**TRC2021 – A Call for Proceeding**

**Advances in Modern Transportation Infrastructure Sciences and Technologies**

**Proposed Topics**

Modern transport systems have been developing rapidly over past forty years and now evolving to a more connected network in China and other countries. The transport systems are built upon a variety of transportation infrastructures including airports, highways, bridges, tunnels, high-speed trains and ports. Their design, construction, operation and maintenance rely on the integrated sciences and technologies such as material science, computer science, pavement engineering, geomechanics and geotechnics, structural analysis, and advanced modelling. Furthermore, the transport infrastructures are being built using more emerging and sustainable materials, monitored by the latest smart and intelligent technologies, and maintained following a systematic and life-cycle methodologies. Crosscutting technologies such as artificial intelligence, big data analytics and smart sensing are being rapidly and widely adopted and implemented in all stages throughout the lifetime of the transport infrastructures.

All the aforementioned advances have been leading to a great amount of new studies and discoveries in the relevant areas. The Transportation Research Congress (TRC) aims to promote the exchange of newest research findings and practical experiences in transportation. It serves as a global platform for researchers, educators, practicing engineers, investors, entrepreneurs, and governmental officials from all over the world. Building from the TRC, a call for proceeding is proposed to provide a unique platform for collecting and presenting these novel studies and new discoveries in the sciences and technologies of the modern transport infrastructures.

**Potential topics may include but not limited the following**

* Transport Infrastructure **Material** Characterisation, Modelling and Innovation
* **Pavement** Structures and Performance Modelling and Predictions;
* Advanced Mechanics/Multiscale/Multiphysical **Modelling** and Numerical Simulations;
* Geomechanics, **Geotechnical** and Geo-environmental Engineering;
  + Experimental and constitutive modeling of subgrade and subbase geomaterials
  + Soil-structure interaction of tunnels and pipelines
  + Piled foundation for bridges and highways
  + Discrete element method (DEM) modeling of subgrade granular materials (e.g. ballast, mixtures of sand-tire rubber)
  + Geosynthetics and reinforcement of subgrade granular materials
  + Ground improvement and slope stabilization for transportation infrastructures
  + Stability of embankments for highways and high-speed trains
  + Climate change (e.g. freezing and thawing) effects on geomaterial properties
  + Numerical modeling of multi-layered construction processes for infrastructures
  + Dynamic vibration/earthquake/rainfall-induced failure of embankments/ transportation infrastructures
* **Bridge** Engineering Materials, Structural Analysis and Modelling;
  + New/smart material applications on bridge construction and enhancement
  + Information and big data applications on bridge construction and maintenance
  + Multi hazard (wind, wave, earthquake) effects on bridges
  + Highway and railway vehicles and bridge interactions
  + Industrialization, informatization, and intellectualization of bridges
  + Health monitoring and performance assessment of bridges
  + Nondestructive evaluation of bridges
  + Dynamic vibration based damage detection of bridges
  + Investigation of bridge failures
  + Reliability based assessment of existing deteriorated bridges
  + Applications of FRP materials in bridge engineering
  + Fatigue assessment of steel bridges under traffic and wind effects
* **Crosscutting** Technologies (AI, big data, smart sensors, etc.) for Intelligent Transport Infrastructures;