

# Realize. It starts with you.

Water main breakages, basement wall cracks, and ruts in the road do not need to be part of our lives. Researchers at the University of Regina are working to find solutions for these expensive problems by studying the city's distinctive soil and how it is influenced by severe weather.

"Beneath our feet is an expansive soil deposit that undergoes swelling and shrinkage due to seasonal weather variations. This has serious implications for our civil infrastructure that is constructed in, on or with these types of materials," says Shahid Azam, a professor of Environmental Systems in the Faculty of Engineering and Applied Science. The associated cost of repair and maintenance is usually quite high and can increase exponentially over time. For example, the annual cost for the City of Regina to manage its distressed water main system alone is estimated to be more than \$2 million.

"Most of the infrastructure is supported by that top two or three meter soil layer that has two main features," says Azam. "First, it is in direct contact with the atmosphere so it is affected by variable precipitation and evaporation from summer to winter. Second, it has hairline cracks that govern the seepage of water through it. The main objective of our research is to capture the effect of both weather conditions and vertical soil fissuring in the volume change measurements."

To investigate the volume change properties of soils, Azam and his team have established the Saskatchewan Advanced Geotechnical Engineering (SAGE) Laboratory. It is sponsored by provincial and federal funds, including those from the Canada Foundation for Innovation, and the University of Regina. This laboratory is equipped with state-of-the-art apparatus, including the Meso-scale Odometer Test System (MOTS) that is designed, fabricated, and calibrated at the University.

"This equipment allows the testing of a larger size sample of Regina clay to better approximate fissuring geometry of the field. When flooded with water - simulating rainfall or excessive lawn watering - the soil specimen tends to swell by absorbing that water," explains Azam. "We prevent this swelling movement by gradually loading the soil using a coupled hydraulic-pneumatic system. This way, we can measure the soil pressure around the pipes under the buildings and in road embankments."

An improved understanding of the swelling, shrinkage, and compressibility of local soils will help us design more stable engineered facilities. To ensure an uninterrupted use of existing infrastructure within our community, Azam's work will eventually lead to the development of new management protocols for buried pipelines.

The investigations of Regina clay behaviour are quite timely given the infrastructure development that is underway in and around the city. Projects underway (and some potential projects) such as the Global Transportation Hub, the 55,000-seat covered stadium, the 26-storey Capital Pointe Hotel and condominiums, and the 18-storey Mosaic Potash Tower will have to be constructed on the same expansive soil. Azam is enthusiastic about the technical assistance his research team can provide to capacity building in the community.



Shahid Azam

## WHAT'S HAPPENING

**Wednesday, March 30 7:30 p.m.**  
3rd Annual Forward Together Lecture

Location: Rex Schneider Auditorium, Luther College, Main Campus  
Speaker: Dr. James Pitsula

Luther College, Campion College, First Nations University of Canada and the University of Regina are pleased to present the third annual "Forward Together" lecture, delivered this year by University of Regina History Professor Dr. James Pitsula.

In his lecture, entitled "A House with Many Mansions: The Shared Centennial Legacy of the University of Regina and the Federated Colleges," Dr. Pitsula will look at the origins of the University of Regina, Campion College, Luther College, and the First Nations University of Canada. Through photos and other archival material, he will bring to life the formative events that have shaped the institutions' development, arguing that there is a core story-line to the past 100 years that has resulted in linked and shared destinies for the University and the Federated Colleges.

A book signing will follow the lecture. Complimentary parking will be available in the designated "M" areas of lots 3 and 19.

For further information, contact Stephen King at (306) 585-4086.

**Thursday, March 31 7:30 p.m.**  
Trudeau Lecture Series

"From Migration to Homelessness: Self-Narrative and Contemporary Mobility"  
Speaker: Dr. Simon Harel, 2009 Trudeau Fellow from Université du Québec à Montréal  
Location: Language Institute, room 216

Free admission and a reception will follow the lecture. Complimentary parking will be available in the designated "M" areas of lot 3.

For further information or to RSVP, contact Awelana Akeriwe at (306) 337-3226.

Photos by University of Regina Photography Department.

## CENTENNIAL SPOTLIGHT



Regina College library in the 1950s.  
Photo courtesy of University of Regina Archives and Special Collections.

Realize. Making students' dreams come true.



It's our centennial and we're in the mood to celebrate.

To commemorate 100 years of Excellence in Education, the University of Regina announces the 2011 Matching Gift Program to support students through scholarships and awards. Now, until December 31, 2011, eligible award and scholarship donations will be matched by the University of Regina—dollar for dollar, up to \$10,000.

Scholarships and awards help support students in their pursuit of a successful academic experience. They also help students facing financial challenges.

Eligible donors can designate their gift to any faculty or create a named award.

To find out more, visit our website at [www.uregina.ca/campaign](http://www.uregina.ca/campaign). Or, call us at 306-585-4024, or toll-free at 1-877-779-4723.

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