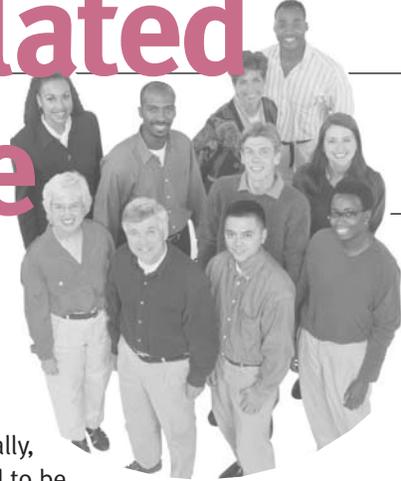


members congratulated for a job well done



The word "national" brings to mind unity; togetherness; teamwork; shared vision; and a sense of family moving forward. On the other hand, the word "territorial" evokes thoughts of individualism; competitiveness; promotion of self interest; and similar phrases. During my involvement with the National Board the national aspect has always been stressed. The desire has been to expand the areas served by CCI and to create Chapters in those provinces where none have existed. It is that vision which is taking the CCI National Board to British Columbia in May of this year. I find it ironic that at the same time CCI is attempting to truly become national, from Atlantic to Pacific, our country appears to be heading in the opposite direction. In the news this week the resignation of Lucien Bouchard has just been announced and his possible successors are campaigning more for a vision of Quebec than a vision of Canada. As well, a group in Alberta wishes to look at a certain level of separation from the rest of Canada. A sad example to CCI that we must always put aside regional differences and regional aspirations to hold true to our national view. For only with that national view do we have strength as a unified lobbying and educational force for condominiums in Canada.

The last few months have been an exciting time for CCI and the expansion of CCI. Many thanks to Gerrit Roosenboom for his work in organizing our future CCI Chapter in Barrie, Ontario. Wayne Cybak is to be congratulated for his organizational efforts in helping to arrange not only the semi-annual CCI National meeting in Kelowna but

also in helping to form a potential CCI Chapter in Kelowna. Personally, I find it wonderful to be able to continue this paragraph by also offering congratulations to Gerry Fanaken in Vancouver who has spearheaded the formation of the Vancouver Chapter and the Vancouver CCI Conference on May 7th. Gentlemen, on behalf of the National Board, I congratulate you and thank you for your efforts on behalf of the National vision of CCI.

We are also conducting preliminary discussions with the Community Association Institute, which is a larger version of CCI in the United States. The purpose of these talks is the potential of hosting a future CAI Annual Meeting and Convention in Toronto. They are currently polling their members to see if the Fall of 2003 would be possible for this event. We would coincide our CCI National AGM and Fall Conference to occur at the same time in Toronto. Thank you to Gina Cody for spearheading this idea on behalf of CCI-National and CCI-Toronto.

PAT CASSIDY, CCI - National President

In this issue

3 Planning Committee Report update on how we are growing

The new CCI Chapter in Barrie, Ontario is well on the way (con't on Page 4)

4 Property Tax breakthrough in Saskatchewan

5 Chapter Chatter

8 Scheduled Maintenance ensures reliability of Heating, Ventilation & Air Conditioning Equipment

9 Better Buildings - A Case Study: Solving persistent moisture problems and moisture damage

12 Ice damming on Shingled Roofs

2000/2001

Board of Directors

Chairman

Rob Giesbrecht, LL.B., A.C.C.I., F.C.C.I.
Pitblado Buchwald Asper, Winnipeg, MB

President

Patrick I. Cassidy, LL.B., M.T.S., A.C.C.I., F.C.C.I.
Cassidy, Nearing, Berryman, Halifax, NS

Executive Vice-President

Ronald S. Danks, B.A., LL.B., A.C.C.I.
Simpson Wigle, Hamilton, ON

Treasurer

Peter K. Harris, C.A., A.C.C.I.
Braithwaite Harris & Chong, Toronto, ON

Secretary

Deborah Howes, LL.B., C.Arb., A.C.C.I., F.C.C.I.
High Clouds Resolution Services, Sherwood Park, AB

BOARD OF DIRECTORS

Mary Barber-Villeneuve, B.A., CCI (Hon's)
President, CCC #133, Gloucester, ON

Gina Cody, M.Eng., Ph.D., P.Eng., A.C.C.I.
Construction Control, Woodbridge, ON

Sandi Cooper, A.C.C.I.
Exclusive Condominium Services,
Edmonton, AB

Jim Davidson, LL.B.,
Nelligan/Power, Ottawa, ON

David Duncan, CPM, A.C.C.I.
Deerpark Management Ltd., Gloucester, ON

Patricia Ernst
Halifax, NS

Connie Grant, CRES, RRS, A.C.C.I., F.C.C.I.
Re/Max Advantage Realty, London, ON

Randy Heathcote
Nicol Property Management, Regina, SK

Gerald Hyman, Q.C., A.C.C.I., F.C.C.I.
Barrister & Solicitor, Toronto, ON

Robert H. Kelly, M.B.A., C.M.A., A.C.C.I.
CondoPros.com, Hudson, QC

Peter Leong, P.Eng., A.C.C.I., F.C.C.I.
Cochrane Engineering Ltd., Toronto, ON

Edie Lipson, CPM., A.C.C.I.
Akman Management Ltd., Winnipeg, MB

K. Bart Porter, A.C.C.I.
Stevenson & Hunt Insurance Brokers, London, ON

Janice Pynn, R.C.M., A.C.C.I.
Del Property Management, Toronto, ON

Gerrit Roosenboom
Barrie, ON

Chetan Thakore, B.A., B.Comm.
Suncorp Valuations Ltd., Saskatoon, SK

Raymond G. Wilson, RCM, AIHM, A.C.C.I.
Wilson Blanchard Management Inc., Hamilton, ON

Bernie Winter, A.C.C.I.
Condominium Support Services Inc., Calgary, AB

NATIONAL EXECUTIVE DIRECTOR

Diane Gaunt

CCI addresses

CCI-North Alberta Chapter

P.O. Box 777
Edmonton, AB T5J 2L4
Tel.: (780) 413-8334
FAX: (780) 413-7532
E-mail: ccinac@junctionnet.com
Website: www.cci-north.ab.ca

CCI-South Alberta Chapter

400, 119 – 14th Street N.W.
Calgary, AB T2N 3Z2
Tel.: (403) 253-9082
FAX: (403) 242-8145
E-mail: info@cci-south.ab.ca
Website: www.cci-south.ab.ca

CCI-North Saskatchewan

P.O. Box 7074
Saskatoon, SK
S7K 4J1
Tel.: (306) 652-0311
FAX: (306) 652-8373
E-mail: chetan@suncorp.ca

CCI-Regina

c/o Nicol Property Management
2347B Cornwall Street
Regina, SK S4P 2L4
Tel.: (306) 525-1381
FAX: (306) 525-0303

CCI-Manitoba

P.O. Box 2517
Winnipeg, MB
R3C 4A7
Tel.: (204) 944-8954
E-mail: cci@cci-mb.com
Website: www.cci-mb.com

CCI-Toronto & Area

#310-2175 Sheppard Ave. E.
Toronto, ON M2J 1W8
Tel.: (416) 491-6216
FAX: (416) 491-1670
E-mail: ccit@taylorenterprises.com
Website: www.ccitoronto.org

CCI-London & Area

P.O. Box #25411
395 Wellington Rd.
London, ON N6C 6B1
Tel.: (519) 453-0672
FAX: (519) 453-3604
Website: www.cci-sw.on.ca

CCI-Ottawa

1910 St. Laurent Blvd.
P.O. Box 1159
Ottawa, ON, K1G 5K9
Tel.: (613) 247-4718
FAX: (613) 247-8794
E-mail: evelyn@intranet.ca

CCI-Golden Horseshoe

Upper Brant Postal Outlet,
Box 40513
Burlington, ON
L7P 4W1
Tel.: (905) 521-8144
FAX: (905) 332-8803
E-mail: ghc.cci@hwcen.org
Website: www.ghccci.org

CCI-Atlantic

c/o 1741 Brunswick St.,
Suite 401
Halifax, NS B3J 3X8
Tel.: (902) 830-0491
FAX: (902) 423-2485
E-mail: cassidy@cnb.ns.ca

CCI-National

#310-2175 Sheppard Ave. E.
Toronto, ON M2J 1W8
Tel.: (416) 491-6216
FAX: (416) 491-1670
E-mail: cci.national@taylorenterprises.com
Website: www.cci.ca

Planning Committee Report

Update on how we are growing

In the last issue of our National magazine I was pleased to report on behalf of the Planning Committee of the National Board that we were in the midst of a growth spurt. We would like to take this opportunity to bring you up-to-date on these various endeavors.

As detailed in the last issue, the Atlantic Chapter of CCI (Nova Scotia presently) has begun discussions with groups in Newfoundland and New Brunswick to expand the chapter and perhaps even looking at establishing individual chapters in those Provinces. The National Board has committed seed money from our Chapter Development Fund to assist in this endeavor and we look forward to the Atlantic Chapter providing us a report at our next Board meeting.

The Ontario region is moving towards the addition of another chapter. Mr. Gerrit Rosenboom who joined the National Board this past November, has been at work to establish a Barrie, Ontario & area chapter. As such, the National Board has committed funds

from the Chapter Development Fund to assist Gerrit in getting the Chapter started and drawing up appropriate boundaries for the chapter given its proximity to the Toronto area.

As we previously mentioned, we are going forward with our efforts to establish a chapter in British Columbia. Our semi-annual meeting of the National Board will be held in conjunction with the Interior Strata Owners Association (based in Kelowna) Annual General Meeting this May 3-5th, 2001. CCI will be making a series of presentations on topics such as Insurance, Reserve Fund Studies, and amending By-laws to the Interior Strata Owners Association. This will serve to showcase the education mandate of CCI. We are working with the Interior Strata Owners Association to coordinate this event to serve as an introduction to CCI and so that they can familiarize themselves with how the National Board functions. Our goal is to raise awareness of CCI and perhaps the Interior Group may wish to join CCI in the future. Following the semi-annual

meeting, several of the National Board's executive will be heading to Vancouver for a May 7th, 2001 general introductory seminar. We are developing this seminar with the assistance of Mr. Gerry Fanaken. Mr. Fanaken is well known in the condominium property management industry in the Lower Mainland and throughout British Columbia. Our aim is to introduce CCI to the Lower Mainland through Mr. Fanaken's efforts, which include developing an invitee list for the seminar. Finally, after the May 7th, 2001 seminar, a few of the National Executive will be heading to Vancouver Island for informal discussions with individuals who have expressed some interest in having a CCI Chapter on Vancouver Island.

So as you can see we are busy, we are committed to building CCI into a truly national organization.

Respectfully submitted on behalf of the Planning Committee,

Chetan Thakore

The New CCI Chapter in Barrie, Ontario

is well on the way

The annual CCI – ACMO joint conferences held in Toronto each November, attracts members from all over the northern Ontario area, including North Bay, Sudbury, Sault Ste Marie and Thunder Bay (up to 1,000 km from Toronto). A number of members from these distant communities have expressed their concern that condo

owners, directors and property manager are not receiving the education and information that CCI purports to provide. Directors of CCI – Toronto have volunteered to travel to these communities to present seminars and courses; however it has been difficult to arrange for local members to co-ordinate such activities in these distant communities.

Opportunity knocked on the door recently; Gerrit Roosenboom, a Director on the board of CCI – Toronto and Director on the board of CCI National, has decided to move to Barrie, Ontario and is leading the charge to open a chapter there to serve the Huronia area. With the help of fellow CCI Directors in Toronto, a large contact list in the sur-

rounding area was quickly established. Gerrit undertook a personal door knocking exercise; contacting local legal firms, accounting firms, property management companies, insurance brokers, engineering firms, financial institutions, the TV cable company, the local newspaper, service companies, directors and owners. He found the local enthusiasm and support overwhelming.

Gerrit thought a steering committee of six would be needed for the start up initiative; but due to volunteers, 12 attended the first meeting of the steering committee in Barrie, on the 10th of January 2001. CCI – Toronto donated binders containing the Ontario directors course for all members of the steering committee. CCI – Hamilton provided a number valuable inserts and Richard

Pearlstein came to the meeting to participate in the forming of the new chapter. CCI – National is sending \$1,000 to help with start up costs. Advice from Ron Danks and Diane Gaunt has been indispensable.

The steering committee has established the membership fees, course fees, arranged a meeting hall, authorized the creation of a bank account and agreed on monthly meetings henceforth. A director's educational course is scheduled to be held all day Saturday, 21 April 2001 and will also be considered as a membership drive. One hundred attendees are expected. CCI-Toronto Directors have volunteered to lecture and the Mayor of Barrie has volunteered to open the session and welcome the new chapter to Barrie. Local

newspapers will help to advertise and service/trades will provide sponsor support.

The AGM for the new chapter is scheduled for Saturday, 10 September 2001. This too will be an all day affair, at which members will elect a board of directors, choose a name and pass the required by-laws. An energy seminar will be presented. Lots of work left to do, but we are sure it will be a resounding success. A new chapter for Sudbury next?

For information on this new Chapter, please write to:

CCI-Huron Chapter
P.O. Box 31023
Barrie, ON L4N 0B3
email: cci.huron@home.com

Property Tax Breakthrough in Saskatchewan

By Randy Heathcote, *President, CCI Regina Chapter*

Previous legislation viewed condominiums as a different class than non-condominium single family dwellings. This difference in classification meant that condominiums were assessed on 85% of the fair market value, while non-condominium single family dwellings were assessed at only 75%. The breakthrough is that the percentage used to calculate assessments for both condominium property and non-condominium single family dwellings has been changed to be the same, at 70%, so "SAMA" (Saskatchewan Assessment Management Agency) now recognizes condominium properties as being no different than any other non-condo single family dwelling. The playing field has been levelled.

However, this is not going to result in a reduction in property taxes, nor does it address unfairness between condominiums and non-condominium single family residences regarding services. Also, the

mill rate will be adjusted to recover the loss of 5% in assessed value from the previous year.

Prior to this change of classification, the City used its "Tax Tools" and applied a mill rate adjustment factor which, the City claims, meant that a condominium and non-condominium single family dwelling paid the same tax.

With the announcement that the percentage for assessment calculation was reduced to 70% it still does not address the lack of service issue that condominium owners have had to endure, and continue to endure. So, on behalf of condominium owners I made a presentation to City Council on November 29, 2000 to address the unfairness that condominium owners continue to be faced with. I feared that the City would discontinue the practice of applying the mill rate adjustment factor for condominiums as there would be, in their opinion, no need to continue this practice as condos will

pay the same tax as a non-condo single family dwelling of the same value, and it appears that I was right. If the City continues to use their "Tax Tools", the mill rate adjustment factor, this would send a positive signal to condominium owners as it would be taken as recognition for services they do not receive. It's still not a solution, but it would be a step forward.

We still have a big job ahead of us to convince legislation, politicians, etc., that the assessment guideline for condominium properties is flawed and is not fair when compared to other non-condominium single family dwelling.

A committee of the Regina Chapter of the Canadian Condominium Institute is being established to focus on changing how condominium properties are assessed for taxation, what needs to be done to effect change, and what procedures are required to see that change is implemented.

London and Area Chapter

The London and Area Chapter of CCI has become firmly entrenched in Southwestern Ontario as a focal point for the dissemination of education on condominium issues. This has been done through the normal and effective channels of newsletters, seminars and courses. We are indebted to faithful experts from our local and other chapters who have volunteered their time to keep us updated on current issues. We find the exchange of speakers and information with other chapters most valuable!

We're trying to expand our educational horizons by co-sponsoring seminars with other groups that

have an interest in condominiums such as the local Real Estate Board, the Real Estate Institute of Canada and the Law Society. This year marks the start of the creation of a video library of seminars. We're hoping the videos will be helpful to current members and will be used to reach out to new prospects.

Board members are enjoying the enthusiasm and humour our new chapter president, Michael Lander, brings to the position; he's looking forward to building on the great work of past president Barry Scott.

Toronto Chapter

The Toronto Chapter of CCI is delighted to welcome its new Board of Directors for 2000 – 2001, voted in during its Annual General Meeting held on December 7th. As a result of an amendment to the bylaws to increase the number of Directors, the Toronto condominium community will now be guided by:

Gina Cody, Ph.d., P.Eng., ACCI	President
J. Robert Gardiner, B.A., LL.B., ACCI, FCCI	Vice President
Denise Lash, B.Sc., LL.B., ACCI	Vice President
John Warren, C.A.	Secretary/Treasurer
Peter Harris, C.A., ACCI	Director
Dave Hicks, ACCI, AIHM	Director
Peter Leong, P.Eng., ACCI, FCCI	Director
Richard Pearlstein, ACCI	Director
Janice Pynn, ACCI, RCM	Director
Gerrit Roosenboom	Director
Donna Swanson, ACCI, FRI	Director
Steve Willerding	Director

Members will be soon receiving the 2001 version of the useful "Professional Services & Trade Directory". All the companies listed in this Directory are involved with the condominium industry and understand the needs of our members, making them a good source for quality service.

Our quarterly newsletter just keeps on growing and improving. Formerly named "News & Views" and beginning with our Spring issue, the newsletter features a new look and name. Please welcome the "The Condo Voice", still providing informative and useful advice to condo owners.

Everybody's been talking about ENERGY – the astronomical rate increases and uncertain supply of electricity, gas, oil and water – and how it will impact on condominium homeowners living in Ontario. CCI-T is presenting a new seminar for condominium directors that gives the inside story and of proposed hydro de-regulation, gas de-regulation, oil supplies and water consumption. Being held on March 20th at the Ramada Plaza Hotel in Toronto, a panel of industry experts explored the revolutionary changes taking place in the delivery of hydro, oil, gas, and water and the long-term implications of rising prices.

Along with everyone else, we're still waiting for definitive word that Bill 38 will be proclaimed soon. When it is, condo owners can hear and learn all about it during a seminar presented by our team of condominium wizards. Stay tuned also for a seminar on Telecom Deregulation, helping directors to choose the right telecommunications agreement for their corporation.

Mark your calendars also for the annual ACMO/CCI Annual Conference, the largest educational forum for the condominium community being held November 16 – 17th, 2001.

Please phone the Chapter office at (416) 491-6216 for membership enquiries, resource materials, event registrations and general information. Visit also our website for up-to-date information at www.cctoronto.org.

North Saskatchewan Chapter

Greetings from Northern Saskatchewan. I am pleased to report that we are truly becoming representative of the Northern half of the province. In the past, our membership base has been exclusively limited to Saskatoon, however we are now getting interest and even a new individual member or two from cities outside of Saskatoon such as Humboldt, and Prince Albert. This level of interest seems to also be carrying forward in Saskatoon, our membership numbers have grown over the past year, we now have a total of 57 members. That membership base may seem small, but on a relative basis that means quite a lot. We estimate that there are 175 condominium corporations in Saskatoon, thus we are bringing educational programs and informative newsletters to approximately 33% of the condominium owners in our region. We are a relatively new chapter in the CCI fold. Hence, we embrace this growth and will continue to push for new members.

At our most recent AGM in September 2000 we were able to bring some new members to our Board, and the new members to the Board have brought with them enthusiasm and great ideas. As a Board we have decided to hold 3-4 seminars this year, we have held one (Legal Issues) in-conjunction with our AGM, while during January 2001 we held a seminar to introduce new directors to their roles and responsibilities. In addition, we continue to

publish a quarterly newsletter with topics such as "Stucco Repair", "Reserve Fund Studies", and "Estoppel Certificates" covered in recent issues.

As indicated previously we are pushing to grow the membership so that we are the consensus "Voice of Condominium". As always there is challenges in keeping a young chapter moving forward, however we are at the point of reaching some critical mass. Thus we continue to urge our membership to get involved with the chapter. During the course of this year, the Board has held several strategic planning sessions to banter ideas about growing the membership and the delivery of seminars, programs and the newsletter. These sessions have led to us completing a survey of our members on such items as how many seminars have they attended, what days they prefer seminars and the locations, and what seminars they want held. Furthermore, we are attempting to have the University's business school assist us in developing a marketing plan to spread the CCI message.

On a national basis our Chapter has been involved with the Planning Committee to initiate new chapters in Ontario and BC. The Northern Saskatchewan Chapter welcomes the semblance of a truly national condominium organization, the strength of the whole organization builds as we bring on new chapters.

Manitoba Chapter

Winnipeg condominium owners are now faced with the possibility of user pay garbage removal in the City's continuing effort to promote waste reduction.

This program is to be implemented with a multi family recycling component that will be welcomed by condominium residents. Many condominium properties have already demonstrated their commitment to the community and to recycling, implementing their own programs that are paid by condominium owners through their common element fees. The City has provided little information on how the new program will be implemented in multi family properties nor whether the existing efficiencies and lower costs of removing waste from multi family units will be recognized.

The property tax issues of condominiums continues to fall on the deaf ear of the provincial government and other initiatives are being pursued including a media/political action campaign.

**mark your calendars
now**

**"2001: A Condo Odyssey"
Joint CCI/ACMO Conference
November 16-17, 2001**

International Plaza Hotel, Toronto

Watch for program details to follow this Spring



Golden Horseshoe Chapter

In comparison to the activity we were involved in last year at this time preparing for Condominium 2000, this year has begun much more quietly.

We are planning another session of our advanced Director's and Manager's course to be held in Waterloo on the 3rd and 10th of March. Craig Robson has been instrumental in organizing the course with the help of our new Board members from that area, Judith Byrom and Don McWhinnie. We are anticipating a healthy response and have, once again, been fortunate to enlist the help of many excellent speakers. Registration forms or further information can be found on our website or included in the last issue of the *Condo News*.

Steve Warner, secretary of the chapter, continues to enlighten all of us with his knowledge and skill at the computer keyboard. Steve has managed to update our entire members list, which by the way has grown to 384, and maintains a data base

containing all pertinent information. Steve has also made several interesting additions to our webpage and is currently experimenting with a more efficient method of handling calls to our hotline.

We have recently published our second edition of a full-colour newsletter and are now ready to offer a full-colour option to our advertisers. The entire format of the newsletter has been updated presenting a more polished and professional appearance. We plan to continue to offer superior information while still improving the presentation and are also giving some consideration to additional features.

The entire Board is excited about our continued growth in membership and grateful to those who submit the articles published in the newsletter and who volunteer their time as speakers at our courses. We are proud to be fortunate enough to offer such quality from our speakers and contributors.

Ottawa Chapter

The CCI Ottawa Chapter will be holding their 2001 Directors' Course beginning Tuesday, March 27, 2001. Registration has been very good, so much so, that the Board of Directors are considering holding the Directors' Course once again in the Fall of 2001. Registrants will learn various aspects of the New Condominium Act from qualified experts in the fields of Property Management, Law, Insurance and Engineering.

On Thursday, June 7, 2001, the Ottawa Chapter will be holding a seminar on the Occupational Health and Safety Act. The guest speaker will be Mr. George Taylor, the Regional Program Advisor with the Ministry of Labour. Some of the topics that will be discussed are: What Is The Definition of Construction vs. Maintenance?, Who is the Constructor?, and the penalties that can be levied against the Board of Directors and Condominium Corporations that are in violation of the Occupational Health and Safety Act.

Atlantic Chapter

The Chapter's February 17th presentation of The Condominium Course was the launch of part one of a three part series. At this writing, it was three days away and we were expecting some 80 chapter members to make their way through wintry weather for the Saturday event at Saint Mary's University in Halifax. Feedback from participants is invited.

The first part of the three part series is titled CM 100 Fundamental Condominium Management

Principles. The Atlantic Chapter initially has adapted part one for use in Nova Scotia from the CM 100-300 series originally prepared and produced by the North and South Alberta Chapters with assistance from the Alberta Real Estate Foundation.

The Atlantic Chapter wishes to take this opportunity to acknowledge the generous permission of the North and South Alberta Chapters to use these materials.

Scheduled Maintenance Ensures Reliability of Heating, Ventilation & Air Conditioning Equipment

By Marcel A. Brissette, Vice-President of Black & McDonald Limited – Winnipeg, Manitoba

Like any mechanical device, rooftop or interior air-conditioning and heating equipment requires a regularly scheduled maintenance program to keep it operating at peak efficiency.

Because single-piece packaged equipment, combining electric cooling and either natural gas or electric heat is usually mounted on rooftops and is controlled automatically, routine inspection and maintenance is often neglected, resulting in costly repairs and expensive downtime in peak load periods.

On large buildings, several units may be used to condition a common space. Some units could be working at low capacity or not at all with adjacent units carrying the load under moderate conditions.

Because of this "out of sight" situation, a fairly minor problem could develop into a major one requiring extensive repairs, such as compressor replacement, before the problem is found. Without regular care, no one would be aware of the problem until adjacent units could not carry the peak load in peak demand. This could occur during extremely hot or cold weather when demand on service personnel would be the greatest. In Winnipeg this is often the case.

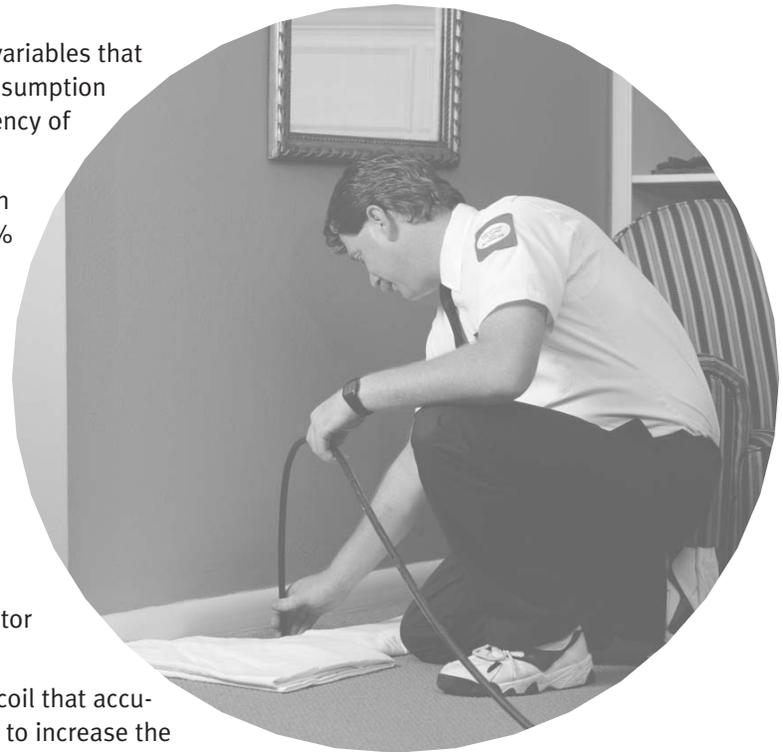
With a regular maintenance schedule, the trouble would have been detected early and corrected on a more scheduled basis and avoiding the downtime.

Properly scheduled maintenance programs will also save energy by keeping all units operating at peak efficiency.

There are many variables that affect the power consumption and operating efficiency of equipment.

- A loose or worn fan belt that allows a 10% or more reduction in the evaporator fan speed due to slippage, resulting in reduction in cooling capacity.
- Improperly maintained return air filters that will cause reduction in airflow through the evaporator coil.
- A dirty condenser coil that accumulates enough dirt to increase the condensing temperature due to air restriction and loss of heat transfer will increase the overall power requirements and cause capacity reduction. A dirty condenser coil can also decrease the operating efficiency by 15% or more.

In order to have an effective maintenance program, good records must be maintained for every piece of equipment. Information recorded should include the unit number, make, model and serial number. Other useful information is the date the unit was last cleaned, lubricated and what parts were replaced, such as belts and filters. A card should be placed on the unit with a checklist of the major parts that were inspected and the important operating parameters.



These cards will maintain the equipment history and provide a handy reference when ordering replacement parts and scheduling maintenance. Journeyman licensed mechanics are necessary, as they will usually detect potential problems while performing routine maintenance items.

There are many more items that we can talk about, that are very important to ensure reliability of maintenance service. For example, proper air filters and their installation, the properly designed control system for the equipment, as well as the minimum check list for the cooling and heating cycles. However, each one of these items is an article unto itself.

Better Buildings – A Case Study

Solving persistent moisture problems and moisture damage

Summary

This three-story, 15-unit, 1,300 square metre (13,993 sq.ft) walk-up was built in 1958. In the 1980's, the building started showing symptoms of moisture damage. The symptoms appeared after the owners replaced the heating system boiler, installed a combustion air inlet in the boiler room, installed a new roof, sealed some air leakage and changed crawl space ventilation.

Contractors asked for solutions to the moisture problems provided conflicting recommendations, some quite costly. The owners hired an impartial consultant to determine the source of the problems and recommend solutions.

The consultant concluded that poor site and crawl space drainage allowed large quantities of moisture to enter the crawl space. The moisture from the crawl space caused high humidity in the apartments. In cold weather, the high humidity caused deterioration of the building envelope, poor air quality and mold growth on walls.

The consultant recommended grading the crawl space, installing sump pits and sump pumps in the crawl space, landscaping the site to drain surface water away from the building and installing exhaust fans in the crawl space.

The project cost \$13,910, plus GST. Moisture and mold problems have ceased.

The building

- built in 1958, the building is typical of many three-story walk-ups constructed in Winnipeg in the '50's

- concrete beams on concrete piles foundation
- first floor level is one metre (3.04 ft) below grade
- the crawl space is accessible through trap doors in suites at each end of the building
- dirt floor of the crawl space was poorly graded and there were no drainage or sump pumps in the crawl space
- headroom in the crawl space was about 1.5 m (4.9 ft) at the centre of the building and about 0.5 m (1.6 ft) at the foundation edge
- flat, built up roof
- exterior walls are bonded masonry
- wood beams and joists support the floor
- heating system is gas-fired, hot water baseboard.

The problem

- mildew odours throughout the building
- mold growth on outside corners and along wall and ceiling intersections
- deterioration, particularly around windows
- severe window condensation in winter
- icicles forming in closets and at outside corners
- stained brick
- deterioration and displacement at the upper levels of outside walls
- blistering of the roof membrane
- mold growth and plaster damage so severe in three suites that they needed repairs and repainting every year.



General view of the building.



East elevation. Masonry deterioration.



Crawl space pre-retrofit. Standing water on uneven surface

Causes

- the changes made in the '80's reduced air leakage and natural ventilation in the building
- settlement around the building allowed roof and surface water to accumulate against the foundation and creep into the crawl space

- the moisture evaporating from standing water and wet soil in the crawl space migrated into apartments, driven by diffusion and stack-induced air leakage
- in cold weather, as humid indoor air passed over or leaked out through exterior walls, it was cooled below its dew point. Moisture condensed from the air onto, or into building envelope elements. Moisture in brickwork resulted in freeze-thaw damage; condensation in and on walls supported mold growth and condensation on windows melted and drained into walls, causing plaster damage under windows.

The solution

The consultant suggested “must-do” and “highly recommended” measures to solve the moisture problems.

Must-do measures to eliminate water that could evaporate from the crawl space were:

- installing sump pits and sump pumps in the crawl space
- grading the crawl space floor so water drains to the sumps
- landscaping the building site to drain water away from the building

To reduce the transport of moisture and odours from the crawl space into the apartments.

Must-do measures

- inspecting water, heat and drain pipes to make sure there were no plumbing leaks in the crawl space
- installing crawl space exhaust fans.

Highly recommended measure:

- installing a moisture barrier in the crawl space to impede moisture movement to the surface, where it could evaporate, from the subsurface
- installing weeping tile around the building to drain to the sumps and reduce the amount of moisture around and under the building.

The project

The owner decided to do all the must-do and highly recommended measures.

The consultant recommended two crawl space ventilation fans, each with a capacity of 11.3 m³ a minute (400 cfm) to depressurize the crawl space and prevent air movement to the apartments from the crawl space. The contractor misunderstood the intent of the recommendation and installed one fan as a supply and the other as an exhaust fan.

The low crawl space caused major difficulties. An excavation beside the foundation gave access for delivery of construction material to the crawl space. After grading, placing a sand base and cover for the moisture barrier, crawl space clearance under the floor beams was less than 0.5 m (1.6 ft).

Costs and benefits

Costs: Install weeping tile around 250-metre (820 feet) perimeter of building; grade crawl space; place 450 square metres (4,843 square feet) of crawl space moisture barrier; install two sump pits and pumps

\$12,810 plus GST

Install two fans and related wiring, connecting fans to existing crawl space ventilation ductwork

\$1,100 plus GST

Contract details: Owner prepared request for proposals from elected contractors and selected the lowest bid.
Source of funds: owner-financed

Operation savings: Little impact on operating costs. Estimated cost of operating and maintaining the pumps and fans is less than \$300 year. Eliminating mold damage in some apartments eliminates cost of repainting the apartments every year.

Consultants: Kevin Knight, Retro-Specs Ltd., Winnipeg; Bert Phillips, P.Eng., UNIES Ltd., Winnipeg

Builder: Jed's Construction

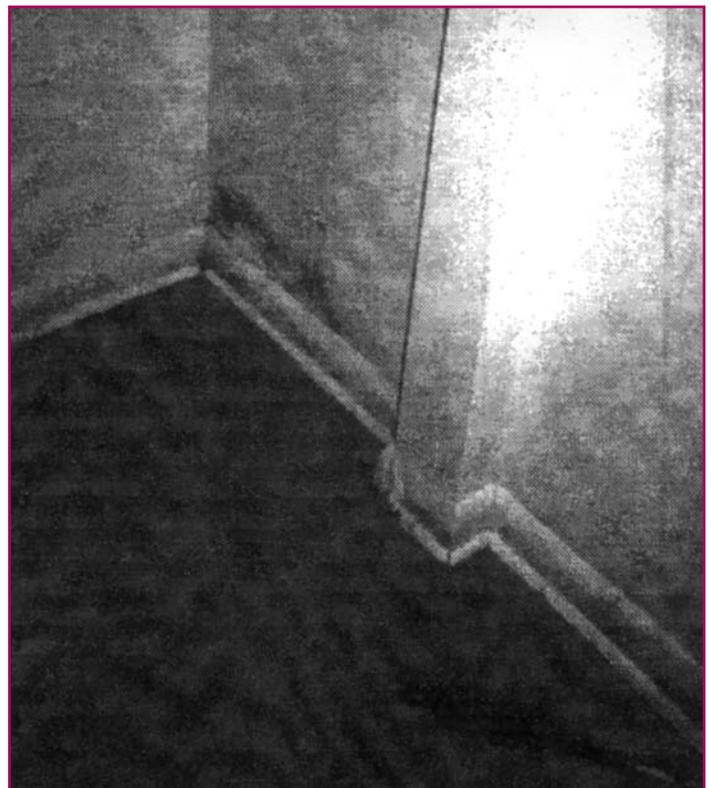
Reprinted from CMHC-SCHL Case Study



Crawl space post retrofit. New ground liner and ballast.



Mold presence on painted plaster.



Crawl space post retrofit. New ground liner, ballast and fan assembly.

Views of the authors expressed in any articles are not necessarily the view of the National Canadian Condominium Institute

Ice damming on Shingled Roofs

By Heinz Keller, P.Eng., *Keller Engineering Associates Inc.*

Introduction

Heavy snow falls have led to water penetration problems in many homes with shingled roofs. This article discusses the causes of ice formation on sloping roofs and the available remedies.

Causes of Ice Formation

The formation of ice dams on sloped roofs is caused primarily by heat loss from the building and, to a lesser degree, by solar radiation. Both of these contributing factors result in a roof surface which is above freezing while the air temperature is below freezing. Under these conditions, the snow in contact with the roof melts, runs down to the eave and freezes again as it gets exposed to the cold air. As this process continues, layers of ice are built up and an ice dam is formed behind which water is trapped. With a shingled roof, there is no positive seal between the shingles and when the depth of the trapped water becomes greater than the vertical overlap of the shingles, water will leak through the roof unless an impervious layer is installed under the shingles.

In order to prevent the formation of ice dams and icicles at the eaves, the roof surface must be kept as cool as possible. This can be achieved by adding insulation and by blocking all passages through which warm air can leak into the attic.

Attic Ventilation

Since heat loss can never be entirely eliminated, ventilation of the attic space is very important to exhaust any heat that manages to escape into the attic. Ventilation is typically achieved through openings at the eaves and near the ridge of the roof. The building code requires

that certain minimum amounts of openings be provided in order that ventilation is effectively achieved. However, when adding insulation the eave openings are frequently blocked and hence the flow of air is greatly reduced. This may result in condensation on the interior surface of the roof structure and the exterior roof surface may get warm enough to melt the snow.

Recently turbine vents have been added to roofs in an attempt to increase ventilation. However, these turbine vents are a mixed blessing. Unless air leakage from the interior is addressed first, these turbines tend to “suck” more warm and moist air into the attic and thus may not really improve the situation. During the winter months, turbine vents tend to get blocked by snow and ice and cease to operate. Therefore, unless air leakage is controlled, it is not recommended that turbine vents be installed.

Remedial Measures

Depending on the roof design, i.e. the amount of roof overhang or the presence of a cathedral ceiling, reducing heat loss or improving ventilation may not be practical or may be very expensive. In these cases, the removal of the ice and the installation of a waterproofing system below the shingles may be the only viable options.

However, in standard sloped roofs with an attic space, it is more effective if the root cause of the problem is addressed. i.e. if heat loss is reduced and the ventilation is improved.

Eave Protection

If it is not possible to reduce the roof temperature, the next line of defence is the control of water penetration. This can be achieved in two ways. Install an

impervious waterproofing system under the shingles, starting at the eave and going up the roof a sufficient distance to prevent leakage from water which is backed up by the ice dam. The steeper the pitch of the roof, the narrower can be the impervious strip. The building code currently requires minimum eave protection of 300 mm inside the exterior wall. Therefore, with a 300mm roof overhang, the eave protection would have to be 600 mm wide. However, it should be kept in mind that the building code provides only minimum requirements for average conditions. As our recent experience has shown, this provision may not be sufficient under extreme weather conditions. Therefore, we frequently recommend now that eave protection consist of an impervious membrane and that it be extended beyond the code minimum value to as much as 900 mm inside the exterior wall.

Maintenance

The removal of snow and ice on shingled roofs can result in significant damage to the shingles and flashings unless done with the utmost care. Where possible, measures should be taken to eliminate the need for snow and ice removal activities. In cases where snow buildup exceeds a height of one metre and where roof vents are blocked, it is recommended that snow be cleared off the roof. Also, where large icicles have formed it is recommended that they be removed as they may pose a damage to the public.

Attics should be inspected after heavy snow storms, as snow can blow through the attic vents and accumulate in large quantities inside the attic space. If left until warmer weather returns, the melting snow will result in leakage to the interior.