ISIS INNOVATOR
NEWSLETTER OF ISIS CANADA January 2003
The Canadian Network of Centres of Excellence on Intelligent Sensing for Innovative Structures

Runners up

Team Members:

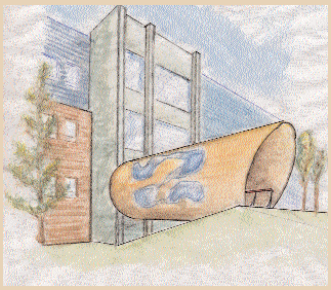
B. Craig
C. Lankinen
A. Al-Mayah
T. El-Maaddawy

University of Waterloo

Team Members:

Y. Beaudoin
P. Lamothe
P. Lapierre
A. Raîche

Université de Sherbrooke



Team Members:

S. Afhami
A. Kamel
M. Kuzik
C. Lacasse

University of Alberta

Team Members:

V. Banthia
H. Crocker
C. Klowak
A. Memon
S. Murison

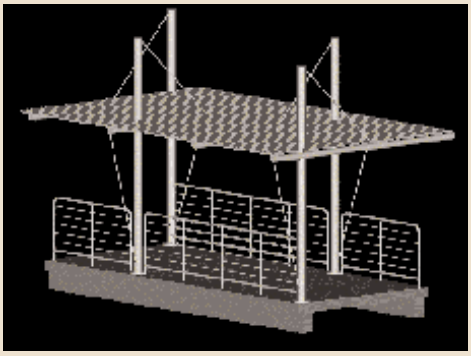
University of Manitoba

Renderings by Jan Kroman
3rd year Civil Engineering
University of Calgary

Five Futuristic Covered Bridge Designs

for Université de Sherbrooke Engineering Building

When Dr. Pierre Labossière, Associate Vice-Rector, Research, Université de Sherbrooke initiated this design competition, he had three goals in mind. One was to enhance the educational experience of ISIS Canada students. The second was to provide a real pedestrian bridge to design, and the third was to have a unique and practical design featured on the Sherbrooke campus. Five teams of graduate students involved in ISIS Canada and representing five universities, rose to the occasion.



Students from Queen's University who won the competition and participated in the detailed design and construction of this pedestrian bridge: Luke Bisby, Raafat El-Hacha, John Ford, Dorian Tung and Brea Williams

According to the student competitors, "The best part about the design competition was the fact that a real bridge would be built." Not only that, but the winning team from Queen's University traveled to Sherbrooke to meet with the ISIS Canada technical advisor, Dr. Gamil Tadros, and with the engineering consultant for the pedestrian bridge, Mr. Gaétan Couture, to finalize design details prior to construction. Such an experience is rare for students.

The final design is not only a unique and attractive covered structure that utilizes advanced composite materials, but it is also a smart bridge by virtue of the structural health monitoring components that have been installed under the supervision of Dr. Pierre Rochette, research engineer with the ISIS Sherbrooke team. The monitoring process will contribute even further to the development of highly qualified personnel within the ISIS Network–and beyond.

ISIS Canada 8th Annual Conference

April 30 - May 2, 2003

Learn about the latest advances in research and applications of FRPs and structural health monitoring technologies.

The Fairmont Waterfront, Vancouver
Reservations 1.800.257.7544 or www.fairmont.com

Guest Speakers

Peter Head, OBE, FREng

As Corporate Development Director at FaberMaunsell, Mr. Head is involved in the strategic management of one of the world's largest consulting firms. Since graduating from the Imperial College London, he has worked in the construction industry designing and building bridges all over the world. Mr. Head invented a new advanced composite construction system that lead to the construction of the world's first major advanced composite bridge, road lift bridge and multi-storey building.

Peter Buckland, P.Eng.

Mr. Buckland graduated from Cambridge University in 1960. He worked for consultants for five years, and a steel fabricator for five years before founding the firm that became Buckland & Taylor Ltd. Mr. Buckland has worked on bridge projects for most of his working life, including the reconstruction of the Lions Gate Bridge in Vancouver, British Columbia and as Independent Engineer for the Confederation Bridge linking New Brunswick and Prince Edward Island.

COMPETITIONS

Visit the ISIS web site for details on all student competitions.

Scholarships
Essays
Posters
Presentations

www.isiscanada.com

Student Exchange Program

ISIS Canada's new Student Exchange Program aims to enhance the educational experience of students and provide an exchange of knowledge by working with other professors and laboratory facilities on interdisciplinary research projects while fostering the networking between students and universities within the ISIS Network.

ISIS will provide up to a maximum of $5,000 for an exchange, based on a one time return trip, between two Canadian universities within the ISIS Network. The program is available to full time ISIS students currently enrolled in a Masters or Ph.D. program. Applications will be reviewed twice yearly. For complete details, see the ISIS Canada website.

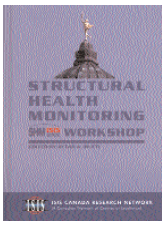
First International Workshop on Structural Health Monitoring

Chair
Dr. Aftab Mufti

Participants traveled from as far away as Australia, Germany, Hong Kong, Italy, Japan, South Korea, Sweden, Switzerland, and the United Kingdom to attend the First International Workshop on Structural Health Monitoring (SHM) of Innovative Civil Engineering Structures in Winnipeg. The Workshop brought forward the latest innovations and applications of the rapidly evolving science of structural health monitoring. ISIS Canada emerged as one of the global leaders in using SHM for both research and management of civil structures. With the sharing of information, ideas and a window on the future, the Workshop was a resounding success.

A short course on ISIS Design Manuals 1 and 2 was held in Winnipeg on September 18, 2002 prior to the SHM Workshop on September 19 and 20.

- Manual No. 1: Installation, Use & Repair of Fibre Optic Sensors
- Manual No. 2: Guidelines for Structural Health Monitoring



Copies of the Workshop Proceedings edited by Aftab A. Mufti are available from ISIS Canada. Order online at www.isiscanada.com

Plan to attend SHM ISIS 2004 in Winnipeg, September 2004

Design Manual Tour Crosses Country

Detailed one-day workshops were held in 8 cities to acquaint practicing engineers with the use and benefits of ISIS Design Manuals 3 and 4:

- Manual No. 3: Reinforcing Concrete Structures with Fibre Reinforced Polymers (FRPs)
- Manual No. 4: Strengthening Reinforced Concrete Structures with Externally-Bonded Fibre Reinforced Polymers

Engineers from the public and private sectors, researchers and students participated in these workshops as ISIS Canada transferred the case studies of leading edge research and field demonstrations to the user sector. To date, over 1000 manuals have been distributed throughout Canada with 150 sold in 23 other countries.

Halifax
Fredericton
Winnipeg
Saskatoon
Toronto
Calgary
Edmonton
Vancouver

ISIS Presentations at Middle East Symposium

ISIS Canada co-sponsored the Third Middle East Symposium on Structural Composites for Infrastructure Applications held in Aswan, Egypt from December 17-20, 2002.

Presenters of ISIS Technologies

Dr. Aftab Mufti, President, ISIS Canada
Dr. Kenneth Neale, ISIS Canada Vice President, Université de Sherbrooke
Dr. Brahim Benmokrane, Université de Sherbrooke
Dr. J.J. Roger Cheng, University of Alberta
Dr. Alaa Elwi, University of Alberta
Dr. Emile Shehata, Wardrop Engineering
Dr. Khaled Soudki, University of Waterloo
Dr. Gamil Tadros, Technical Applications Consultant, ISIS Canada

SITEF2002—Toulouse, France

Dr. Pierre Labossière, Université de Sherbrooke, represented ISIS Canada at SITEF, France's annual Science, Technology and Innovation Conference held in Toulouse, France from October 23-26, 2002. SITEF is a major conference with attendance of 60,000. Canada's Networks of Centres of Excellence (NCE) were invited to participate in the first general meeting of the French Research and Innovation Networks held in conjunction with SITEF. This proved to be a unique opportunity to establish contacts with researchers, government and industry representatives from France and other European countries.

Short Course on FRP Reinforced Concrete Structures

The Université de Sherbrooke presents a three-day short course on FRP Reinforced Concrete Structures from February 12-14, 2003 at the Delta Hotel, Sherbrooke, QC. Drs. Brahim Benmokrane and Kenneth W. Neale will teach the course based on ISIS Canada design manuals and CSA codes. The course will explain the properties and characteristics of FRP reinforcements, theories, design methods, and construction details, and provide analysis and case studies. Four hours will be spent in the laboratory familiarizing participants with experiments in the mechanical characterization of FRPs, and behaviour of FRP reinforced concrete elements.

The cost of the course is $975. For more information, contact:
Brahim.Benmokrane@USherbrooke.ca

Université de Sherbrooke Receives Technical Innovation Award

Dr. Brahim Benmokrane and his Technical Transfer and Utilization research group at the Department of Civil Engineering, Université de Sherbrooke, have been awarded the Technical Innovation in Infrastructure Award from the Quebec Ministry of Municipal Affairs for the Wotton Bridge field project. The Wotton Bridge was constructed using FRP bars as reinforcement for the concrete deck slab and was instrumented with fibre optic sensors to monitor the deck behaviour.

The other partners that received this award are the Municipality of Wotton, Quebec Ministry of Transportation, Teknika, Les Coffrages Carmel Inc., Pultrall Inc. and RocTest Ltd. All these partners are associated with the NSERC Research Chair in FRP Reinforcement for Concrete Structures, the position held by Dr. Benmokrane. The award recognizes Quebec municipalities, and their industrial and scientific partners whose collaboration makes innovative technological solutions possible. Dr. Benmokrane is an ISIS Canada Project Leader at the Université de Sherbrooke.

State of Missouri Explores ISIS Research Results

The Missouri Department of Transportation (MoDOT) Research Advisory Panel is studying the steel-free hybrid reinforcement system for concrete bridge decks developed by ISIS. The University of Missouri-Columbia and the University of Missouri-Rolla have been conducting the research project to validate ISIS Canada's research.

Dr. Vellore S. Gopalaratnam, University of Missouri-Rolla, reported that his research team, under a research contract from the Missouri Department of Transportation, has nearly completed the study of the design and performance of steel-free structures built in Canada. In addition, his team has reviewed current design and construction practices to develop analysis and design procedures for the proposed steel-free hybrid reinforcement design. In September 2002, Dr. Aftab Mufti, President, ISIS Canada, met with the UMC and UMR research teams, MoDOT engineers and industry collaborators to provide input on the research project. The Department of Transportation expects to implement the steel-free hybrid bridge system within two years.

Fairmont Waterfront
900 Canada Place Way
Vancouver, BC
V6C 3L5
(604) 691-1991
Toll-Free North America
1-800-257-7544
www.fairmont.com

Hotel Accommodation

Conference fees do not include hotel accommodation. For reservations, please contact the hotel directly and indicate that you are attending the ISIS Canada Conference.

ISIS CANADA RESEARCH NETWORK

Public Forum Day Speakers, April 30

• **Peter Head**	**FaberMaunsell, UK**
• **Peter Buckland**	**Buckland & Taylor, BC**
• **Roger Cheng**	**University of Alberta, AB**
• **Aftab Mufti**	**ISIS Canada, MB**
• **Nemkumar Banthia**	**University of British Columbia, BC**
• **Peter Brett**	**BC Ministry of Transportation, BC**
• **Kenneth Neale**	**Université de Sherbrooke, QC**
• **Don Kennedy**	**Associated Engineering, BC**
• **Gordon Sparks**	**University of Saskatchewan, SK**

CONFERENCE REGISTRATION

On Line Registration
www.isiscanada.com
or fill out and fax or mail the form below

Personal Information (Please print clearly)

Last Name: _____ First Name: _____

Title : _____

Mailing Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone: _____ Fax: _____

Email: _____

Method of Payment

Registration fee is $321 including GST. This fee includes all speakers featured on April 30, 2003 plus continental breakfast, breaks, and lunch. It does not include hotel accommodation. A limited number of display booth spaces are available at $535 per booth including GST. Contact Patricia Paige at (204) 474-9156 for further information. GST# 86790-2868

All registrations must be accompanied by payment.

☐ Cheque made payable to ISIS Canada Corporation is enclosed

_____
Name of Card Holder

☐ American Express ☐ MasterCard ☐ VISA

_____
Card # Expiry Date Signature

☐ Special Requirements: Vegetarian, Kosher, Halal, Other (Specify) _____

Return Registration Form

Conference fees must be paid prior to arrival at conference.

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(204) 474-7519

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Dana Bebak
(204) 474-7883

Mail
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A250 Ag Engineering Building
University of Manitoba
96 Dafoe Road
Winnipeg, MB R3T 5V6

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www.isiscanada.com

All registrations will be confirmed.

ISIS Canada Conference 2003 - Vancouver, British Columbia

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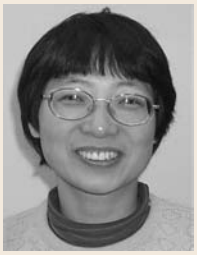
Phone 204. 474. 8506
Fax 204. 474. 7519
E-mail central@isiscanada.com
Website www.isiscanada.com

Order of Canada for Dr. L. Jaeger

Dr. Leslie Jaeger

Dr. Leslie Jaeger has been appointed to the Order of Canada, the nation's highest honour for lifetime achievement. In addition to being a founding member of the ISIS Canada Research Network, Dr. Jaeger is Emeritus Research Professor of Civil Engineering and Engineering Mathematics at Dalhousie University, where he is a world-renowned authority on highway bridge analysis. Equally recognized as an engineering consultant and lecturer, he has helped to raise the profile of Canadian engineering companies and increase their competitiveness in the international marketplace.

Canada Research Chair for Dr. X. Bao



Dr. Xiaoyi Bao

Dr. Xiaoyi Bao has been appointed the Canada Research Chair in Fibre Optics and Photonics at the University of Ottawa with a budget totaling $1.4 million over seven years. Dr. Bao conducts research in Brillouin scattering-based distributed fibre optic sensors, characterization and compensation of the impairment in photonics systems. Her research program will build on existing strengths, such as fibre characterization and compensation for polarization mode dispersion and polarization-dependent loss, the development and application of distributed fibre sensors and stabilizing laser wavelength and reducing line width.

Both Drs. Jaeger and Bao have been appointed to the ISIS Canada Research Management Committee

Additional Awards

Dr. Jag Humar, Professor of Civil and Environmental Engineering, has been recognized as one of Carleton University's most distinguished faculty members by being named a Chancellor's Professor.

Dr. Alex Kalamkarov, Professor of Mechanical Engineering at Dalhousie University, has been awarded a Fellow of the American Society of Mechanical Engineers (ASME). He is the first and only Fellow of the ASME in Nova Scotia.

CSCE Lifetime Achievement Awards for Drs. Jaeger, Dorton and Bakht

The Canadian Society for Civil Engineering presented Lifetime Achievement Awards to Dr. Leslie Jaeger, Dr. Roger Dorton, and Dr. Baidar Bakht for their sustained and outstanding contributions to bridge engineering in Canada and abroad at the SMSB-VI Conference in Vancouver, British Columbia.

(L to R) Drs. L. Jaeger, R. Dorton & B. Bakht