

First Annual Structures Graduate Students Conference 2015 (SGSC 2015)

Royal Glenora Club

Edmonton, Alberta | September 4th, 2015

On behalf of our Structures Group at the University of Alberta, we would like to welcome you to our First Annual Structures Graduate Students Conference. The event is dedicated to celebrate our students, present our work, and thank our industry and alumni for their valuable support.

Agenda

7:00 – 8:00	Registration
8:00 – 8:30	Breakfast
	Opening Remarks
	By: Dr. Roger Cheng (Chair of the Department of Civil and Environmental Engineering)
8:30 – 9:15	Keynote: “ <i>From Rivets to Robots</i> ”
	By: Paul Zubick
9:15 – 10:00	Session 1: Steel Structures
10:00 – 10:30	Coffee Break
10:30 – 12:00	Session 2: Mixed Session (Steel / Railway / Pipe / Concrete)
12:00 – 1:15	Lunch
	Keynote: “ <i>Engineering in the ‘Real’ World: Things I know now that I wish I knew then</i> ”
	By: Cameron Franchuk
1:15 – 2:30	Session 3: Concrete Structures
2:30 – 3:00	Coffee Break
3:00 – 4:00	Session 4: Structural Health Monitoring
4:00 – 5:00	Session 5: Biomechanics
5:00 – 6:30	Mixer Event
6:30 – 7:30	Dinner
7:30 – 8:00	Awards and Prizes
	Closing Remarks

Keynotes

Keynote: “*From Rivets to Robots*”

Presenter: Paul Zubick, P.Eng.
Chief Operating Officer, Supreme Group

Chair: Dr. Robert G. Driver

The structural steel sector leads construction trades in implementation of new technology to maximize efficiency and streamline costs in building construction. It is critical to the competitiveness of the Canadian construction industry that we integrate these tools and technologies into the construction process at all levels, from conception through to final construction and commissioning, in order to lever the advantages on a larger scale. Paul's talk will show how far the steel industry has come in just a few decades, and will highlight the integration of leading-edge technology into today's traditional construction industry.

Paul Graduated from University of Alberta with a BSc in Civil Engineering in 1983. With thirty two (32) years of experience in the steel construction industry, Paul is currently the Chief Operating Officer at Supreme Group LP. Paul is a member of the Board of Directors for the Canadian Institute for Steel Construction and a member of the CISC's Education and Research Council. Paul also served on the CSA standard S16 technical committee from 1998 to 2010.

Keynote: “*Engineering in the ‘Real’ World: Things I know now that I wish I knew then*”

Presenter: Cameron Franchuk, M.Sc., P.Eng.
Associate, DIALOG

Chair: Dr. Robert G. Driver

Upon graduating, every engineer has to deal with the difference between the idealization of the job and the reality of the job. Cameron's talk will discuss some of the things that new engineers don't expect to experience when they first get into the “real” world. How much does that air handling unit really weigh? How close is close enough and how far is too far? Which rules need to be followed, which can be bent, and which can be broken?

Cameron is an alumni of the University of Alberta completing his Master's degree in 2002. Since then, he has worked as a consulting engineer on many prominent buildings in Edmonton – NREF, NINT, and PAW at the U of A; The Edmonton Federal Building Renovation; and the Ice District Parkade and Towers. Cameron is also heavily involved in the engineering industry having volunteered his time with the Consulting Engineers of Alberta, the Canadian Society for Civil Engineering, and the Canadian Institute for Steel Construction. Over the past few years, he has also served as a sessional lecturer at the U of A teaching first year engineering statics.

Session Schedule

Session 1: *Steel Structures*

Chair: Amir Jamshidi

- Progressive Collapse Resistance of Shear Connections in Composite Construction
Amir Jamshidi and Robert G. Driver
- Steel-Frame Connection Modelling Techniques for Progressive Collapse Analysis
Safa S. Masajedian and Robert G. Driver
- Behavior of Steel Cantilever Plate Connection Elements
Pouya Salem and Robert G. Driver

Session 2: *Mixed Session (Steel / Railway / Pipe / Concrete)*

Chair: Meng Lin

- Evaluation of Stiffness and Force Resisting Capacity of Unstiffened Wide Flanged Members Subjected to Twisting of One Flange
Muhammad Ahmad and Robert G. Driver
- An Investigation of the Effects of Axle Spacing and Track Stiffness on the Rail Stress Behavior
Lihua Zhang, Mustafa Gul, and Michael Hendry
- Evaluation of Rail Maximum Vertical Deflections and Bending Stresses Using the Real Time Rail Vertical Deflection Measurements Along the Track
Saeideh Fallah Nafari, Mustafa Gul, and Roger Cheng
- Effect of Z-Shape Steel Plate Connectors on out of Plane Flexural Behavior of Concrete Sandwich Wall Panels
Nabi Goudarzi, Yasser Korani, Samer Adeeb, and Roger Cheng
- Pipe Interaction with Drilling Fluid in Horizontal Direction Drilling
Montazar Rabiei, Yaolin Yi, Alireza Bayat, and Roger Cheng

Session 3: *Concrete Structures*

Chair: Pouya Salem

- Performance Evaluation of an Innovative Hybrid FRP-Concrete Bridge Truss Girder
Parham Joulani and Mamdouh El-Badry
- Vibration-Based Prestress Force Identification in Existing Prestressed Concrete Bridges
Mohammad Hossein Moravvej Hamedani
- On Improvement of Self-Re-Centering Properties of Reinforced Concrete Shear Walls
Mohammad Javad Tolou Kian and Carlos Cruz
- Conservation of Heritage Water Infrastructure in India: Cauvery Basin Waterworks
Md Islam, Vivek Bindiganavile, and Narayana Suresh
- Numerical Simulation of Concrete Shear Walls Reinforced with GFRP Bars Under Lateral Cyclic Loading
Fereshte Talaei and Carlos Cruz

Session Schedule

Session 4: *Structural Health Monitoring*

Chair: Nabi Goudarzi

- Structural Health Monitoring Plan of the Walterdale Bridge Determined Using Finite Element Analysis
Aimee De Laurentiis, Mustafa Gul, Roger Cheng and Robert G. Driver
- Detection of Stiffness and Mass Changes Separately with Output only Vibration Data
Ngoan Do and Mustafa Gul
- A Framework for Vibration Based Damage Detection of Bridges Under Varying Temperature Effects Using Artificial Neural Networks and Time Series Analysis
Branislav Kostic and Mustafa Gul

Session 5: *Biomechanics*

Chair: Saeideh Fallah Nafari

- Simplified Equivalent Material Model for Cancellous Bone
Behzad Vafaeian and Samer Adeeb
- Developing a New Continuum Approach to Model Skeletal Muscle and Its Application
Fateme Moghaddam and Marwan El-Rich
- Influence of the Lumbar Spine Sagittal Curvature on Its Internal Loads and Load Sharing
Sadegh Naserkhaki, Jacob L. Jaremko, Samer Adeeb, and Marwan El-Rich