



# PROCEEDINGS OF THE 9<sup>TH</sup> INTERNATIONAL CONFERENCE ON CIVIL, STRUCTURAL AND TRANSPORTATION ENGINEERING (ICCSTE 2024)

**June 13 - 15, 2024 | Chestnut Conference Centre  
University of Toronto, Toronto, Canada**

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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 9<sup>th</sup> International Conference on Civil, Structural and Transportation Engineering (ICCSTE 2024).**

ICCSTE 2024 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 held annually. The 9<sup>th</sup> International Conference on Civil, Structural and Transportation Engineering (ICCSTE 2024) is going to be held in a hybrid format, i.e. in person as well as online.

In the eighth meeting of this conference, two plenary speakers and three 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 61 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 9<sup>th</sup> International Conference of Civil, Structural and Transportation Engineering (ICCSTE 2024). We wish you a very successful and enjoyable experience.

**Dr. Khaled Sennah**  
*Conference Chair and Proceedings Editor*  
*ICCSTE 2024*

# ABOUT ICCSTE 2024

The 8th International Conference on Civil, Structural and Transportation Engineering (ICCSTE 2024) aims to become the leading annual conference in fields related to civil, structural and transportation engineering. The goal of ICCSTE 2024 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 annually. These conferences focus on all aspects of civil, structural and transportation engineering. After successfully holding ICCSTE'15 to ICCSTE'23 in Canada, ICCSTE 2024 is hosted in Chestnut Conference Centre - University of Toronto, Toronto, Canada as well this year. ICCSTE 2024 is going to be held in a hybrid format, i.e. in person as well as online.

**ICCSTE** is an acronym for **I**nternational **C**onference on **C**ivil, **S**tructural and **T**ransportation **E**ngineering.

All papers were peer-reviewed

The conference proceedings are published under an ISSN and ISBN number

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# SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICCSTE 2024 Congress:

## Scientific Committee Chair



**Dr. Khaled Sennah**

**Toronto Metropolitan University, Canada**  
Conference Chair

## Scientific Committee Members

- Dr. Mizan Ahmed**, Curtin University, Australia
- Dr. Firas Al-Mahmoud**, University of Lorraine, France
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- Dr. Iraj H.P. Mamaghani**, University of North Dakota, USA
- Dr. Ayman M. Okeil**, Louisiana State University, USA
- Dr. Luigi Di Sarno**, University of Liverpool, UK
- Dr. Grzegorz Sierpiński**, Silesian University of Technology, Poland
- Dr. Maged A. Youssef**, University of Western Ontario, Canada

# KEYNOTE SPEAKERS

The keynote information for the 8th International Conference on Civil, Structural and Transportation Engineering (ICCSTE 2024) is as follows:

## Plenary Speakers



[Dr. Mamadou Fall](#)  
University of Ottawa,  
Canada



[Dr. Matthew J. Roorda](#)  
University of Toronto,  
Canada

## Keynote Speakers



[Dr. Yasser Hassan](#)  
Carleton University, Canada



[Dr. Radhouane Masmoudi](#)  
Université de Sherbrooke,  
Canada



[Dr. Habib Tabataba](#)  
University of Wisconsin-  
Milwaukee, USA

# ICCSTE 2024 PLENARY SPEAKER



**Titles:** Challenges and Perspectives of Deep Geological Repositories for Nuclear Energy

**Dr. Mamadou Fall, University of Ottawa, Canada**

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Dr. Fall is a Distinguished University Professor in the Department of Civil Engineering at the University of Ottawa and the Chair of the Department of Civil Engineering. He holds the University Research Chair in Geotechnical Engineering for Net Zero Transitions. Ranked as one of the top one percent of scientists in the world by Elsevier Publisher in 2022, Professor Mamadou Fall is a leading researcher in Geotechnical Engineering, specializing in technologies that are critical for the construction and maintenance of sustainable structures and net zero transitions. His research has been adopted globally by industries, federal agencies, and institutions. His research contributions have garnered numerous awards, complementing his 300+ authored publications. Prof. Fall has held key leadership positions nationally and internationally, including Vice-President Technical of the Canadian Geotechnical Society, Director of the Ottawa-Carleton Institute of Environmental Engineering, Chair of the uOttawa Department of Civil Engineering, and Coordinator of the German Research Chair in Environmental Geosciences and Geotechnics. Prof. Fall is a member of several societies and has led or participated in the organization of numerous national and international workshops, seminars and conferences. He has been invited on several occasions as a keynote speaker or lecturer and to participate in various expert committees. He regularly serves as a consultant and reviewer for scientific committees, journals and funding agencies, both nationally and internationally.

# ICCSTE 2024 PLENARY SPEAKER



**Titles:** Sustainable Urban Freight Transport: The Case for E-Cargo Tricycles

**Dr. Matthew J. Roorda, University of Toronto, Canada**

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Matthew Roorda is a Professor of Civil Engineering, has been faculty at the University of Toronto since 2005, and has worked in the transportation engineering profession since 1998. He is the Canada Research Chair in Freight Transportation and Logistics and leads the scientific advisory committee of the Smart Freight Centre. Dr. Roorda's research interests include urban freight transportation, freight planning and operations, freight and passenger travel survey methods, city logistics, agent-based simulation, parking and curbside management, street and neighbourhood design, emissions analysis, activity-based travel demand modelling, and firm behaviour.



# ICCSTE 2024 KEYNOTE SPEAKER



**Titles:** Probabilistic, Safety-Explicit, Reliability-Based Road Design  
**Dr. Yasser Hassan, Carleton University, Canada**

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Dr. Yasser Hassan is a Full Professor and the Chair of the Department of Civil and Environmental Engineering at Carleton University (on sabbatical for the academic year 2023-2024). His areas of expertise include modelling of roadway alignments; three-dimensional analysis; effect of driver perception and behavior; reducing collision risk through better design and consideration of human factors; design consistency and its relation to traffic safety; probabilistic highway design; interaction of road infrastructure and vehicle technologies; and pavement analysis and design. He served as a member of a number of committees of the Transportation Research Board and is currently a member of the Performance Effects of Geometric Design (AKD10) and the Co-Chair of the Subcommittee on Emerging and Crosscutting Topics (AKD10-2). He also served as the Chair of the Transportation Engineering Division of the Canadian Society for Civil Engineering and as a member of the Transportation Association of Canada's Chief Engineers Council. He received several research awards and honors including for example best paper by the Canadian Society for Civil Engineering and best presentation by a new author from the Canadian Technical Asphalt Association.

# ICCSTE 2024 KEYNOTE SPEAKER



**Titles:** Residual Fatigue & Static Strengths of Full-Scale Bridge Girders Strengthened In Shear with CFRP

**Dr. Radhouane Masmoudi, Université de Sherbrooke, Canada**

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Dr. Radhouane Masmoudi, is a professor in the Civil & Building Engineering Department and former vice-dean for research at the faculty of engineering, of the Université de Sherbrooke. He holds a US-patent on high-performance hybrid structures (US Patent No. 9,637,923, 2017). He is the founder and director of the High-Performance Hybrid Structures Laboratory (HPS), a member of the American Concrete Institute (ACI), a voting member of the ACI-440 Committee on Fiber Reinforced Polymers (FRP) for Concrete and Chair of the ACI-440D Committee: Research, Development and Applications of FRP Reinforcements for Concrete. He was the recipient of the Bazinet Award of Excellence in Teaching by the student's association (AGEG), and the Jury Excellence Award of the Canadian Institute of Steel Construction for the design of a huge architectural structure (L104m x H48m x W20 m) of the iconic-420 million \$-Jacques-Parizeau Building (formerly Caisse de dépôt et de placement building) in Montreal. His research contributions are mainly related to the design, testing, modeling and analysis of FRP reinforced concrete structures and structural shapes made of fiber-reinforced polymers filled with reinforced concrete. He is the author and co-author of more than 200 publications in peer-reviewed journals and conferences. Prof. Masmoudi has been elected Fellow of the Canadian Society of Civil Engineering (FCSCE, 2022) and Fellow of the International Institute of FRP for Construction (IIIFC, 2023).

# ICCSTE 2024 KEYNOTE SPEAKER



**Titles:** Investigation of the Collapse of the  
Arecibo Telescope in Puerto Rico

**Dr. Habib Tabatabai, University of Wisconsin-  
Milwaukee, USA**

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Habib Tabatabai is a Professor of Structural Engineering and Director of the Structural Engineering Laboratory at the University of Wisconsin – Milwaukee. Prior to that, he was a Principal Structural Engineer with the CTL Group (1989-1999) and a bridge engineer with the Florida Department of Transportation (1987-1989). He has conducted research on topics related to bridges including reliability, durability, corrosion, and repair of structures, stay cable testing and condition assessments, jointless bridges, and survival analysis of structures. He is a licensed Structural Engineer (SE) and Professional Engineer (PE) in the State of Illinois. He is a member of the PTI committee on cable-stayed bridges (DC-45) and has served on the ASCE Committee 19 (Structural Applications of Steel Cables for Buildings) (2005-2020). He also served as a member of a committee formed by the National Academies of Sciences, Engineering and Medicine to investigate the collapse of the Arecibo Observatory in Puerto Rico.

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Selected articles from the conference will be published in the [International Journal of Civil Infrastructure \(IJCI\)](#) after a secondary review process.

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.

All published papers of IJCI will be submitted to Google Scholar. 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.

Please visit the following website for the respected journal:  
IJCI: <https://ijci.avestia.com>



# ICCSTE 2025

The 10th International Conference on Civil, Structural and Transportation Engineering (ICCSTE 2025) will be held on June 17, 2025 - July 19, 2025 at Imperial College London Conference Center, London, United Kingdom .



For inquiries and to obtain further information on the congress,  
please visit the [website](#)

You can also email [info@iccste.com](mailto:info@iccste.com) or call us at: +1-613-834-9999

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# ETHICS & MALPRACTICE

At International ASET Inc., we take matters that relate to ethics in publishing very seriously. We believe that the peer-review publication process is a vital building block of academia, and its integrity must be maintained at all costs, which is why every article will be peer-reviewed by several experts in the field. Under peer-review, experts in the related fields are required to provide opinions and comments on the improvements of the submissions.

We are proud of our efforts towards abiding by the guidelines of ethics, integrity, and high standards in publishing.

**Following are the ethics guidelines set by the organizers for the authors and the reviewers of the conference:**

## **Scientific Committees**

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: [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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Scientific committee member(s) and publishing staff may not disclose manuscripts or their content, directly or indirectly, to anyone other than individuals invited to review the manuscript (whether they accept or not), other reviewers of the same publications, and publishing staff.

## ***Conflicts of Interest***

Scientific committee member(s) and publishing staff may not utilize the contents of submitted manuscripts whether accepted or rejected, directly or indirectly for their own research purposes without prior written consent by the authors.

# ETHICS & MALPRACTICE

## Reviewers

### ***Contribution to Decisions***

In order for final decisions to be made regarding acceptance or rejection of papers, we rely on peer-review. Peer-review is the process of experts in the field reading, understanding, and objectively commenting on submitted papers. Through peer-review, scholars give back to the academic and scientific community by helping the chair(s) make decisions regarding manuscripts.

### ***Promptness***

Reviewers should promptly notify the chair(s) if they are unable or unqualified to carry out their reviewing duties. Reviewers should do their best to provide the reviews to the chair(s) as promptly as possible, and within the designated time-frame.

### ***Acknowledgment of Source***

The reviewer should notify the chair(s) if they find any similarities in the paper being reviewed and any other work that has been published previously.

### ***Confidentiality***

Reviewers must not share the contents of the manuscripts they receive for review, regardless of their decision to review or contents of the review, directly or indirectly, with anyone other than the person who has assigned the review.

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Reviewers should review manuscripts fairly and objectively, with supporting evidence or arguments, regardless of personal feelings or biases.

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Invited reviewers should immediately inform the chair(s) in case of a conflict of interest based on competitive, collaborative, personal, family, and other relationships with the authors or people involved in the work.

# ETHICS & MALPRACTICE

## Authors

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The paper being submitted for the proceedings should be based on clear objective, discussion, and references. The findings, data, and the arguments being used in the paper should be accurate. It is author's responsibility to guarantee the authenticity of the data in the paper.

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Only persons who have significantly contributed to the work and the manuscript can be named authors on a paper. These contributions include the idea/concept, design, experiments, evaluation, analysis, drafting or revision of the manuscript, and others. Authors must all have agreed to be named as such and for the manuscript to be submitted. Anyone who has contributed based on the above, but the level of contribution is not significant, may appear in the acknowledgement section of the manuscript.

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# ETHICS & MALPRACTICE

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# ETHICS & MALPRACTICE

## Publisher

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