

# construction *innovation*

## Bringing together building and health scientists

A recent workshop on the effects of the built environment on health brought together 50 Canadian experts to investigate ways in which they could work together to design better environments that promote the health and well-being of Canadians. Experts from areas as diverse as acoustics, architecture, biology, chemistry, engineering, epidemiology, medicine, psychology, public health, and urban planning met at the First Canadian Building and Health Sciences Workshop in Montreal in November 2008. Their aim was to identify the knowledge gaps that impede healthy design, develop plans to address them, and begin breaking down the barriers that obstruct interdisciplinary research and knowledge transfer among these disciplines.

The workshop outcomes will guide the further development of the Canadian Building and Health Sciences Network. This Network was founded in 2007 by NRC-IRC in partnership with Health Canada, Canada Mortgage and Housing Corporation, and the Canadian Institutes of Health Research in order to facilitate communication among Canadian researchers interested in the connections between our health and the buildings we live, work, learn and play in. The outcomes will also guide NRC-IRC in its



Our health and well-being depend in part on the built environment around us.

own work in environmental health, a goal identified in its strategic plan.

Two broad goals for the Network emerged from the workshop: improved health for all Canadians, and high quality and sustainable built environments. Achieving these goals will require collaborations and partnerships involving researchers, governments, the construction industry and the general public.

There is mounting evidence that air, light, sound, materials, and even some features of interior design and architecture can all influence health, but understanding just how they do so is a complex business. Thorough research addressing questions such as “What is the best way to construct a house to reduce noise and all the resulting stressful effects on our bodies” or “Which ventilation strategies reduce exposure to potential allergens while still conserving energy?” requires expertise from many scien-

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tific disciplines. The research agenda before us is, therefore, challenging.

The workshop identified significant research gaps that impede action. For example, although there is a great deal of information around the world about how conditions in the built environment can affect health, little is known about the real conditions that Canadians are exposed to. We also lack information on the costs and benefits of reducing exposure to unhealthy conditions, making it difficult to determine where to direct our research efforts, or to identify which of the many possible changes to building design and operation are most important.

Dr. John Cooper of Health Canada, one of the final panellists, concluded the workshop by saying: “[W]e want to see improved health outcomes and we’d like to see building designs that incorporate indoor environmental quality and building performance.”

Actions needed to achieve the broad goal of a more healthful Canadian built environment go beyond research. Education and

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# Construction codes

## Last chance for your input into the 2010 national model codes

The Canadian Commission on Building and Fire Codes (CCBFC) invites all Canadians to take part in the fall 2009 public review of proposed changes to the national construction codes. This will be the final public review for the 2010 edition of the codes. It will run from September 1, 2009 until October 30, 2009 on the national codes Web site (<http://www.nationalcodes.ca>), as in previous years. The public review is one of the main steps in the process for developing national code documents, providing a nationwide forum where anyone can review and comment on the changes proposed.

Approximately 50 technical changes are being proposed to the National Building Code (NBC), the National Fire Code (NFC) and the National Plumbing Code (NPC), covering four main topics – care occupancies, climbable guards, protection against falls from residential occupancy windows, and radon – plus proposals for updating the tables of documents currently referenced in the codes and the seismic data as well as localities in Appendix C of the NBC. This very limited topic list for the fall 2009 public review reflects those that the CCBFC considers high priorities for the 2010 codes. It was established in consultation with provincial and territorial regulatory authorities. The proposed technical changes are summarized below.

### Care occupancies (NBC, NFC)

A joint task group formed by the CCBFC Standing Committees on Use and Egress, Fire Protection, and Housing and Small Buildings is proposing to create a new occupancy classification for residential care facilities (Group B3 occupancy). The decision to do so arose out of concerns that current requirements related to residential care facilities were too onerous, due to their being

considered in the codes the same as institutions rather than as a facility providing some form of care. Some of the proposed changes originally submitted for public review in fall 2008 were revised, based on the comments received, and are being resubmitted for public review. Requirements for this new occupancy type deal with issues such as corridor widths for wheelchairs and stretchers, fire department access, fire detection, emergency power, and sprinklers.

### Climbable guards (NBC)

In the 2005 code cycle, a change was introduced into NBC Part 9 requiring that handrail guards not be climbable and that spindles not have horizontal projections of specified dimensions, which greatly restricted ornamental design possibilities. Railing manufacturers responded that there was no technical justification for this and substantiated their claim with a peer-reviewed report on fall incidents related to guard design that was commissioned by a non-partisan group in the United States. A task group formed by the CCBFC Standing Committees on Housing and Small Buildings, and Use and Egress, reviewed the report and reached the same conclusion.

The proposed changes submitted for public review this fall are a compromise solution that respects both industry and regulatory authority concerns. Design limitations are being removed for certain applications – such as in homes (where it is assumed that parents monitor children) and in other types of occupancies such as bars and prisons (where children are absent) – while design specifications for other applications are being replaced with a simple statement that the guards cannot be climbable. The proposed changes leave it up to the authorities to determine whether a guard is climbable or not.

### Protection against falls from residential occupancy windows (NBC)

Concerns from various advocacy groups, coupled with recent incidents of children falling through openable residential occupancy windows, have initiated a technical change to the NBC. As part of the overall initiative to harmonize Parts 3 and 9, it was noted that protection against falls from such windows was not addressed within Part 3. The proposed change introduces window opening protection requirements by way of a guard or mechanism to control the window opening to not more than 100 mm.

### Radon (NBC)

Health Canada's new guideline of 200 becquerels/m<sup>3</sup> for indoor radon concentration, published in June 2007, necessitated the review of current code requirements related to radon. A task group struck by the CCBFC Standing Committees on Environmental Separation, Housing and Small Buildings, and Building and Plumbing Services reviewed the requirements in NBC Parts 5, 6 and 9 to determine their adequacy in protecting occupants from radon ingress and in providing viable compliance options for designers, builders and building officials.

The resulting proposed changes in Part 9 include consolidating air barrier requirements and requiring that every building have a rough-in for a future radon exhaust system, should the need for radon mitigation later arise. Proposed changes in Parts 5 and 6 require that engineers and designers consider radon protection in their designs. Advice for doing so is provided in the related appendices.

### Referenced documents (NBC, NFC, NPC)

The CCBFC's standing committees also reviewed the documents refer-

### Status report on the National Energy Code of Canada for Buildings

In 2008, several task groups were established by the Standing Committee on Energy Efficiency in Buildings to update the Model National Energy Code for Buildings (MNECB) 1997 (see *Construction Innovation* June 2008). The project is now well underway and the updated document will be published in an objective-based format as the National Energy Code for Buildings (NECB) in late 2011.

This code establishes a construction standard for those features of buildings (other than small residential buildings) that affect their energy efficiency. Energy efficiency in small residential buildings is addressed by a companion document, the Model National Energy Code of Canada for Houses (MNECH), for which a plan is currently under development (see *Construction Innovation* March 2009).

Most task groups are concentrating on the technical updating of their assigned Parts of the NECB, while the Task Group on Code Consolidation focuses on ensuring that the work proceeds in a coordinated and consistent manner. The latter recommended the following paths of compliance for the updated NECB:

- a prescriptive path providing detailed provisions that, when adhered to, constitute compliance with the code
- a performance path, possibly consisting of an energy target, that uses an engineering approach and modeling solutions, and
- a trade-off path based on the prescriptive approach but allowing provisions within a part of the code to be traded with each other, as long as the same result is achieved.

The task group also considered a trade-off path based on the prescriptive approach but allowing trading between parts of the code. This was deemed too ambitious for the NECB 2011 but will be considered for the next edition. The Standing Committee accepted the recommendations of the Task Group on Code Consolidation.

An objective-based analysis of the MNECB 1997 requirements was completed in March 2009 and will be the basis for establishing objectives for the NECB 2011.

For more information on this project, please contact Cathy Taraschuk at 613-993-0049, fax 613-952-4040, or e-mail [cathleen.taraschuk@nrc-cnrc.gc.ca](mailto:cathleen.taraschuk@nrc-cnrc.gc.ca).

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enced in the 2005 codes and recommended updates to the code tables referencing these documents to reflect the more current editions. The tables are included in this public review to confirm the public's concurrence with these updates, and to receive comments from those who might object.

#### **Localities for Seismic Values and Climatic Data (NBC)**

The seismic values in Table C-2 of Appendix C have been reviewed to reflect a change in the equation used

to calculate the values. The localities mentioned in this table have also been revised to improve the correlation between data locations and the needs of designers. The table is being submitted for public review to confirm the structural design community's approval.

If you are interested in receiving more information on the public review, please contact the Secretary to the CCBFC at 613-993-5569, fax 613-952-4040, or e-mail [codes@nrc-cnrc.gc.ca](mailto:codes@nrc-cnrc.gc.ca).

## Publication of new 2009 Quebec Plumbing Code integrated into the 2005 National Plumbing Code

Amendments to Chapter III, Plumbing, of the Construction Code were adopted by the Province of Quebec on March 19, 2008 with an effective date of July 1, 2008. This Chapter comprises the National Plumbing Code of Canada 2005 (NPC) and approximately 180 changes related to potable water supply, drainage systems, as well as the sale and lease of materials and fixtures to be used in plumbing systems, among others. The Plumbing Chapter is intended for designers, contractors responsible for carrying out building work, and owner-builders.

NRC-IRC, in collaboration with the Régie du bâtiment du Québec, is pleased to announce the publication of the *Quebec Construction Code, Chapter III – Plumbing, and National Plumbing Code of Canada 2005 (amended)*. This new document includes the amendments to Chapter III, Plumbing, and the amended NPC provisions so as to indicate clearly to users the changes that apply to construction and renovation work in Quebec.

As in the case of the NPC, an objective-based approach was used to prepare this new Chapter III, Plumbing. The majority of the Code provisions are linked to objectives describing the overall goals that the provisions are intended to achieve and to functional statements describing conditions that help satisfy the objectives. This new information allows for flexibility by helping users evaluate alternative solutions to the acceptable solutions provided in the Code.

The *Chapter III, Plumbing, with the amended NPC* is available now in print (binder format). It will be offered on CD-ROM and on the Web (on-line subscription service) later this summer.

To order the *Quebec Construction Code, Chapter III – Plumbing, and National Plumbing Code of Canada 2005 (amended)*, please visit the NRC Virtual Store at [www.nrc.gc.ca/virtualstore](http://www.nrc.gc.ca/virtualstore), or fill out the enclosed order form and fax it to 1-613-952-7673.



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## Input sought for NRC-CCMC business review

The National Research Council has engaged a consulting firm to conduct a business review of the Canadian Construction Materials Centre (NRC-CCMC). The goal is to seek input from a cross-section of stakeholder groups to help ensure the continued success of this evaluation service, whose role is to help new and innovative building construction products gain regulatory and market acceptance. The Canadian Commission on Construction Materials Evaluation (CCCME) and NRC management will use the study's findings to set the future direction for the centre and make necessary changes to meet stakeholders' short- and long-term needs.

NRC-CCMC has earned a solid reputation for its national evaluation service over the past twenty years. The many changes that have taken place since then, in both industry and regulatory environments across Canada, necessitate a review to determine if the service is still meeting needs and expectations. These changes include the advent of green products, the concept of sustainability and pressures to increase energy efficiency.

The consulting firm, Montreal-based Brio Conseils, will review the centre's current business practices and solicit input from stakeholders. It will then prepare a comprehensive overview of expectations and how

they being met. A project team consisting of manufacturing representatives, provincial and municipal regulators, NRC staff, and the CCCME Chair will oversee the firm's activities, verify findings and provide guidance.

Brio Conseils will first conduct an environmental scan to identify the centre's strengths and weaknesses, as well as the changes in the industry and regulatory environments that are having an impact on its operations. Industry consultations will take place this fall, via face-to-face meetings across the country and possibly a web-based questionnaire

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### New product evaluations

Company	Product Name	CCMC #	Description
BASF Canada Inc.	Lupranate M20SB and Lupranate M20FB	13421-R	Binders for OSB and Waferboard
Canadian Industrial Distributors Inc.	Durafoam	13435-R	Durability Assessment of Bead-Applied Urethane-Based Sealant Foam for Air Barriers
Controlled Power Company	EL Series/ELH, ELN/ ELE and ELU	13428-R	AC Inverter System for Emergency Power Supply for Lighting (Single Phase)
Firestone Building Products Co.	GenFlex TPO	13370-R	TPO/FPO Sheet-Applied Roofing
Fomo Products Incorporated	Handi-Foam Straw Foam, Handi-Foam Gun Foam and Handi-Foam E84 Class I Spray Foam II-105, II-205, II-605 and Refill Systems	13392-R	Durability Assessment of Bead-Applied Urethane-Based Sealant Foam for Air Barriers
GAF-ELK Composite Building Products	Crosstimber Professional Grade Hollowcore	13379-R	Cellulosic/Polymer Composite Exterior Decking (Hollow Cross-section)
GAF-ELK Composite Building Products	Crosstimbers® Classics	13399-R	Cellulosic/Polymer Composite Exterior Decking (Hollow Cross-section)
Insulation Manufacturing	Polar Barrier	13410-L	Cellulose Fibre Insulation (CFI) for Buildings
Knauf Insulation	Knauf JETSTREAM® CANADA Fiber Glass Blowing Insulation	13404-L	Loose-Fill Mineral-Fibre Insulation
Kruger Inc.	DRIcore	13436-R	Panel Type Underlay
LaPolla Industries Inc.	FL-2000 Wall Insulation	13414-L	Spray-Applied Rigid Polyurethane Foam Insulation – Medium Density
Owens-Corning	WeatherLock™ Cold Climate/ WeatherLock™ High Tear Granular/ WeatherLock™ Mat/WeatherLock™ Flex/ WeatherLock™ Metal/Starter Shingle Roll	13403-R	Eave Protection, Self-Sealing Modified Bituminous Membranes

For further information on the performance, usage and limitations of these products, as well as for other reports and listings by NRC-CCMC, see the Web Registry of Product Evaluations located at <http://www.nrc-cnrc.gc.ca/eng/services/irc/ccmc/registry-product-evaluations.html>.

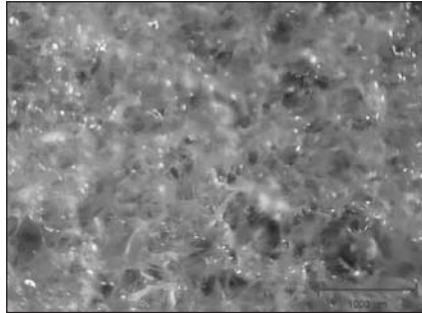
# Building envelope and structure

## New NRC initiative on bioproducts for construction

Researchers at NRC have started a new R&D initiative on bioproducts for application in construction. Bioproducts are obtained from the use of biomass, that is, renewable, biological-based, raw materials. The building blocks of biomass include vegetable oils, proteins, lignin, and complex sugars like cellulose and starch. Interesting sources of these building blocks are industrial by-products including, for instance, agricultural fibres.

Bioproducts are an alternative to petroleum-derived products. The motivation for their use is increased sustainability and environmental protection, as biomass feed stock is biodegradable and renewable. Biomaterials are an element in the movement towards “greener” construction.

Researchers are interested in the development of new biomaterials, and the investigation of their performance and long-term durability including, for instance, applications in



A bio-insulating foam prepared from a cellulose derivative.

water protection, biofibre-reinforced materials, insulation, and thermal storage. In this respect, industrial partners are sought for the development and investigation of bio-materials, including (but not limited to) bio-adhesives for roofing, bio-asphalt, lignin-based composites, bio-polyurethanes for coatings and insulation, and the use of bio-fibres in cementitious materials and concrete. For more information, contact Dr. J-F. Masson at 613-993-2144, fax 613-954-5984 or e-mail [jean-françois.masson@nrc-cnrc.gc.ca](mailto:jean-françois.masson@nrc-cnrc.gc.ca).

## Bringing together building and health scientists

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training will be needed, aimed at professionals, the building industry and the general public. Public policy tools will also be necessary, including guidelines, recommended practice documents, standards and perhaps code changes. The Canadian Building and Health Sciences Network, led by NRC-IRC and its government partners, will be at the forefront of these actions.

The proceedings of the workshop are available by visiting <http://www.nrc-cnrc.gc.ca/eng/projects/irc/building-health-network.html>. Specific questions can be directed to Dr. Jennifer Veitch at 613-993-9671, fax 613-954-3733 or e-mail [jennifer.veitch@nrc-cnrc.gc.ca](mailto:jennifer.veitch@nrc-cnrc.gc.ca).

## Input sought for NRC-CCMC business review

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as well as telephone surveys. A final report is scheduled for spring 2010. The project team will review the report, prioritize the results, and submit its recommendations to NRC management and the CCCME.

The review's ultimate goal is to undertake changes that will improve the efficiency of the NRC-CCMC and enhance service to the regulatory community and to clients and users doing business in today's competitive environment. Dr. John Flack, the centre's manager, stated, “We've been evaluating products for many years, and over that time we've done a thorough job. Our role is to help regulators and users of our reports make sound decisions as to whether new, innovative construction products meet National Building Code requirements. We want to hear from interested parties on how best to do that.”

Anyone wishing to participate is asked to contact Dr. John Flack at 613-990-8518, fax 613-952-0268, or e-mail [john.flack@nrc-cnrc.gc.ca](mailto:john.flack@nrc-cnrc.gc.ca).

## 2008 Quebec Construction Code now available on the Web!

The 2008 Quebec Construction Code can now be consulted through an online Web-based subscription service. Purchasing an annual or 10-day subscription gives you access to this new Code from any computer connected to the Internet.

The online version of the Quebec Construction Code allows you to easily navigate between its various Parts and to quickly find specific content using the powerful search engine. The integrated external links allow for instant access to provisions in other Codes for which subscriptions were purchased and the active internal links allow for consultation of cross-references, defined terms and Appendix Notes. Quebec-specific requirements, that is to say, technical changes or additions made relative to the National Building Code of Canada 2005, are clearly indicated. Go to <http://www.nrc-cnrc.gc.ca/eng/services/irc/codes-centre/online-codes-library.html> for more information on this new product.

To purchase a subscription or the printed version of the 2008 Quebec Construction Code, please visit the NRC Virtual Store at [www.nrc.gc.ca/virtualstore](http://www.nrc.gc.ca/virtualstore) or contact NRC-IRC Publication Sales Department at 1-800-672-7990 or 1-613-993-2463 (Ottawa-Gatineau and U.S.).



Organized by: Institute for Research in Construction  
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## Energy Efficiency in Buildings – New Tools and Technologies

Building Science Insight is a national seminar series presented annually by the National Research Council Canada Institute for Research in Construction to provide construction professionals with practical information. Each seminar focuses on technical advances in building science on a specific topic and includes the results of NRC-IRC research. This year's seminar will address the efficient use of energy in buildings through five presentations on recent research and one on issues related to energy codes.

The following topics will be addressed:

### **Overview of the National and Provincial Energy Codes for Buildings**

This presentation will provide an overview of the development of the Model National Energy Code for Buildings 1997 and its evolution to the updated provisions planned for the National Energy Code for Buildings 2011. It will also discuss the current and future status of energy regulations for buildings in the provinces and territories and their association with the National Energy Code for Buildings 2011.

### **Dimmable Lighting: Energy Savings and Occupant Satisfaction**

Dimming ballasts with appropriate controls can reduce lighting energy consumption as much as 50%. Personal dimming controls can produce additional energy savings of about 10%, while also improving occupant satisfaction and productivity. NRC-IRC researchers will review their research findings in this field and predict future trends.

### **Energy Ratings of Window and Wall Assemblies**

This presentation will summarize the procedure for window Energy Rating found in CSA Standard A-440.2 and its relationship to Natural Resources Canada's ENERGY STAR program. It will also provide examples of the results of NRC-IRC research on high-performance glazing systems and present a procedure for comparing the thermal performance of walls built with different insulation materials.

### **Making Buildings Responsive to Peak Energy Demand**

Meeting peak electrical demand is costly, but failure to do so leads to blackouts. Building operators can help by dimming lights and changing thermostat set points and ventilation rates during peak periods. This presentation looks at the extent to which energy demand can be reduced without significantly affecting the indoor environment.

### **High-Performance Thermal Insulation in Building Envelopes**

Although still virtually unknown in Canada, vacuum insulation panels (VIP's) have thermal resistance values up to 10 times those of conventional insulation materials. This presentation will outline NRC-IRC studies on the performance and construction of VIPs, explain how they work, and demonstrate the challenges and advantages of using them in building construction.

### **Energy-Efficient Roofs**

Properly designed roofs can play a significant role in efforts to achieve energy efficiency and sustainability in construction. This presentation will review and clarify misunderstandings surrounding sustainable, green, reflective and high-performance roofs; present some recent research on the performance of these roofs; address environmental, durability and life-cycle issues; discuss design and construction; and encourage the use of new technologies.

This one-day seminar will be held in the following locations:

### **English Seminars**

- Vancouver Oct. 6, 2009
- Whitehorse, Oct. 8, 2009
- Winnipeg, Oct. 20, 2009
- Edmonton, Oct. 22, 2009
- Iqaluit, Nov. 3, 2009
- Regina, Nov. 16, 2009
- Calgary, Nov. 18, 2009
- Yellowknife, Nov. 20, 2009
- St. John's, Dec. 1, 2009
- Halifax, Dec. 3, 2009
- Toronto, Dec. 9, 2009
- Fredericton, Jan. 12, 2010\*
- Ottawa, Jan. 15, 2010\*

### **French Seminars**

- Quebec, Feb. 9, 2010
- Montreal, Feb. 11, 2010\*

\* With simultaneous translation

The registration for the seminar is \$349 plus tax, \$75 for students. Discounts are available for 10 or more people from the same organization. Please visit the Web site at <http://bsi.gc.ca> for more details and registration information.

**Speakers:** The roster of speakers includes NRC-IRC building science specialists Hakim Elmahdy, Guy Newsham, Phalguni Mukhopadhyaya, Benjamin Birt, Aziz Laouadi, Mike Swinton, Ralph Paroli and Morad Atif, technical advisors from the Canadian Codes Centre Cathleen Taraschuk, Mihailo Mihailovic and Heather Knudsen. Provincial representatives responsible for energy regulations will also be invited to address energy code issues.

## Past Seminars now on the Web

NRC-IRC is pleased to announce that Webcasts of our three most recent BSI seminars, BSI 2008/09 on **Single and Multi-Family Houses**, BSI 2007/08 on **Fire Safety Research for Better Building Design**, and BSI 2006/07 on **Sustainable Infrastructure** are now available. These consist of complete audio and visual records of each presentation, allowing anyone anywhere, at any time, to stay current with developments in construction research in these areas.

Versions of these seminars are now available at <http://www.nrc-cnrc.gc.ca/eng/ibp/irc/bsi/seminar-publications.html>.

The price of each online seminar is \$125.

# Upcoming events

## Meetings of Canadian Commission on Building and Fire Codes

Contact Anne Gribbon at 613-993-5569,  
e-mail: [anne.gribbon@nrc-cnrc.gc.ca](mailto:anne.gribbon@nrc-cnrc.gc.ca)

### Summer 2009

Standing Committee Meetings.  
Consult Canadian Codes Centre Web site  
at [http://www.nationalcodes.ca/ncd\\_calendar\\_e.shtml](http://www.nationalcodes.ca/ncd_calendar_e.shtml).

### September 22-23, 2009

Commission Regular Meeting. Saskatoon.

## JULY

### 13-15

4th Symposium on Human Behaviour  
in Fire, Cambridge U.K. <http://www.intersciencecomms.co.uk/html/events/hb09a1.htm>

### 21-24

4th International Conference on Structural  
Health Monitoring of Intelligent Infrastructure  
(SHMII-4 2009), Zurich, Switzerland.  
<http://shmii.empa.ch/>

### 27-30

Building Simulation 2009, Glasgow, Scotland.  
<http://www.bs2009.org.uk/>

## AUGUST

### 23-26

INTER-NOISE 2009, Ottawa.  
<http://www.internoise2009.com/>

## SEPTEMBER

### 13-16

American Public Works Association  
International Public Works Congress &  
Exposition, Columbus, OH.  
<http://www.apwa.net/Meetings/Congress/2009/>

### 21-27

5th International Structural Engineering  
and Construction Conference (ISEC-5),  
Las Vegas. <http://isec-5.ce.unlv.edu/>

## OCTOBER

### 11-14

2009 Conference on Green Building – Towards  
Eco-City, Taipei. <http://www.taiwangbc.org.tw/>

### 20

Contech Building Events Trade Show, Quebec.  
[http://www.contech.qc.ca/eng/index\\_batiment.php](http://www.contech.qc.ca/eng/index_batiment.php)

### 26-27

Experiencing Light 2009: International  
Conference on the Effects of Light on  
Wellbeing, Eindhoven, The Netherlands.  
<http://www.experiencinglight.nl/>

## NOVEMBER

### 3-4

Buildex Calgary, <http://www.buildexcalgary.com/>

### 11-13

Greenbuild International Conference and Expo,  
Phoenix, AZ. <http://www.greenbuildexpo.org/>

### 25

Contech Building Events Trade Show,  
Montreal. [http://www.contech.qc.ca/eng/index\\_batiment.php](http://www.contech.qc.ca/eng/index_batiment.php)

## DECEMBER

### 2-4

Construct Canada, Toronto.  
<http://www.constructcanada.com/>

## 2010 APRIL

### 21

Buildex Vancouver, <http://www.bcconstruct.com/>

## MAY

### 5-7

First International Conference on  
Nanotechnology in Cement and Concrete,  
Irvine, CA. [http://www.trb.org/news/blurb\\_detail.asp?id=9750Vancouver, B.C.](http://www.trb.org/news/blurb_detail.asp?id=9750Vancouver, B.C.)

## construction innovation

<http://irc.nrc-cnrc.gc.ca/ci>

*Construction Innovation* is published quarterly by the NRC Institute for Research in Construction.

Editor: Jim Gallagher

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Institute for Research in Construction  
Ottawa, Ontario K1A 0R6

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ISSN 1203-2743

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National Research Council  
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Canada

Ottawa, Canada  
K1A 0R6

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