

# ICTE 2015

Proceedings of the Fifth  
International Conference on  
Transportation Engineering



Dailan, China • September 26–27, 2015



EDITED BY Qiyuan Peng, Ph.D.; Kelvin C. P. Wang, Ph.D.;  
Xiaobo Liu, Ph.D.; and Bingzhi Chen, Ph.D.

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ON TRANSPORTATION ENGINEERING

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September 26-27, 2015  
Dalian, China

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Southwest Jiaotong University

Dalian Jiaotong University

Transportation & Development Institute  
of the American Society of Civil Engineers

EDITED BY  
Qiyuan Peng, Ph.D.  
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# Preface

We are fortunate to have Southwest Jiaotong University (SWJTU, Chengdu, China) to host the Fifth International Conference on Transportation Engineering (ICTE 2015). Transportation and Development Institute (T&DI) of the American Society of Civil Engineers (ASCE) is a key sponsor of the conference and ASCE is the publisher of the conference proceedings. SWJTU, formerly known as Tangshan Jiaotong University, is renowned for its prestigious engineering programs in various transportation related disciplines, dating back to 1896. The editors are grateful for the kind support of SWJTU, and the organizations and individuals who played important roles for the success of the conference, which are acknowledged at the beginning of the proceedings. This conference is held in the city of Dalian with outstanding support of Dalian Jiaotong University. This is the first time that ICTE is held outside of Chengdu, China. We all appreciate the diligent work by Dalian Jiaotong University for ICTE.

The motif of ICTE 2015 is “Comprehensive, Wisdom, Green, Safety, High-Speed and Innovation”. ICTE 2015 is a platform of communication and discussions among worldwide experts and scholars in the field of transportation engineering. During the conference, they will present their latest achievements and innovations to promote mutual study and collaboration.

All papers in the proceedings were peer-reviewed resulting in over 400 papers selected for publication. The School of Transportation and Logistics of SWJTU provided various support for the conference, including soliciting abstracts and papers, organizing sessions and presentations, and managing the peer-review process.

There were a number of volunteers who reviewed the submitted papers. The conference and the editors appreciate their valuable work. The editors thank their important contributions to the conference. The diligent work by members of the Secretariat in organizing the vast number of papers is critical for the publisher to meet the deadlines.

Lastly, we would like particularly thank ASCE T&DI Director, Mr. Muhammad Amer, and staff of ASCE publications for their support of this conference.

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