

URBAN UPDATE

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Urban Projects

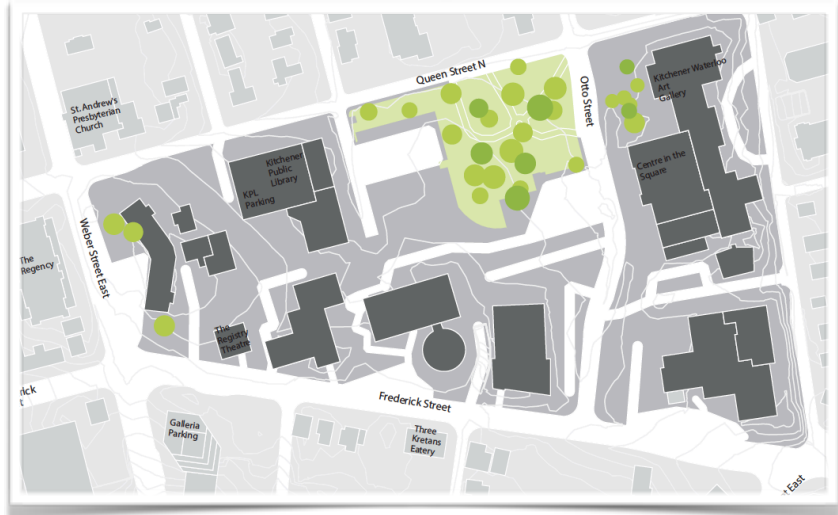
Attended Aida Mollaei's first committee meeting for her Masters research "Weight of Cities" with her supervisor from the School of Environment, Enterprise and Development (SEED), Prof. Komal Habib.

Engineering Education

Following a survey by the Centre for Extended Learning, I've initiated the migration of my online course "Sustainable Cities: Adding an African Perspective" to Waterloo's online course repository.

Teaching

This month saw the completion of all the teamwork workshops that our Capstone students attended, which were led by the Ideas Clinic. We believe that these workshops will have a positive outcome on the design project deliverables. The workshops were: Team Membership & Coordination; Giving and Receiving Feedback, and Team Health Assessment.



Design Charrette @KWAG

On June 7th, four teams assembled for the day at the Kitchener Waterloo Art Gallery (KWAG) to engage in a design charrette to reimagine the Civic District. The event was led by Prof. Rick Haldenby, and I was invited by Paul Eichinger to take part in Team MTE. The leaders of the four design teams presented to the public their ideas for creating a new cultural destination. The community teams creatively envisioned and designed a culturally active city centre connecting the cultural precinct comprising Centre In The Square, Kitchener Public Library and the Kitchener-Waterloo Art Gallery with the City of Kitchener's Queen Street vision.



Event Highlights



Ontario Society for Professional Engineers. Claudette MacKay-Lassonde Forum. June 18.

International Society for Industrial Ecology (ISIE) Sustainable Urban Systems (SUS) Webinar Series - Part One: Sustainability Through The World's Cities. Attended June 5

Canadian Engineering Education Association (CEEA-ACEG) 2019. Presented papers with co-authors: "Engineers-in-Residence Programs as a Framework for Industry Engagement in Undergraduate Engineering Education" "Global Classroom" and "Sustainable Infrastructure," in Ottawa, June 8-12.

Keep an eye out next month for...

Here are events to look forward to in July 2019:

- Summer Potluck with SEED, July 3
- CEGES Barbecue, July 4
- CEE Awards, July 11
- Turkstra Chair Advisory Board Meeting, July 15



INTERNATIONAL SOCIETY FOR INDUSTRIAL ECOLOGY



KWAG DESIGN TEAM FOR CIVIC DISTRICT IN KITCHENER



OSPE IT'S TIME WE BUILD - PANEL DISCUSSION



It's Time We Build

Participated in the Ontario Society for Professional Engineer's 17th Annual Claudette MacKay-Lassonde Forum on Women in Engineering, STEM and Diversity, led by OSPE's Women in Engineering Advocacy Champions Task Force (WE ACT). Themed "It's Time We Build," I was a panelist together with engineering role models including David Kinniburgh, Anita Ramroop, and Sarah Shortreed. A table was sponsored by the Faculty of Engineering, where I invited graduate students Michelle Liu, Allie Kennington, and Sevda Payganeh and Kimia Aghasadeghi for an opportunity to explore the importance of professional networks, personal branding, mentorship, and the role of men in the advancement of women.

Cities of the future are designed by engineers of today.



Faculty Contribution



Carl Haas is the Tier I Canada Research Chair in Construction and Management of Sustainable Infrastructure and Chair of the Department of Civil and Environmental Engineering at the University of Waterloo. His research, teaching and consulting are in the areas of advanced construction and transportation technology, sustainability, and construction productivity. Carl Haas shares the work of the Circular Economic Systems in the Built Environment Group, which includes Dr Haas, Dr Bachmann, Dr Walbridge, Dr Saari, Dr Philip Beesly, Dr Ibrahim, Dr Sanchez (recent PhD grad), Jackie Chan (MSc student), Mansour Esfahani (PhD student), Sheida Shahi (PhD student). The Circular Economic Systems in the Built Environment Group is interested in developments to support circular economic activity in the built environment primarily in urban areas.

Moving toward a circular economy in the built environment is necessary for our sustained well being. This entails, for example, achieving the broad socio-economic goals of closing materials loops, urban mining, adaptive reuse, design for adaptability and deconstruction, establishing buildings as materials banks, and less wasteful renovation and construction. Dr Sanchez recently completed his PhD under the supervision of Dr Haas on a methodology for improving the net environmental impacts of new buildings through product recovery management. Dr Sanchez developed semi-automated optimization approaches to assist in maximizing the environmental and economic benefits in the process of adaptive reuse through selective disassembly planning. These optimization approaches are performed employing advanced Building Information Modeling (BIM), Product Recovery Management (PRM), and LCA technologies which have recently opened up a wide range of solutions in the field of sustainability in the construction industry. Contributions of developing the described framework include developing (1) an efficient single-target selective disassembly sequence planning method approach for buildings, (2) an efficient approach for the selective deconstruction programming of buildings, and (3) a multi-objective optimization analysis approach for selective disassembly planning of buildings. The overall framework developed in this research is demonstrated to be effective to improve sustainability in the construction industry by proving the life-cycle net environmental and economic potential benefits of buildings' adaptive reuse.



Student Contribution



Sehrish Ahmad, Haris Bhatti, Nayandeep Maan and Tina Chen are a group of ambitious fourth year civil engineering students that have come together to form a Capstone Design Team to combat the flooding issues in Canada. This project team is passionate about improving the lives of Canadian residents through their experience in land development and water resources engineering. The team is working under the technical guidance of Dr. James Craig to develop a robust flood mitigation strategy. In Phase 1 of the design process, the team will choose the top alternatives options to develop a flood mitigation strategy. Design alternatives under review include the following structural and non-structural design options: on-stream reservoir; off-stream reservoir; levees; water sensitive urban design; and rezoning/future planning. Phase 2 will focus on developing a detailed flood mitigation strategy.

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The team’s project area is Ville de Gatineau. Ville de Gatineau has recently experienced major flooding in the Spring of 2017 and 2019. During these major flood events, residents have utilized temporary measures to minimize damages. Despite these efforts, Ville de Gatineau and its residents have incurred significant infrastructure and monetary damages due to these recent flooding events. Evidently, these temporary measures are ineffective and hence there is a need for a permanent solution to mitigate the flood risks in the Ville de Gatineau. Areas along the Ottawa and Gatineau Rivers have recently experienced severe flooding due to overflowing river banks and high precipitation rates. With the Ville de Gatineau being located at the junction of the Gatineau and Ottawa River, the city requires a flood mitigation system that can withstand major flood events. Pointe-Gatineau is situated in one of the more flood prone areas in the city and has experienced significant flooding over the past few years. The goal of their project is to provide a cost-effective and sustainable flood mitigation plan for the Pointe-Gatineau area. Flood mitigation strategies can be classified into two types; structural and non-structural measures. Traditionally, structural measures are proposed to solve flooding issues and are adopted in situations where adjacent residential areas are situated in the maximum flood level zone or to protect land adjacent to the river from an existing flood risk. Non-structural measures often utilize planning and sustainable design to reduce not only the catastrophic consequences of flooding, but also adverse impacts on the environment. The team’s design approach will involve combining both structural and non-structural solutions.

