcher in north Sweden.

Ultraviolet light is in itself invisible to the human eye, and consequently non-dazzling, but it reflects strongly when it strikes objects coated with fluorescent materials. Tests have shown that UV makes it possible to obtain a considerably longer headlight range than is currently possible with dipped lights.

Road traffic is a priority in the current development work and other applications in this sector include street lighting and lighting of pedestrian and grade level crossings.

NORWAY RECYLES ROADS

A recycling mentality and budget consciousness have led to large portions of Norway's secondary road net being recycled in place, using innovative techniques researched and developed by the Norwegian Roads Department. Much of the country 26,000 km road network is now in need of repair because of surface breakdown caused by severe weather, heavy traffic and the use of snow chains and spikes during the long winter season. Using specially adapted equipment, a cold recycling process used mainly on secondary roads cuts and mills the deteriorated road surface in a single operation, at a rate f up to 22 meters per minute.



As the old surface material reaches the end of the milling process it is windowed behind the machine. An asphalt paver then mixes the reclaimed material with a cold mix soft bitumen and relays the road surface. Once compacted, the road can be immediately re-opened to traffic. The relaid top course immediately provides a strong, wear-resistant surface capable of withstanding ten ton axle loads.

While this method is used mainly for secondary roads of which about ten million square feet are currently being recycled annually, another technique stockpiles the milled top surface of main roads which are being rebuilt in the conventional manner. The stockpiled, granulated surface is then relaid on secondary roads, greatly reducing the requirement for new surfacing materials.

"STUDDED SNOW TIRES" FOR YOUR FEET

A convenient new solution to the dangers of slipping, sliding, and risking injury while walking outdoors during our northern winters has just been introduced to the Canadian market.

Using the same concept as the studded snow tires many people buy for their cars, one of Europe's leading manufacturers has designed "Shoe Spikes", the perfect personal anti-slip device. This ingenious new product slips on over most shoes or boots and features sixteen steel studs mounted in rubber to provide heel-to-toe traction throughout the iciest winter. "Shoe Spikes" fasten firmly with velcro fasteners, are easy to put on and remove, and roll up to take up virtually no space when not being worn.

"Shoe Spikes" are available from Unlimited Enterprises, LB #41056, 200 Petrolia Mall, Edmonton, Alberta, T6J 6M7; phone: (403) 435-8198.

ICY STREET SPEEDS

An empirical study of pedestrians crossing ice streets in Edmonton, Alberta revealed features of both traffic and of the pedestrians themselves, influencing speeds of crossing.

As volume of pedestrians increased, average pedestrian crossing time decreased. Fastest crossing times were recorded at middle ranges of traffic density, wherein traffic was more likely to be travelling close to speed limits and presenting greatest risk.

Of the variables studies, outside temperature held the strongest relationship to crossing times. Colder temperatures were consistently associated with faster crossing times. Interestingly, time of day also effected speeds of crossing, with the slowest crossings recorded between noon and 2 p.m., the fastest times between 3 p.m. and 5 p.m. This study did not include a consideration, however, of early morning flow, i.e. 7:30 a.m. - 9:30 a.m. For more information call Prof. Teply at University of Alberta, Dept of Civil Engineering. ❄

Do you know of a new cold climate innovation?
Share it with us!
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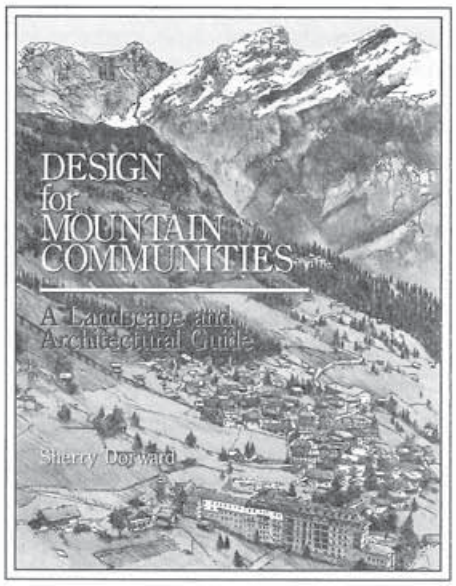
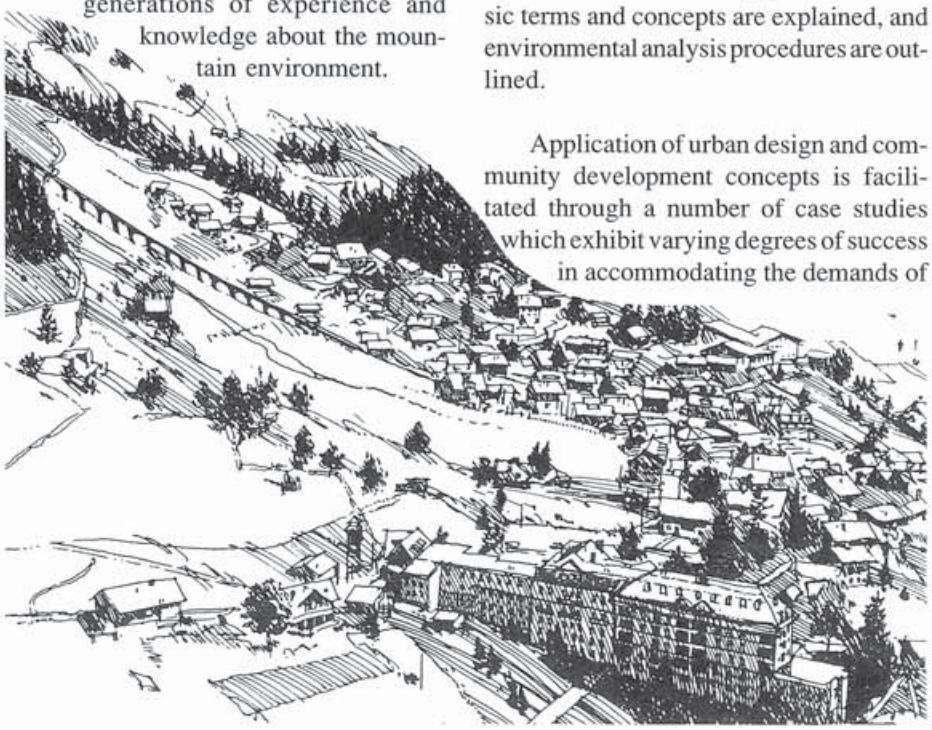
Design for Mountain Communities

Dora Bundgard

It is a sad truth that urban designers are seldom ecologists and vice versa. As a result, many developments in mountain communities do not realize the potential of these sensitive and challenging environments. This book is a fine integration of ecological science and urban design. Dorward reviews the experience of high-country residents, developers, contractors, and scientists in the mountains, and provides design guidelines for use in future development applications. The book attempts to illustrate how built forms can be made compatible with their natural setting and be evocative of a community's sense of place.



Traditional mountain villages make use of compactness of form for heat efficiency, wind shielding, and efficient use of buildable land. In the most memorable mountain villages, the constraints of topography have been turned into scenic opportunities. Structures are of small scale and have a pedestrian orientation. Such village forms have resulted from generations of experience and knowledge about the mountain environment.



Dorwald provides a great deal of basic information about mountain ecology, beginning with the impact of elevation, and including information on vegetation, geomorphology, climate and hydrology. The range of information presented is very extensive, but is concisely presented. Basic terms and concepts are explained, and environmental analysis procedures are outlined.

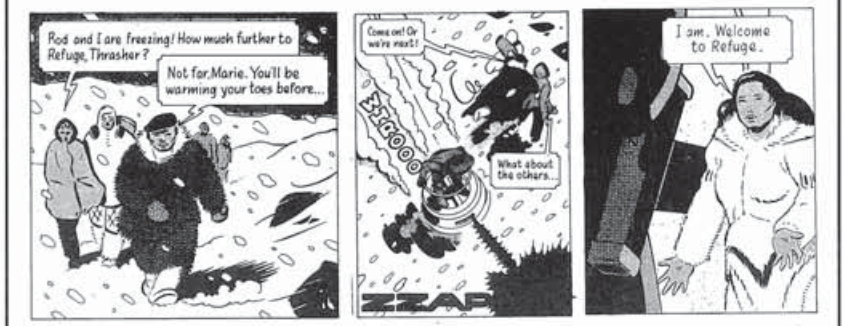
Application of urban design and community development concepts is facilitated through a number of case studies which exhibit varying degrees of success in accommodating the demands of the mountain environment. As well, archetypes of mountain architecture are described and compared. Applications of scientific concepts to urban design are explained through the guidelines, which conclude each chapter.

Of particular interest to a general audience are the design guidelines provided for snow removal and storage. These guidelines are generally applicable to all winter cities communities by their consideration of snow removal and disposal. Design guidelines provide a review of environmental considerations affecting the use of roads and parking lots, and suggests how to counteract unfavorable effects. For example, sharp corners and dead end streets can be hazardous under icy conditions. An efficient design reduces hazards and reduces costs of snow removal by taking into consideration such factors as gradient, sun and wind.

Greater emphasis is given to roadway and parking lot design in comparison to that given to pedestrian needs. Design responses to pedestrian needs exhibit less integration with the text and dwells on gradient. Since Dorwald has dealt with the pedestrian experience throughout the book, perhaps she felt it unnecessary to dwell on it. However, better coverage of pedestrian needs in this section may have assisted integration of themes throughout the book.

Overall, this is an informative text with an interdisciplinary approach to landscape design. Much of its information is applicable to winter cities generally, and its philosophy towards urban design is applicable anytime. ❄

DESIGN
FOR
MOUNTAIN COMMUNITIES
Published by: Von Nostrand Reinhold
Author: Sherry Dorward



It's about time!

Greg Liburd

If you have been waiting for a comic that gives a taste of the northern experience then prepare to sit down to an all-you-can-eat buffet... Arctic Comics has come and unfortunately, gone. Arctic comics was an independent outfit that, to the best knowledge of comic book dealers just, "went down in flames" The first issue is a tribute to good intentions. It contains three story lines which were clearly intended to address cold climate issues while educating and entertaining the reader.

The first tale is a dramatization of Inuit life during a perilous Arctic spring. Though adventure and drama abound, the author, Nick Burns, spends most of the caption space supplying historical and factual information. In this respect the first offering reminds me of a Bible comic. The second story is a tale of a northern summer vacation told through the eyes of the daughter of a Texan oil tycoon. Again it contains some thrills, but its main thrust is to pontificate on development issues. The final story is a science fiction work. In this case, a radical coalition group has convinced humankind to leave Earth so that no more environmental damage occurs. The saga follows the only people remaining on the planet; in the North, of course, after the spaceships leave. Though there is a really nifty linkage to the initial Inuit theme, the plot really goes no-where.

In general, Arctic Comics is a bit disappointing. Not a, " I wasted my time" let down, rather a, "Gee that had such potential," disenchantment. All in all, the artwork is a slight notch below that found in a standard comic and sheer entertainment value takes a back-seat to northern issues; thus, it is quite interesting, but somehow does not convey the hedonistic, self indulgent appeal of a standard illustrated adventure.

So what is to be gained out of reviewing a defunct, mediocre comic book? Nick Burns and company tried. They put their money, ink and substantial toil into trying to convey Northern life. Without people putting forth efforts on new frontiers it would be impossible for organizations such as the Winter Cities Association to succeed. Arctic Comics stands as a monument to the innovators and visionaries who bring attention to and attempt to better the cold climate living experience. ❄

ARTIC COMICS
Author: Nick Burns
Published By: Arctic Comics

PUBLICATIONS LIST

All the following publications are available from the Winter Cities Association, 1933 - 5 Street S.W., Calgary, Alberta, Canada, T2S 2B2

Winter Cities: Recreation and the Written Word, by Dr. Larry Neal. $3.00 (Non-members $6.00)

Winter Cities Design Manual, intended for use by all people involved in the designing, planning or developing of winter cities. $5.00 (Non-members $8.00)

Calgary - An Approach to Design for Winter . $13.00 (Non-members $16.00)

Writings in Gerontology, from the National Advisory Council on Aging. $13.00 (Non-members $16.00)

The Quality of Life of Seniors in Ontario, the final evaluation report of the Mobility in Winter Project. $8.00 (Non-members $11.00)

Winter Stress and the Quality of Life of Seniors in Scarborough. $13.00 (Non-members $16.00)

Opportunities to Improve the Quality of Life of Seniors in the City of Sudbury. $8.00 (Non-members $11.00)

Seniors and Mobility in Winter. $3.00 (Non-members $6.00)

Sudbury Seniors Coping with Winter. $8.00 (Non-members $11.00)

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Reshaping Winter Cities, concepts, strategies and trends. $13.00 (Non-members $16.00)

Livable Winter Cities, 1988. $13.00 (Non-members $16.00)

Winter Cities: Snow Removal Conditions in the Winter Cities. $3.00 (Non-members $6.00)

Final Report - UN/ECE, Research Colloquium of Human Settlements in Harsh Living Conditions. $3.00 (Non-members $6.00)

Harsh Living Conditions: A Research Agenda. $3.00 (Non-members $6.00)

The Search for Northern Settlement Form. $3.00 (Non-members $6.00)

Conference Proceedings from Forum '91 in Sault Ste. Marie. $42.50 (Non-members $50.00)

Conference Synopsis from Forum '91 in Sault Ste. Marie. $10.00 (Non-members $13.00)

** **Videos** - a list of videos of Forum '91 presentations is also available on request.

Back Issues of Winter Cities magazine - all back issues are priced at $10.00 plus $3.00 shipping and handling per copy. Non-member cost is $13.00 plus $3.00 shipping and handling per copy.

Winter Cities Waterfronts - Volume 7, Number 6

The Business of Winter - Volume 7, Number 7

Design - Volume 8, Number 2

Reflections from the Arctic Rim - Volume 8, Number 3

Environment - Volume 9, Number 2

C ❄ A ❄ L ❄ E ❄ N ❄ D ❄ A ❄ R

The 13th International Congress of Biometeorology will be held September 12-18 1993 in Calgary, Alberta, Canada. The program will address the interactions of all aspects of climate with health, performance, migration, settlements, architecture, clothing, energy and transport. The deadline for abstracts, 300 words or less, is February 15 1993. For further information contact Dr. Barthakur, McGill university- MacDonald Campus,
Phone 514-398 7938
Fax: 514-3987983.

The Fourth International Symposium on Cold Region Development-ISCORD 1994 will be held in Finland on June 13-16 1994. Details of the conference and Call for Papers procedures may be obtained from ISCORD 1994 secretariat c/o The Association of Finnish Civil Engineers, Meritullinkatu RIL 16A5 SF-OO170, Helsinki Finland. Fax: +358.0.13555760.

WINTER CITIES FORUM'93 is being held in Yellowknife, Northwest Territories, Canada, March 22-25, 1993. The program will address Remedies Not Problems to the issues of Northern Transportation, Tourism and Settlement Design. For further information, contact Bill Zarchikoff Executive Director
Phone 403- 920 7257; Fax: 403-920 7258.

The Northern Forum Conference is being held this year in Tromso. For further details contact Tromso Arrangement AS, Phone 47 83 10000 or Fax: 47 83 10010.

The World Wilderness Congress (WWC) convenes in Tromso, Norway, Sept. 24 to Oct. 1, 1993. The congress will address strategies for responsible corporate, indigenous, recreational and scientific uses of circumpolar wilderness and natural areas. For further information, contact in Europe: P. Boks 190, 9001 Tromso, Norway. Phone 083-80811 or Fax 083-80618, in N & S America, WILD Foundation, 211 West Magnolia Street, Fort Collins, CO 80521, U.S.A. Phone 303 498- 0303 or Fax 498-0403.

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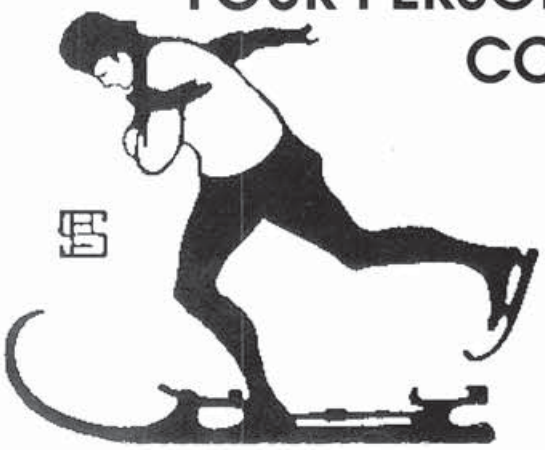

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NEXT ISSUE: Elements of Winter City Planning