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PROCEEDINGS OF THE 5TH INTERNATIONAL CONFERENCE ON CIVIL, STRUCTURAL AND TRANSPORTATION ENGINEERING (ICCSTE'20)

November 12, 2020 - November 14, 2020 | Niagara Falls, Canada | Virtual Conference

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WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to the 5th International Conference on Civil, Structural and Transportation Engineering (ICCSTE'20).

ICCSTE'20 is aimed to become one of the leading international annual conferences in the fields related to civil, structural, and transportation engineering. This conference will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

ICCSTE is a series of international conferences which are held yearly. These conferences focus on all aspects of civil, structural, and transportation engineering. After the success of the third conference in Canada, ICCSTE will remain in Canada and will host the fourth international conference.

In the fourth meeting of this conference, two keynote speakers will share their expertise with the aim of exposing participants to a wide spectrum of applications, and to foster crosspollination of ideas and develop new research interests. In addition, approximately 25 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 5th International Conference of Civil, Structural and Transportation Engineering (ICCSTE'20). We wish you a very successful and enjoyable experience.

Dr. Khaled Sennah

Conference Chair and Proceedings Editor ICCSTE'20

ABOUT ICCSTE'20

The 5th International Conference on Civil, Structural and Transportation Engineering (ICCSTE'20) aims to become the leading annual conference in fields related to civil, structural and transportation engineering. The goal of ICCSTE'20 is to gather scholars from all over the world to present advances in the fields of civil, structural and transportation engineering and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

ICCSTE is a series of international conferences held yearly. These conferences focus on all aspects of civil, structural and transportation engineering. After successfully holding ICCSTE'16 to ICCSTE'18 in Canada, ICCSTE'20 is hosted in Canada as well this year.

ICCSTE is an acronym for International Conference on Civil, Structural and Transportation Engineering.

The proceedings is published in Ottawa, Canada.

All papers were peer-reviewed

The congress proceedings is published under an ISSN and ISBN number

Each paper is assigned a unique DOI number by Crossref

The conference proceedings is indexed by Scopus and Google Scholar

The proceedings is permanently archived in **Portico** (one of the largest communitysupported digital archives in the world)







SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICCSTE'20 Congress:

Scientific Committee Chairs



Dr. Khaled Sennah Ryerson University, Canada

Conference Chair

Scientific Committee Members

- Dr. Francis Au, University of Hong Kong, Hong Kong
- Dr. Ashutosh Bagchi, Concordia University, Canada
- Dr. Susan A. Bernal, University of Leeds, UK
- Dr. Muntasir Billah, Lakehead University, Canada
- Dr. Mohamed Boulfiza, University of Saskatchewan, Canada
- Dr. Rifat Bulut, Oklahoma State University, USA
- Dr. Sunanda Dissanayake, Kansas State University, USA
- Dr. Massimo Fragiacomo, University of L'Aquila, Italy
- Dr. Christoph Gehlen, Technische Universität Münich, Germany

SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICCSTE'20 Congress:

Scientific Committee Members

- Dr. Rajeshwar Goodary, Université des Mascareignes, Mauritius
- Dr. Sean He, Rensselaer Polytechnic Institute, USA
- Dr. Jianwei Huang, Southern Illinois University Edwardsville, USA
- Dr. Ying Huang, University of North Dakota, United States
- Dr. Reza Kianoush, Ryerson University, Canada
- Dr. Mohamed Lachemi, Ryerson University, Canada
- Dr. Elżbieta Macioszek, Silesian University of Technology, Poland
- Dr. Fadi Oudah, Dalhousie University, Canada
- Dr. Seunghee Park, Sungkyunkwan University, South Korea
- Dr. Bhuwani Paudel, University of Ottawa, Canada
- Dr. Gianluca Ranzi, University of Sydney, Australia
- Dr. Aleksandar Stevanovic, University of Pittsburgh, USA
- Dr. Thanos Tzempelikos, Purdue University, USA
- Dr. Sai Vanapalli, University of Ottawa, Canada
- Dr. Maged A. Youssef, University of Western Ontario, Canada

KEYNOTE SPEAKERS

The keynote information for the 5th International Conference on Civil, Structural and Transportation Engineering (ICCSTE'20) is as follows:



Dr. Mijia Yang University of North Dakota, USA



Dr. Khaled Sennah Ryerson University, Canada



Dr. Adil Al-Mayah University of Waterloo, Canada



Dr. Maged A. Youssef University of Western Ontario, Canada

ICCSTE'20 KEYNOTE SPEAKER



Titles: An Innovative Bridge Inspection Technique through Drive-by Vehicles – A Special Application on Prestress Loss Identification

Dr. Mijia Yang, University of North Dakota, US

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Dr. Yang has practiced teaching and research broadly in structural and transportation engineering. He has taught Steel Design, Dynamic of Structures, and several others for the last 5 years. His research concentrates on impact and blast protection with advanced engineering materials, multi-scale modeling of composite and concrete materials, smart health monitoring in Civil Infrastructure, and self-healing concrete. His representative work included developing a systematic design method for impact barriers, a unified fatigue criterion for uniaxial Polyurethane E-Glass composite laminates, damage detection through guided wave, and a creep design methodology for Epoxy bonded anchor systems. Dr. Yang has participated in several state and national projects during his career, including "Effect of intermediate diaphragms on prestressed concrete bridge girders for over-height truck impacts" and "Testing of window connections specially designed for blast loading". Dr. Yang also won several national and international awards, including the Philip E. Rollhaus, Jr. Roadway Safety Essay Contest held by Quixote in 2005, the faculty research award at the University of Texas at San Antonio in 2007, the ASCE travel award in 2005, and the ASCE Journal of Aerospace Engineering Outstanding Reviewer award in 2012 and 2018. Dr. Yang is currently serving as the associate editor of Journal of Materials in Civil Engineering, ASCE, and has more than 100 publications, including journal papers, conference papers, and reports in the field of composites, structural testing and characterization.

ICCSTE'20 KEYNOTE LECTURE



Titles: Recent Advances in Accelerated Bridge Replacement <u>Dr. Khaled Sennah, Ryerson University,</u> <u>Canada</u>

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Dr. Khaled Sennah is a Professor of Structural Engineering and Chair of the Civil Engineering Department at Ryerson University, Toronto, Canada. He obtained his B.Sc. and M.Sc. degrees in civil engineering from Alexandria University of Egypt in 1985 and 1990, respectively, and his Ph.D. in structural engineering from University of Windsor in 1998. Dr. Sennah, core area of expertise includes design, evaluation and rehabilitation of bridges on which he has more than 260 publications and supervised over 75 graduate students. He has demonstrated numerous evidences of impact and contribution to economical design and sustainable construction that led to field applications and standards. In collaboration with Ontario Ministry of Transportation (MTO) and industry partners in USA, Canada and Germany, his research team conducted innovative research including (i) the development of prefabricated bridge elements and connection technologies to accelerate bridge construction, (ii) development of crashworthy and cost-effective, bridge barrier and deck slabs reinforced with glass fibre reinforced polymer (GFRP) bars for sustainable construction and (iii) cost-effective and accelerated FRP repair strategy to bridge girders damaged by vehicle impact.

For more information please visit: https://iccste.com/program

ICCSTE'20 KEYNOTE LECTURE



Titles: An Emerging Paradigm for the Integration of Mechanics and Imaging for Ma

terial Characterization

Dr. Adil Al-Mayah, University of Waterloo, Canada

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Dr. Adil Al-Mayah has a unique blend of work experience in both the engineering and medical fields, resulting in the licensing of ground-breaking innovations in both areas. Professor Al-Mayah's expertise includes material characterizations, composite materials mechanics, image registration, biomechanical characterization of soft tissues, and cancer mechanics. He is the director of the Imaging-Mechanics Integration laboratory (IMI Lab) at the University of Waterloo that serves researchers from a wide range of fields including civil and mechanical engineering, environmental, earth science, and building science.

ICCSTE'20 KEYNOTE LECTURE



Titles: Objective and Performance-Based Design in Structural Fire Engineering <u>Dr. Maged A. Youssef, University of Western</u> <u>Ontario, Canada</u>

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Dr. Maged A. Youssef is a Professor of Civil and Environmental Engineering at the University of Western Ontario. He received his PhD from McMaster University, Canada, in 2000, and then joined Murray Engineering P.C., New York City, as senior structural engineer. Dr. Youssef joined Western in August of 2002. He was promoted to the rank of Associate Professor in 2009 and to the rank of Professor in 2015. He also acted as the Associate Chair for Undergraduate Affairs from 2012 to 2015. Dr. Youssef received the 2007 R. Mohan Mathur Award for Excellence in Teaching. In addition to university teaching, he is actively involved in professional development of practicing engineers. Dr. Youssef's research focus on improving safety of our civil structures to natural and man-made disasters. His research covers areas in Earthquake Engineering, Structural Fire Engineering, and Smart Materials and Systems. He shared in publishing three standards. He also published 2 book chapters, 57 journal articles, 55 conference papers, and several technical reports. He presented his research as a keynote/expert speaker in national and international conferences. He was also invited to present his research at Tohoku University (Japan), Kyoto University (Japan), and South China University of Technology (China). Dr. Youssef supervised 12 PhD students, and 8 Master students to graduation. He is currently supervising 3 PhD students and 2 Master Students. He is an active member of the professional Committees of the Canadian Society of Civil Engineers and the American Concrete Institute. He is licenced professional engineer and is actively involved in structural engineering consulting activities.

Earthquake and Structural Engineering

Title: Rate-Dependent Cyclic Lateral Load Test on a Single Pile in Sand

Authors: Naba Raj Shrestha, Masato Saitoh, Alok Kumer Saha, Chandra Shekhar Goit

View Paper

Title: Spectral Element Method for Damage Localization in Non-Uniform Structures with Parametric Uncertainty

Authors: Purushottam Kumar Chaudhary, Kumar Anjneya, Koushik Roy

View Paper

Title: A Model-Based Method for Damage Localization and Qualification in a Cable-Stayed Bridge

Authors: Mohammad Alikhani Dehaghi, Maryam Montazeri, Gholamreza Ghodrati Amiri, Ali Zare Hosseinzadeh

View Paper

Title: Simulation of Spatially Varying Ground Motions at Site with Stochastic Soil Layers: A Case Study in Nw Algeria **Authors:** Karim Afif Chaouch

View Paper

Title: Seismic Indicators Based Earthquake Magnitude Prediction for Bangladesh Using Machine Learning Algorithms

Authors: Md Nafizul Islam, Md Abu Sufian Khan, Muhaimin Bin Munir, Md Abul Kalam Azad, Tanvir Mustafy

View Paper

Title: Evacuation Planning In Natural Disaster Using Multi Objective Optimization Approach: The Rohingya Refugee Crisis in Bangladesh **Authors:** Md. Ridwanur Rahman, Samia Zakir Sarothi, Tanvir Mustafy

View Paper

Geotechnical Engineering

Title: Earthquake Induced Liquefaction Potential of Paste Tailings: Shaking Table Results

Authors: Fahad Alshawmar, Mamadou Fall

View Paper

Title: Mechanical Properties and Behavior of Early-Age Fiber-Reinforced Cemented Paste Backfill

Authors: Iarley Loan Sampaio Libos, Liang Cui

View Paper

Title: Performance of Pile Cap Foundation with Respect to Cap Thickness **Authors:** Soukayna El Hammouli, Adel Hanna, Lan Lin, Mahmoud Khalifa

View Paper

Title: Vibration Induced By Rapid Impact Compaction on Granular Soils **Authors:** Omar El Khaled, Emmanouil Spyropoulos, Omar Maalej

View Paper

Title: Challenges of Railway Embankments Remediation **Authors:** Mario Bačić, Antun Juzbašić

Advanced Structural Materials

Title: Fresh and Hardened Properties of Engineered Geopolymer Composite with MgO

Authors: M. A. Hossain, K. M. A. Hossain, T. Manzur, M. J. Hasan, D. Sood

View Paper

Title: Properties of Lightweight Self-consolidating Fibre Reinforced Concrete

Authors: K.M. A. Hossain, I. N. Celasun, K.M. Y. Julkarnine, M.A. Hossain

View Paper

Title: Mechanical Properties Of Geopolymer Concrete: Statistical Analysis And Prediction Models

Authors: Ahmed Hassan, M Talha Junaid, Samer Baraka

View Paper

Title: Finite Element Analysis of Built-Up T Stub under Blast Loading **Authors:** Sanjida Akter, Abdullah Al Azad Mamun, Samia Zakir Sarothi, Tanvir Mustafy

View Paper

Title: Partial Parameter Analysis of the Stability of Small and Medium Span Steelconcrete Composite Bridges **Authors:** Haogi Li

View Paper

Title: Non-Conventional Building Technologies as a Panacea Against the Covid-19 Pandemic

Authors: Bruno Tayo, Jeffrey Mahachi, Benson Wekesa

New Technologies, Methods and Techniques in Civil Engineering

Title: Performance of Steel I-Beams Strengthened by Fastening Hybrid FRP Strips **Authors:** Omnia AbouEI-Hamd, Amr Sweedan, Bilal EI-Ariss

View Paper

Title: Application of Collaborative Management NEC and DAB to Improve Communication and Integration in Multi-Family Building Projects **Authors:** Mario Aragon Gonzales, Jair Mamani Zevallos, Jorge de la Torre

View Paper

Title: Numerical Studies on the Effects of Mooring Configuration and line Diameter on the Restoring Behaviour of a Turret- Moored FPSO **Authors:** Idris Ahmed Ja'e, Montasir Osman Ahmed Ali and Anurag Yenduri

View Paper

Title: Restoration modelling of Water Network under seismic hazard: Role of Electrical and Power Network

Authors: Ghazanfar Ali Anwar, You Dong

View Paper

Title: Railway Tracks Detection of Railways Based On Computer Vision Technique and Gnss Data

Authors: Adham, Mahmoud, Mohamed, Mohamed G., El Shazly, Adel

Building Materials

Title: Early-Age Strength and Workability of Basalt Fiber ReinforcedConcrete Made with Recycled Aggregates – A Pilot Study **Authors:** Shahrukh Shoaib, Hilal El-Hassan, Bilal El-Ariss, Tamer El Maaddawy

View Paper

Title: Development of a Life Cycle Inventory Dataset for Recycled Concrete Aggregates in the City of Abu Dhabi **Authors:** Mohammed Alzard, Hilal El-Hassan, Tamer El Maaddawy

View Paper

Title: Probabilistic Inference Approach for Predicting Concrete Compressive Strength - A Bayesian Network Algorithm **Authors:** Omar Najm, Hilal El-Hassan, Amr El-Dieb, Hamad Aljassmi

Water Resources and Treatment

Title: Simulation of Water Supply in The City of Lima For the Period 2020-2050 Using the WEAP Platform

Authors: José Reynaga, Jorge Cornelio, Manuel Collas

Traffic and Transportation Engineering

Title: Evaluating the Economic Benefits of Non-Motorized Transport Infrastructure (NMT) for Sustainable Development Case Study: Non-Motorized Transport Pilot Scheme for Kampala City

Authors: Joseph Kigozi

View Paper

Title: Study of Delays to Evaluate the Sustainability over Time of Solutions for Urban Intersections

Authors: F. Medina, A. Burga, A. Bravo

Bridge Engineering

Title: Development of Graphical Computer Software for the Design of Composite Steel I-Girder Bridges per the Canadian Highway Bridge Design Code

Authors: Ahmed Diab, Khaled Sennah

View Paper

Title: Simplified Equations for Moment and Shear in Bridge Girders Resulting from AASHTO Truck Loading

Authors: Seyedshayan Barary, Ahmed Diab, Khaled Sennah

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International ASET Inc. would like to thank the following sponsors for their support of ICCSTE'20:





JOURNAL SPECIAL ISSUES

Selected articles from the coference will be published in the

International Journal of Civil Infrastructure (IJCI) after a secondary review process.

The publication fee will be waived for papers that win the best paper award. Other attendees will receive a 25% discount towards the publication fee of the journal.

This journal has adopted to the open-access model, meaning all free access to the journal's articles and content with no need for subscription. This ensures larger audience and therefore higher citations.

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All published papers of IJCI will be submitted to Google Scholar, Microsoft Academic Search, Open J-Gate, Mendeley, Index Copernicus International, Academic Index, Mendeley, Primo Central, and Genomics JournalSeek for possible indexing. Additionally, they will be permanently archived in Portico (one of the largest community-supported digital archives in the world) and will be assigned unique DOIs.

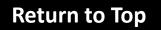
ICCSTE'21

The 6th International Conference on Civil, Structural and Transportation Engineering (ICCSTE'21) will be held on May 17 - 19, 2021 in Niagara Falls, Canada.



For inquiries and to obtain further information on the congress, please visit the <u>website</u> or call us at:

+1-613-834-9999



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The following statement is mainly based on the <u>Code of Conduct and Best-Practice Guidelines for Journal Editors</u> (Committee on Publication Ethics, 2011).

Scientific Committee

Scientific Committee

Scientific committees consisting of experts in the fields are established. The committees oversee the peer-review and publication process. To see the scientific committee members, please follow the link below. Scientific Committee

Equality and Decisions

One or more reviewer, scientific committee member, or chair, (internal or external), are responsible for evaluating the relevance of the submitted manuscripts to the proceedings, technical and scientific merit, originally, and impact. These evaluations are to be carried out regardless of ethnicity, religion, gender, sexual orientation, political beliefs, and institutions. Successive to peer-review, the Chair has full authority and is solely responsible for the published content and the process thereof.

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Authors

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Unethical/plagiarism issues mostly result in a retraction, while unintended mistakes will mostly result in the publication of an erratum.

Publisher

Errata and Retractions

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Schedule

This conference proceeding accompanies the conference, meaning a new proceedings will be published every year for the corresponding annual conference of this series.



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