Cat tales

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ICLR and The Co-operators complete Canada's first Safer Living home

Inside this issue:

An ambitious program designed to confront the challenge presented by increasing weather-related catastrophes celebrated an important milestone in November, with the completion of Canada's first *Safer Living* home.

Located on Prince Edward Island and designed and constructed to withstand winds of 200 km/h, the house is the first to be completed under ICLR's *Designed...for safer living* program. The construction was funded by The Co-operators. The *Safer Living* program is available to ICLR member insurers, home builders and others seeking to build homes resilient to historic and future severe weather risks.

"The increasing frequency and severity of weather-related catastrophes such as Hurricane Juan are growing dangers to people around the world," said ICLR executive director, Paul Kovacs. "Canadians have a tradition of building strong homes, yet we have the knowledge to build homes that are even more resilient to extreme weather events that are increasing in frequency and severity - we need to harness that knowledge to build safer homes for this and future generations of Canadians. Our hope is that today's celebration will be the first step in our journey to building more resilient homes and communities right across the country."

The house, located in West Point on the western shore of PEI, had to be rebuilt after a fire destroyed the home, which was insured by The Co-operators.

Cont...

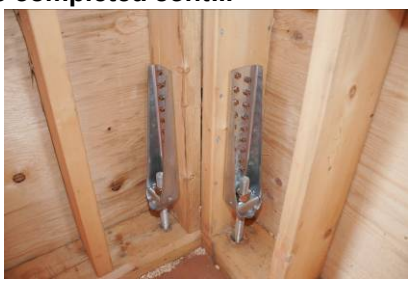
Canada's first-ever Safer Living home was constructed in West Point, Prince Edward Island. The house, a partnership between ICLR and The Co-operators, was built after the family's original homestead was destroyed by fire in April 2005.

Canada's first Safer Living home completed *cont*...

The new house was designed to withstand the most hazardous weather conditions in the area - wind storms and extreme winter weather.

Special construction features include:

- Impact-resistant windows rated for high wind pressures;
- 1" thick steel rods that anchor the floors together, including between the first floor to the foundation;
- Steel braces securing the trusses to the framing, and braced gable ends to withstand high winds;
- Special shingles designed to meet 200 km/h standards, installed using additional nails and cement;
- Heavy roof sheathing designed to stay dry, fastened with ring-shank nails in a tight nailing pattern;
- Water-resistant sealing around windows and doors;



The foundation bolts are fastened to the studs.

- Adhesive weather-resistant strips installed over every joint in the roof sheathing to protect against water intrusion; and
- Special wind-resistant siding, fascia and soffits.

Some of the special features were imported from the United States, where a similar program was developed several years ago by ICLR's sister organization, the Institute for Business and Home Safety.

"The cost of damage from natural disasters has doubled every five to seven years since the 1950s, and more and more people are living in vulnerable areas. This is an alarming trend that is not sustainable and must be confronted," said Kathy Bardswick, president and CEO of The Co-operators and member of the ICLR board of directors. "We're proud to support this program because as an insurer, we see first-hand the devastation wrought by natural disasters. It is incumbent upon us to do all we can to promote safer living, and we hope this will encourage all stakeholders to embrace safer standards."

In the months and years to come, additional safer living homes will be built in various regions of Canada. The homes will be designed to be resilient to the weather perils in that area, which may include earthquakes, prairie wildfire, tornadoes and hail storms.

The frame of the home is bolted to the foundation.

The roof is attached to the frame using special clips.

Kovacs speaks to municipal groups

ICLR Executive Director Paul Kovacs recently presented to two groups representing Canadian municipal governments: the Federation of Canadian Municipalities (FCM) and the Alberta Urban Municipalities Association (AUMA).

At both FCM's Annual Conference and Municipal Expo in June and AUMA's Annual Convention in October, Kovacs spoke to enthusiastic audiences interested in learning how to build disaster resilient communities.

The Federation of Canadian Municipalities (FCM) has been the national voice of municipal government since 1901. FCM represents the interests of municipalities on policy and program matters that fall within federal jurisdiction. Members include Canada's largest cities, small urban and rural communities, and 18 provincial and territorial municipal associations.

The Alberta Urban Municipalities Association (AUMA) was founded in 1905 and represents Alberta's 284 urban municipalities including cities, towns, villages, summer villages, and specialized municipalities.

NSERC, Benfield and ICLR launch new Industrial Research Chair in Earthquake Hazard Assessment

ICLR, Benfield Canada and NSERC (Natural Sciences and Engineering Research Council of Canada) recently held receptions in Toronto and Vancouver to launch a new Industrial Research Chair in Earthquake Hazard Assessment at the University of Western Ontario (UWO) in London.

Dr. Kristy Tiampo, holder of the chair, accepted a plaque from André Isabelle, Director of the Environment and Natural Resources Division of NSERC. Dr. Tiampo also presented some of her research to attendees, which included CEOs and other representatives from several ICLR member insurance and reinsurance companies.

Dr. Kristy Tiampo receives a plaque commemorating the launch of the new NSERC/ ICLR/Benfield Industrial Research Chair in Earthquake Hazard Assessment, from NSERC's Andre Isabelle

It is inevitable that a major earthquake will strike a large urban centre in Canada like Vancouver, Montreal, Ottawa or Victoria. The toll in lives and property damage could be staggering and, for most insurers in Canada, it could be the largest challenge they will ever face. "Dr. Tiampo's work centres on the science which seeks to anticipate and mitigate the losses from such an event, a significant endeavour for Canada's insurance industry," says Benfield's Chris Parish.

Over the next five years Dr. Tiampo's $1.25 million research program will identify hot spots of elevated near term risk in B.C. and Quebec, anticipate the strength of Canada's next earthquake, and simulate potential damage scenarios. This research will provide a foundation that will dramatically transform earthquake risk management and loss prevention.

Benfield's Chris Parish addresses attendees in Toronto.

Dr. Tiampo was appointed assistant professor in the Department of Earth Sciences at UWO in September, 2003. In the 1980s she earned a Master's degree from Stanford University in structural engineering. Dr. Tiampo received her professional engineering certification while working as a construction engineer in 1990, and has kept that certification current. She earned her Ph.D in geophysics from the University of Colorado in 2000.

Prior to her arrival at UWO, Dr. Tiampo was a researcher at the University of Colorado at Boulder, where she developed a cross-disciplinary program that involved interaction with colleagues in a wide spectrum of disciplines. These include both the analysis and modeling of geodetic and seismic data, specifically GPS, gravity, and seismic catalog data, and the application of innovative analysis techniques to this data. In addition, she spent the winter of 2002-2003 at the Universidad Complutense in Madrid, investigating new data sources, analysis techniques, and modeling approaches.

Natural Science and Engineering Research Council of Canada (NSERC) is the Government of Canada's primary instrument for making strategic investments in Canada's capability in science and technology. NSERC supports basic university research and project research through partnerships among universities, governments and the private sector.

Benfield, one of the world's leading reinsurance and risk intermediaries, is the founding corporate sponsor of this program. Its customers include many of the world's major insurance and reinsurance companies as well as government entities and global corporations.

ICLR retrofits an Ottawa home to make it more resilient to earthquake and winter storm

Last spring, the Institute for Catastrophic Loss Reduction (ICLR) unveiled its latest home retrofit project. As part of the insurance industry's ongoing commitment to educate Canadian homeowners about disaster safety, ICLR once again chose Emergency Preparedness Week to unveil its latest home retrofit project, this time in Ottawa.

Paul Kovacs, Executive Director of ICLR, conducted a media tour of the home. Says Kovacs: "Actions taken to make a home more resilient to natural catastrophes should reflect local hazard risk. The Ottawa-St. Lawrence Valley represents one of three of the most seismically active areas in Canada. Additionally, the area is regularly hit with several severe winter storms. Homeowners can prepare now for hazards that will inevitably strike in the future."

The Ottawa home retrofit included:

- Anchoring cabinets, office equipment, and bedroom furniture to walls;
- Bracing TV stands, televisions and refrigerators with appliance straps;
- Outfitting the washing machine with armoured water supply hoses;
- Anchoring the hot water heater;
- Securing pictures to the walls;
- Applying safety and security film to windows;
- Installing a gas shut off valve at the gas meter outside the house and encasing the meter in a cage to protect it;
- Insulating pipes to prevent them from freezing;
- Installing snow melt cables on roof edges and gutters to prevent the formation of ice dams;
- Installing carbon monoxide and smoke detectors and a fire extinguisher;
- Reinforcing the front and rear doors.

A gas shut off valve was installed at the gas meter to prevent against fire following an earthquake.

There are about 1,500 earthquakes recorded in Canada each year. While the most seismically active area in Canada is the west coast, damaging earthquakes of up to Richter magnitude 7 have occurred in or near the Ottawa/St. Lawrence Valley region. In October 1990, the area was shaken by a 5.0 on the Richter scale, and on January 1, 2000, by a 5.2. On February 24, 2006, an earthquake measuring 4.5 on the Richter scale struck the area.

The National Capital Region receives an average of about 225 centimetres of snow each year. However in winter 1996/97, 324.6 centimetres of snow fell. The area is also susceptible to ice storms. At Christmas 1986, freezing rain left one in four Ottawa-area homes without power, and more than 85 millimetres of freezing rain fell in the area as a result of the Great Ice Storm in 1998, causing significant damage. The average January temperature in Ottawa is -10.8 degrees Celsius, making the city the second-coldest national capital in the world, after Ulaanbaatar, Mongolia.

According to Kovacs: "We can prevent natural hazards from becoming disasters if people undertake simple, appropriate preventative measures beforehand. Such actions and measures are affordable and take little time to do. We showcase them today in this home."

This is the fourth year that ICLR has retrofitted an existing home as part of Emergency Preparedness Week. In 2005, a home in Vancouver was made more resilient to earthquakes, and in 2004, a Halifax home was protected against hurricanes. In 2003, a home in London, Ontario was made more resilient to tornadoes. The Institute has also retrofitted several child care centres as part of its "Protecting our Kids from Disasters" program."

ICLR presents in front of the House of Commons Standing Committee on the Environment and Sustainable Development

Paul Kovacs, Executive Director of ICLR.

Paul Kovacs, Executive Director of the Institute for Catastrophic Loss Reduction, on November 7 presented in front of the House of Commons Standing Committee on the Environment and Sustainable Development on the urgent need to build resilient communities nationwide. The presentation was made as part of the Committee's study of Bill C-288: An Act to ensure Canada meets its global climate change obligations under the Kyoto Protocol, a private member's bill put forward by Montreal MP Pablo Rodriguez that would compel the government to comply with Canada's climate change obligation under the Kyoto Protocol.

Kovacs shared two messages with the Committee:

1) There is growing evidence of the benefits of early action by Canada and Canadians to address change in the climate. In particular, the frequency and severity of large storms is already increasing, and action is urgently required to protect Canadians and our property by investing in resilient communities.

2) A comprehensive national strategy to address climate change should include participation in international efforts to mitigate the adverse impacts on future generations, combined with a domestic plan to adapt to the local impact. Bill 288 and the federal Government's proposed Green Plan focus on managing future emissions, however both fail to provide a comprehensive strategy that includes both a mitigation policy and an adaptation policy.

"Because actions needed to bring about meaningful reductions in greenhouse gas emissions will take many years to achieve it is critical that international mitigative actions are supported by local adaptive actions that deal with the adverse impacts that will increasingly occur over the next several decades. Near-term investments to build resilient communities are crucial over the next 20 to 50 years while we wait for international mitigation efforts to have an effect," says Kovacs.

He continued: "Some adaptation is taking place without any supportive action or direction from the federal Government, such as the reaction of insurance companies to the increase in severe weather events, but there are many opportunities for governments, including the Canadian government, to provide leadership: Providing climate information, local climate predictions and other risk management tools to support decision making by individuals, governments, industry and others; Investing in public infrastructure, modernizing building codes and adapting other standards that influence private investments in buildings to reflect historic local climate experience and future climate predictions; Protecting climate-sensitive public goods such as unique ecosystems and vulnerable coastal regions, and integrating climate predictions into comprehensive emergency management through a focus on prevention; Ensuring that the adverse impact of change in the climate is appropriately shared by Canadians, and does not excessively fall on the most vulnerable; And, supporting independent research in disaster safety."

2007 Friday Forum workshop schedule (tentative)

January 19
Lightning (Brian Mills)

February 16
Climate risk: Kelowna case study (Stewart Cohen)

March 23
Landslides (Peter Bobrowksy)

April 20
Wildfire (Brian Stock and Mike Wotton)

May 11
Tour of the Weather Network (Ron Bianchi)

June 15
Flood mapping (Don Pearson)

September 21
Flood (Slobodan Simonovic)

October 19
Earthquake in Ottawa and Montreal (Gail Atkinson)

November 16
Hamilton tornado (Richard Kinchlea)

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Three Little Pigs: An update

By Dr. Mike Bartlett, University of Western Ontario

Progress continues at Western's new research laboratory where full-scale houses will be subjected to testing to destruction using realistic extreme wind loads. This short report will highlight some of the recent achievements.

The first full-scale test specimen, constructed by community college students from the Building Technology Division of Fanshawe College as part of their academic program, is framed and clad and should be completed in the winter of 2007. The house has also been informally inspected by about 30 touring building officials and has been declared about average, with several obvious faults, some of which will be corrected before testing. (There is no implication here that the Fanshawe students did a poor job, we asked for "average" and are delighted that that's what we got!)

The structural steel reaction frame was delivered and erected, as an in-kind donation from the Ontario Region of the Canadian Institute for Steel Construction, in late June 2006. Figure 1 shows the full-scale house test specimen inside the nearly complete reaction frame "cage".

Figure 1: Full-scale house test specimen inside galvanized steel reaction frame.

A prototype system of ten Pressure Load Actuators has been successfully tested during a visit by their developers, Cambridge Consulting Ltd., in December 2006. Murray Morrison and Eri Iizumi, two PhD students supervised by Professor Greg Kopp, were instrumental in getting the prototype system operational and are now continuing to investigate its capabilities. Figure 2 shows the first actuator delivered to the facility: it is capable of reproducing a time history of rapidly fluctuation pressures that vary from 5 kPa (105 psf) positive pressure to –20 kPa (-420 psf) suction. Patent protection has been obtained for design of the valve. David Henderson, then Manager of the Cyclone Testing Station at James Cook University in Australia, joined the team for two months in the fall of 2005 and three months in the spring of 2006 to assist with the development of the pressure load actuator system. We plan to scale up to a system of 100 actuators during the early spring and summer of 2007.

On the building science front, Professors Eric Savory and James Scott, working with Prof. Jayshri Sabarinathan of the UWO Department of Electrical and Computer Engineering, have developed a prototype sensor that can monitor mould growth in a wall cavity and this will eventually allow transmission of data to a central processor using wireless technology. John Straube and Chris Schumacher of the Building Engineering

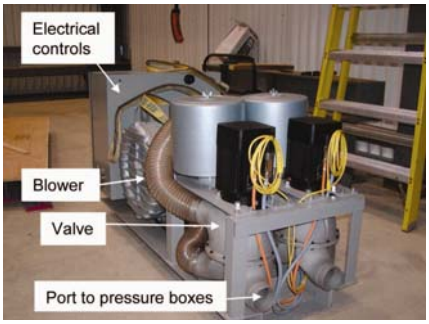

Figure 2: Pressure Load Actuator—The unit is about 600 mm wide and 1,200 long.

Group at the University of Waterloo have agreed to work with Professor Diana Inculet to purchase and install temperature and moisture measuring instrumentation, initially in some test panels in the control building for trial purposes.

The project continues to gain a lot of attention in the media. In 2006 we were featured on CBC's The National, in The Globe and Mail Report on Business, and in various publications of the insurance industry. We are co-ordinating visits by the national science reporter for The Toronto Star and a BBC television crew in January.

Fundraising to obtain the "matching" 20 percent needed to leverage funds from the Canada Foundation for Innovation and the Ontario Innovations Trust has been quite successful – to date we have raised approximately $1.3 million cash and in-kind contributions. The largest donor is the Insurance Bureau of Canada, which has been given the right to name the facility. The name will remain confidential until a formal announcement is made in February.

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Mission
To reduce the loss of life and property caused by severe weather and earthquakes through the identification and support of sustained actions that improve society's capacity to adapt to, anticipate, mitigate, withstand and recover from natural disasters.

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