

Norman W. McLeod Chair in Sustainable Pavement Engineering



2/29/2012

2011/2012 Annual Report

This report provides an update of the activities of the Norman W. McLeod Chair from January 2011 – January 2012 inclusive.

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Norman W. McLeod Chair in Sustainable Pavement Engineering

2011/2012 ANNUAL REPORT

This report is intended to summarize the activity of the Chair from January 2011 to January 2012.

1.0 Scope and Objective of the Chair

The scope of the Chair focuses on emerging and innovative pavement technology, state-of-the-art research infrastructure in areas of design, materials, construction, preservation, safety, and management for tackling specific problems, developing new technologies and training skilled people.

The objective of the Chair is to:

- Provide cutting-edge sustainable pavement engineering research.
- Develop sustainable and cost-effective materials, designs, construction and management tools.
- Collaborate with government, industry, and academia.
- Teach and supervise students.
- Disseminate findings through seminars, newsletters, papers and reports.

One main objective of the Chair is to provide specialized training needed to meet the challenges of transportation engineering in the 21st century. The research and teaching program is designed to develop future leaders and to advance critical partnerships between universities, government, and the private sector.

The Norman W. McLeod Chair in Sustainable Pavement Engineering is in support of the Centre for Pavement and Transportation Technology (CPATT). CPATT has been at the forefront of exceptional research, training and professional activities. This success is rooted in both the experienced and skilled faculty members, as well as the state-of-the-art facilities such as the John J. Carrick Pavement Laboratory at the University of Waterloo, the CPATT Test Track at Waterloo Region's Waste Management Facility and several satellite test sites located across Canada. All of these facilities support the state-of-the-art research program. The current and future research will continue to advance key research needs but will also provide strategic training for the industrial partners and the broader community at large. Development of national and international partnerships will also facilitate technology transfer.

2.0 Partners

We greatly appreciate the support of our partners in the Norman W. McLeod Chair in Sustainable Pavement Engineering. Our industry partners are key industry stakeholders and are knowledgeable in the areas of research in which the Chair will pursue. The resources and expertise they can provide is extremely beneficial as we move forward on various research initiatives. Below is a list of our partners:

- Capital Paving Limited
- DBA Engineering Ltd.
- Golder Associates Ltd.
- Holcim Canada Inc.
- LVM-Jegel
- McLeod Endowment
- McAsphalt Industries Limited
- Miller Paving Limited
- Ministry of Transportation Ontario
- Ontario Good Roads Association
- Ontario Hot Mix Producers Association
- Ready Mixed Concrete Association of Ontario
- Roto-Mill Inc.
- Shiloh CanConstruct
- Stantec Consulting Limited
- Steed and Evans Limited



3.0 Chair Launch

On January 28th, 2011, the University of Waterloo and the Centre for Pavement and Transportation Technology officially launched the new \$1.5 million endowed Norman W. McLeod Chair in Sustainable Pavement Engineering. At the launch ceremony, Susan Tighe, a professor of civil and environmental engineering at the University of Waterloo, was announced as the Norman W. McLeod Chair in Sustainable Pavement Engineering.

Many guests attended this event including all the funding partners, students, faculty, staff and industry partners and people. Key participants in the announcement included:

- Dr. Feridun Hamdullahpur, President, University of Waterloo
- Dr. Adel Sedra, Dean of Engineering, University of Waterloo
- Dr. Susan Tighe, Chair in Sustainable Pavement Engineering, University of Waterloo
- Dr. Ralph Haas, Distinguished Professor Emeritus, Emeritus Norman McLeod Chair, University of Waterloo
- Vimy Henderson, Doctoral Candidate, University of Waterloo (Representing Students)
- Gerry Chaput, Executive Director and Chief Engineer, MTO (Representative of Chair Sponsors)

The key participants all gave speeches at this event, speaking of the importance of this Chair and funding partners to enable more research focusing on innovative pavement engineering, evaluation of new materials, construction expediting, innovative concrete pavement, smart roads, implementation of SuperPave technology, surface friction improvement and alternative contracting methods.

After the speeches concluded, a lunch was held in E5 for funding partners, some industry members and a few faculty members involved with CPATT and the Norman W. McLeod Chair. It was a great way to show our appreciation to the funding partners for their contributions to the Chair. This event was a great success in launching the new endowed Norman W. McLeod Chair in Sustainable Pavement Engineering.

Below are a few pictures taken from the event:



Guests in Attendance



During the announcement



Adel Sedra, Dean of Engineering



Feridun Hamdullahpur, President UW



Gerry Chaput, Assistant Deputy Minister, MTO



Ralph Haas



Vimy Henderson, Doctoral Candidate



Susan Tighe



Neil Thomson, Chair Civil and Environmental Engineering



Susan Tighe with the graduate students

4.0 Outreach

Over the past year we have hosted a Graduate Student Poster Symposium and also a seminar on an International Review and Evaluation of Public Private Partnerships with speaker Dr. Cesar Queiroz, Former World Bank Highway Advisor.

4.1 Graduate Student Poster Symposium

On Friday October 28th, 2011, we held a Graduate Student Poster Symposium in the E5 Student Design Centre. The event started at 12:30pm – 3:00pm and lunch was provided for the guest. In total, 18 graduate students, who participate in CPATT, prepared posters on their current research projects. Approximately 300 industry members, faculty, staff and students attended this event to learn more about what the students were researching.

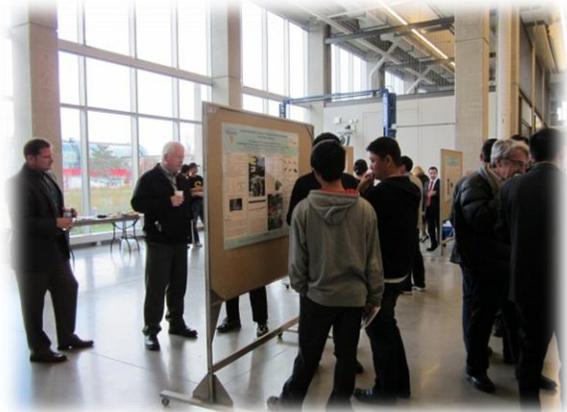
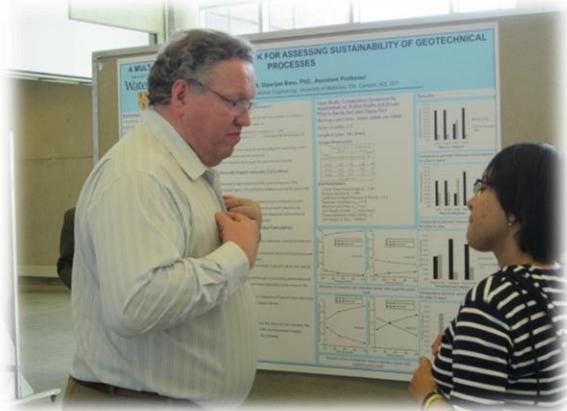
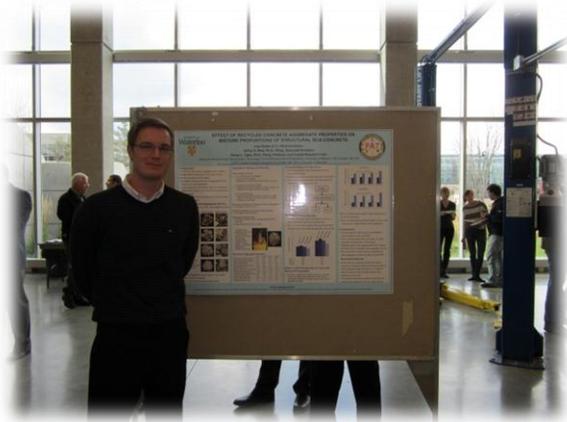
This event was a great way for industry partners to come to the University and ask the students questions and get a better understanding of some of the current research projects. It was also a great opportunity for the students to network with the industry members and receive feedback on their work.

Booklets were provided to the guests, which presented an abstract of each of the student's projects. We received great feedback from the guests for this event. Some of which include:

“The symposium was well organized and had many posters on display. The amount of unique research being done at the University and the high quality of students attending the University doing post graduate studies was very impressive. The most interesting item for me, as I am working on a large research project, was the perpetual pavement project being done near Woodstock. It was very comforting to see pavements being instrumented and monitored in Ontario. The poster was presented well. Prior to attending the Symposium, I assumed only a few posters would be presented and it was a pleasant surprise to see so many on display” – **Gabe Cimini, Stantec Project Manager, Infrastructure Management and Pavement Engineering, Stantec Consulting Ltd.**

“We were pleased to attend the Norman McLeod Chair/CPATT Student Poster Symposium in October and what we (myself and other Roto-Mill staff) found most interesting was the enthusiasm shown by the students on their individual research projects and the diversity among the various projects. It was great to see both the lab and field research data being presented for improvements with existing technologies (asset management, recycled concrete) and the innovative research being done on emerging technologies such as the solar road panels. The research being completed at CPATT is relevant and can be utilized to improve current practices or be implemented in the transportation industry in the near future. Great Job to All!” – **Chris Thompson, Construction Manager, Recycled Asphalt Construction Division, Roto-Mill Inc.**

Some pictures of this event are shown below:



4.2 Cesar Queiroz Seminar

On January 21, 2012, CPATT and the Norman W. McLeod Chair held a seminar on “An International Review and Evaluation of Public Private Partnerships (PPP)”. The invited speaker, Dr. Cesar Queiroz, Former World Bank Highways Advisor, presented on his experience with PPP. He discussed the importance of infrastructure and economic development. He also discussed the differences between

developed countries and developing countries and how PPP can be implemented in these situations. In addition, the role of private investors in PPP was discussed and various forms of partnership were discussed. The presentation drew on Dr. Queiroz's 40 years of experience as an international consultant on roads and transport infrastructure and his expertise in infrastructure, road maintenance, financing, management and development, performance-based contracts, improving governance, quality assurance and evaluation, research, teaching and training.

This seminar was very beneficial to all those that attended, especially those working on projects which relate to public-private-partnerships. There was also a very good question and answer section where various issues were discussed.

We greatly appreciate Dr. Cesar Queiroz, taking the time to travel to the University of Waterloo and present a very insightful and interesting presentation. His knowledge and expertise in this area was evident in his presentation and also the question and answer session after the presentation.

5.0 Recent Projects

Below is a list of some of the recent research projects which relate to the Chair, which Susan Tighe is the principal investigator:

- Transportation Association of Canada – 2012 Pavement Asset Design and Management Guide
- Ministry of Transportation Ontario – Automated Performance Measures for Contract Administration
- Ministry of Transportation Ontario – Assessment of Long-term Performance and Cost-effectiveness of Standard Pavement Treatments used in PMS2
- Ministry of Transportation Ontario/Ontario Hot Mix Producers Association – Determining Quantity of Recycled Asphalt Pavement in Hot Mix Asphalt
- Cement Association of Canada – Canadian Design Guide for Pervious Concrete
- Ontario Hot Mix Producers Association – Evaluation of Perpetual Pavements
- Natural Science and Engineering Research Council of Canada – Sustainable Long Life Pavements
- Town of Markham – Quantifying Pavement Sustainability - Evaluation of Pavement Distress Measurement
- Miller Paving Ltd. – Evaluation of Recycled Asphalt Shingles in Asphalt
- Ontario Tire Stewardship – Evaluation of Rubber Modified Asphalt: Past, Present, Future
- Transportation Association of Canada – C-LTPP Database Review
- Ready Mixed Concrete Association of Ontario/Cement Association of Canada – Development of Concrete Pavement Training Material.

6.0 Board of Advisors Meetings

The first Board of Advisor's (BOA) meeting was held on April 4, 2011. The main focus of this meeting was to discuss the roles and responsibilities of the board, briefing on current commitments and projects

and planning for the future. It was an introductory meeting to introduce this new Chair position and to discuss what the future plans are and get feedback from the board members. This first meeting was a great success and received very positive feedback from the board members. Discussion questions were asked at the meeting to all the board members to get their feedback on various topics including:

Education and Training:

1. What qualities do you want to see in your employees? (i.e. engineers, technicians, managers)
2. What training/education is required for new graduates?
3. What training/education is required for working professionals? (i.e. engineers, technicians, managers)
4. How can the Chair assist with meeting your training/education needs?

Research:

1. How can research be effectively communicated to you?
2. How can we best connect you with students?
3. How can we assist with solving specific technical problems? (i.e. industry, corporate)
4. Can you take advantage of UW research facilities?

Other

1. How can the Chair assist with organizational needs? What can the Chair do to assist with industry needs?
2. What are the best mediums for communicating with you? (i.e. newsletter, websites, emails, features in industry newsletters, hosting seminars, hosting meetings, hosting tours, etc.)

The feedback that was received from the questions was then used to plan activities for the year. The group agreed it was beneficial to provide an annual report summary of key activities. Holding seminars was also identified by the BOA as a way to communicate information. In addition, the continued emphasis on outreach and more specifically the hosting of lab tours for visitors and the continued updating of the websites was deemed important.

Another comment during this meeting was communicating using newsletters. Since January 2011, CPATT has distributed an electronic newsletter three times annually. The BOA gave positive feedback on this newsletter and industry members were pleased with the progress on sustainable research and teaching. The speaker's corner section in the newsletter which asks stakeholders a questions relating to either the industry, seminar's we have hosted, etc. was also seen as a good opportunity for interaction. Moreover, it is a great way to include our partners in our newsletters and get their opinions on our research and events.

The BOA decided that an annual meeting to discuss current projects and future opportunities was appropriate. The next meeting will be held in 2012, the date is yet to be determined.

7.0 Future Plans

7.1 New Faculty Position

One of the primary motivations of the Chair is to expand the current pavement research program by hiring a new faculty member. Although, originally an advertisement for this position was to be issued in Fall 2011 with hire in Fall 2012, due to the current payouts on the endowment the advertisement will instead be issued in January 2013 once the full \$1.5 million amount of the endowment has been received. This is unfortunate but related directly to the current market returns.

The new faculty member must have a strong background in pavement engineering and management. The preferred candidate will have a research record in design, construction, maintenance and rehabilitation of flexible and rigid pavements, and expertise in one or several research areas such as modern pavement materials, pavement performance modeling, pavement instrumentation and evaluation and materials testing. We will keep you updated on that progress.

7.2 Upcoming Seminars

We have an upcoming seminar on April 5, 2012 on “Long Life Asphalt and Concrete Pavement including Fast Track Construction”. The speaker for this seminar will be Dr. John Harvey, a Professor from the University of California at Davis. We will be inviting industry members and students to attend this event to learn more about this topic and ask questions from an expert in the field of flexible and rigid pavements.

In addition, Professor Doug Hooton, from the University of Toronto, will be presenting on new innovations in concrete materials. Date is yet to be confirmed.

7.3 Collaboration

Over the next few years the plan is to continue to develop and expand on external collaboration through outreach. We will have active participation in various external meetings, seminars and conference. This also includes active student participation in these activities.