

ICCREM 2015

Environment and the Sustainable Building

Proceedings of the 2015 International Conference
on Construction and Real Estate Management

Lulea, Sweden
11 – 12 August 2015

Volume 1 of 2

Editors:

Yaowu Wang
Thomas Olofsson

Geoffrey Qiping Shen
Yong Bai

ISBN: 978-1-5108-1972-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by American Society of Civil Engineers
All rights reserved.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact American Society of Civil Engineers
at the address below.

American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, VA 20191
USA

Phone: (800) 548-2723
Fax: (703) 295-6333

www.asce.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Contents

Global Construction Management

Towards a Knowledge-Based Engineering Methodology for Construction.....	1
Marcus Sandberg	
Maintenance Management: A Case Study of the Obstetrics and Gynecology Building in Al-Shifa Hospital in the Gaza Strip	9
Farida Elshorafa and Adnan Enshassi	
Embedding Corporate Social Responsibility into the Construction Process: A Preliminary Study.....	18
Weiyang Jiang and Johnny K. W. Wong	
A Safety Model for Construction Site Layout Planning Using an ACO Algorithm.....	28
Xin Ning and Wenhan Liu	
Instruments of Strategy Management Accounting and Their Application in Inter-Organizational Cost Management.....	33
Xu Chen	
Research on the Index System of Comprehensive Benefits of the Reconstruction of Old Factory Buildings, Old Villages, and Old Towns.....	42
Jingkuang Liu, Jiangfeng Li, and Jian Zhu	
Research on the Current Situation and Development Countermeasures of Engineering Construction Supervision.....	51
Yi Wu and Chenhao Zeng	
Workflow Analysis for the Lean Construction Process of a Construction Earthmoving Project	58
Feifei Cheng	
Analyzing Factors Affecting Time, Cost, and Quality between Diverse Public Construction Agencies	67
Jesper Kranker Larsen, Thomas Ditlev Brunoe, and Søren Munch Lindhard	
Representation and Reasoning for Common Quality Faults of Construction Based on Ontology	78
Xin Liu, Shaohua Jiang, and Zhongfu Li	

Empirical Study on the Contribution of the Construction Industry in Guangdong Province	88
Yufan Zhang, Yousong Wang, Yanan Huang, Jianfeng Li, Hui Yan, and Yan Zhang	
Simulation Analysis of a Contract Modification Process Based on Stochastic Petri Nets: A Case Study of Mechanical and Electrical Installation Projects in the Guangzhou Metro	98
Liangliang Yuan, Yousong Wang, Xin Yang, and Yufan Zhang	
<i>Information Technology Application in Construction</i>	
An Integrated BIM-Based Framework for the Energy Assessment of Building Upstream Flow	107
Farshid Shadram, Tim Johansson, Weizhuo Lu, and Thomas Olofsson	
Research on Housing Component Searching Based on BIM and E-Business.....	119
Zhongfu Li and Dandan He	
Research on Urban Public Service Equalization on the Basis of GIS: Take the Main Urban Districts of Nanchang City as an Example.....	128
Qunhong Liu, Shengyun Niu, Qian Yang, and Xiaoyi Fang	
A Construction Safety Management System from Contractors' Perspectives	134
Wei Zhang and Xi Chen	
Application of an Online Consumer Review in Real Estate Marketing	144
Yongfa Song, Xiuxiu Zhao, and Yun Han	
A Study on the Innovation Mode of a Chinese Construction Management Certified Qualification System Based on Knowledge Integration	149
Yulong Li, Anqi Yin, Xiangzhao Liu, Zhiye Huang, and Guijun Li	
Application and Research of a Construction Monitoring System for Construction Enterprises	159
Jiasheng Zhang, Chuanquan Zhang, Tuhong Yuan, and Shuqiong Yang	
Green Building Materials Management Based on BIM Technology	170
Zhenshuang Wang and Liguang Wang	
Research on the Construction of a Comprehensive Performance Evaluation Index System of an Integrated Construction Supply Chain.....	178
Anye Liu and Xiaohui Li	

General Contract Management Based on BIM5D	187
Pingyu Yan, Teng Liu, and Shunxiong Huang	
Analysis and Design of the Safety Management Information System of an Existing Urban Building.....	197
Jue Lu, Yang Chen, Legang Cai, and Jie Zhu	
Automated PPE Misuse Identification and Assessment for Safety Performance Enhancement.....	204
Shuang Dong, Qinghua He, Heng Li, and Qin Yin	
Collaborative Construction Schedule and Management Based on BIM Theory	215
Zhihe Yang and Xiaodong Li	
Research on Precast Concrete Structures with BIM Involving Information on Structural Details and Behaviors	222
Dongzhi Guan, Zhengxing Guo, and Chao Zhang	
Study of a Self-Help House Decoration Mode Based on BIM	229
Junqiang Ma, Qingpeng Man, and Yong Bai	
Developing an RFID-Based Man–Tool Safety Management System on a Construction Site	238
Qian Chen and Shoujian Zhang	
Collaborative Management Based on BIM.....	248
Zhenmin Yuan and Xiaodong Yang	
Research on Creating a Construction and Demolishment Waste Recycling System	255
Yan Lei and Shoujian Zhang	
<i>Sustainable Construction and Innovation</i>	
Technological Innovation in the Research and Application of Green Engineering	262
Linghu Yan, Yu Qin, and Yuelong Yu	
Study on the Development Situation and Prospects for Green Construction	272
Wan You and Xuwen Xiao	
Assessment on the Carbon Emissions of Buildings with a Study Case.....	282
Chengshuang Sun, Nan Zhang, Chongyang Wang, Yu Qin, and Yanshi Fu	

Research on the Comprehensive Environmental Performance Assessment System for Green Data Centers.....	292
Yingbo Ji and Chunlin Han	
Hall 3D Model of the Life Cycle Analysis of Green Buildings	302
Fengyong Zhai, Liyang Liu, and Deyuan Gong	
Research on Sustainability and Construction Firms: Current Status and Future Agenda	310
Ruidong Chang, George Zillante, Zhenyu Zhao, and Jian Zuo	
Methods to Improve the Energy Utilization in Villages in Northern China.....	318
Liangbao Li, Yue Wang, Lixin Sun, and Hongbo Zhang	
Sustainable Building Design Optimization Using Building Information Modeling	326
Sha Liu	
An Emergy Methodology of Operational Resources Analysis for Green Construction.....	336
Yuna Wang, Yuelong Yu, and Xianwei Meng	
Research on Government Cultivation Behavior Based on Cultural Construction in the Building Energy Efficiency Services Market	343
Feng Shi and Yiyue Wang	
Energy Simulation of a Building Envelope for NetZero Energy Home (NZEH) Design.....	351
Hongxian Li, Haitao Yu, Dave Turnbull, Mustafa Gül, Mohamed Al-Hussein, and Don Mah	
Transition to a Sustainability-Oriented Construction Industry in China: A Critical Analysis from the Multi-Level Perspective	361
Ruidong Chang, George Zillante, Veronica Soebarto, and Zhenyu Zhao	
Developing Green Building in the Manner of Industry Cluster.....	369
Junyan Jin, Yue Shi, and Shoujian Zhang	
Sustainable Construction Indicators: An Examination of Clients' Requirements in Tender Documents	380
Li Yan, Kunhui Ye, and Weiyan Jiang	
Survey on the Evaluation Index System of a Green Village in a Cold Region	389
Deyuan Gong, Xiaolin Yang, and Shuo Wang	

**A Survey of Consumers’ Perspectives on the 2014 Edition of
“Green Building Evaluation Criteria”: Take Chongqing for Example400**
Runting Gong and Weiguang Cai

Land Use and Urban Management

**On the Participation of Rural Collective Economic Organization in
Urban Village Reconstructions.....408**
Fan Dong and Xiaoyan Li

**Strategies for Shenzhen’s Public Participation in Urban and
Rural Planning in the New Media Era 420**
Yaowu Wang and Yiting Dai

**Measuring Quality of Life from the Perspective of Neighborhood
Accessibility427**
Mojgan Zarekani, Monjur Panna, Ahmed Bouferguene, and
Mohamed Al-Hussein

**An Empirical Study on the Region-Based Housing Industrialization
Grading System in Chinese Rural Areas.....435**
Shoujian Zhang, Qian Chen, and Junyan Jin

**Local Implementation Problems and Suggestions of China’s
Real Estate Unified Registration445**
Xiaoping Zhou, Xuelian Liu, and Xianghai Wang

Research on Harbin Rural Land Circulation during New Urbanization452
Lixin Sun, Hongbo Zhang, Liangbao Li, and Yue Wang

Land Use Practice in a Hyper-Dense City: A Lesson from Hong Kong.....460
Hao Wang and Qiping Shen

**Study on the Potential Evaluation of Intensive Urban Land Utilization:
A Case Study of Harbin City477**
Wei Wang, Yan Wang, and Zengyan Fan

**Analysis and Design of a Land Resource Dynamic Monitoring
System Based on 3S Technology.....484**
Bo Zheng

**Research on Problems and Countermeasures of Post-Disaster
Reconstruction in China.....491**
Ling Wang, Zengyan Fan, and Yan Wang

Urbanization Quality Evaluation under the Perspective of New-Type Urbanization in China: A Case of Chongqing497
 Pengpeng Xu, Liye Pan, and Huishu Du

Analysis of the Potential for Intensive Use of Urban Land in Harbin City505
 Hong Wang and Honghong Qu

Industrial Structure Evolution and Urbanization Development in China514
 Yanshuo Zhu, Yanxin Zhu, and Hezhi Dai

Review on Studies of Urban Spatial Behavior and Urban Planning from the Perspective of Big Data.....521
 Xuezhu Cui and Xuotong Wang

Tianjin City’s Low-Carbon Energy-Saving Building Usage Analysis.....532
 Jinfeng Lu and Tingting Li

Research on the Establishment of a Rural Construction Standard System Based on Petri Net538
 Wei Wang, Shoujian Zhang, and Zhi Sun

Comprehensive Evaluation of an Urban Village’s Reconstruction Ability under the View of Sustainable Urban Development: Case Study of Guangzhou547
 Yuhan Jiang, Yongshi Pang, Sisi Han, and Yingchang Liu

Research on Evaluations of City Space Performance558
 Taoye Wang and Yong Kong

Project Management

Delayed Payment Problems in Public Construction Projects: Subcontractors’ Perspectives.....567
 Adnan Enshassi and Lina Abuhamra

A Research Framework for Evaluating the Maturity of Relationship Management in Chinese Mega-Construction and Infrastructure Megaprojects: A Relational Contracting Perspective576
 Albertpingchuen Chan, Yun Le, Yi Hu, and Ming Shan

Ontology-Based Representation Model to Support Cause and Effect Analysis.....584
 Hanhsiang Wang

Understanding Construction Projects' Schedule Overruns in South Africa	591
Mulenga Mukuka, Clinton Aigbavboa, and Wellington Thwala	
Discussion on the Construction of Project Organization Management Mode	603
Gang Li, Qinqin Qiao, Ge Gao, and Yanjing Huo	
Research and Application of a Comprehensive Project Management System of China Construction Fourth Engineering Division in Full Life Cycle Control of a Modern Construction Project.....	610
Yiasheng Zhang, Jialian Zhou, Tingting Ma, and Shuqiong Yang	
A Study on the Behavior of Multiple Subjects in the Real Estate Development Process	621
Zhenhua Wu, Hong Jiang, Yabei Wang, and Heng Mei	
Applying Policy Network Theory to the Decision Making Process of the Three Gorges Dam Project	631
Haitao Zheng, Caiyan Qin, Chaoning Zhang, and Qihui Yang	
Effects of Relationship and Contract Governance on Construction Project Performance: Review and Prospects	639
Yazhuo Luo, Bohai Zheng, Yuan Fang, and Xiuqin Yin	
Optimization of Construction Project Cost Management Based on the Smart Construction Theory	650
Yudi Wu and Yaowu Wang	
Research on the Evaluation of Project Management Maturity in a Hydropower EPC Project	661
Yapeng Xiao, Shenbei Zhou, and Xi Lou	
<i>Risk Management</i>	
Real Estate Financial Risks Caused by Aging and Its Precautions	669
Shufeng Liu, Xuanchang Zhang, and Cheng Yuan	
Research on Construction Multiemployer Health Insurance.....	679
Yifei Ma	
Pre-Control Study of the Falling Risk in Construction Based on Fault Tree Analysis and a Reason Model	687
Gaosheng Yang, Ying Xu, Xiaoli Zheng, and Ningping Xia	

Claim Management of Construction Engineering.....	696
Lixia Song, Junjie Wang, Lijun Song, and Fang Guo	
Barriers Analysis and Risk Assessment Methodology of an Energy Services Company in China.....	702
Yangling Wang and Kuixing Liu	
Simulation Research on an Airport Terminal Building from the Perspective of Roof Safety under Strong Wind	711
Jing Li and Deming Liu	
Research on Risk Allocations of a Construction Project	718
Shuo Wang, Liangbao Li, and Liyang Liu	
The Relevance of a Chief Financial Officer’s Characteristics and a Real Estate Company’s Financial Risks.....	726
Dan Liang and Ying Chang	
Research on the Conflict Management of Stakeholders in a Construction Project.....	733
Yingjie Li, Shengyue Hao, and Xu Ren	
Methods Based on the Bayesian Network for a Construction Accident Pre-Warning System	741
Bochao Xu, Chengjie Xu, and Xueqian Lin	
PFI Risk Management Research.....	749
Wei Huang, Junyan Jin, and Shoujian Zhang	
<i>Real Estate Investment, Finance, and Management</i>	
Strategy of Bidding under the Engineering Bill Pricing Mode	758
Baizhou He and Chen Liu	
Research on China’s Mortgage System	764
Fan Dong, Xianghai Wang, and Xuelian Liu	
Analysis on Impact Factors of Real Estate Price Based on the Factor Analysis Method	773
Yaowu Wang, Chongyang Wang, Nan Zhang, Yu Qin, and Zeng Li	
Chinese International Contractors in Africa: Market Potentiality and Entry Opportunity.....	782
Zhenyu Zhao and Desirewade Atchike	

Cost-Benefit Analysis of PPP Project Financing Based on the Government's Position	792
Ping Tao and Weiwei Ji	
Research on Real Estate Price Bubbles through Supply Variables	798
Fan Dong and Zijing Wu	
BT Operation Model Advantages in the Analysis of Park Development: Based on the Case of the Guangzhou Baiyun Airport Comprehensive Bonded Zone	805
Lizhong She and Wei Du	
Research on the Marketing Planning and Design of the Yongzhou Wuxi Estate Project	811
Liyong Zeng, Yazheng Qiu, Yixin Peng, and Shan Zhou	
Acceptance and Use of LCC as a Decision Support Tool for Renovation Investments.....	821
Pernilla Gluch and Mathias Gustafsson	
Receipts in Advance and the Earned Surplus Reserves and Earnings Management of Real Estate Enterprises	829
Ping Tao and Xiu Zhang	
Research on the Ex-Post Evaluation of a Social Affordable Housing Project: A Case Study of Xiamen.....	835
Hong Zhou, Yijin Zeng, and Bin Han	
Study on the Economic Effect of Affordable Housing on the Housing Commodity Market	843
Haiyan Jin	
Empirical Research on the Impact of the Financial Leverage of Listed Real Estate Companies on Enterprise Value	856
Haoyang Zhang	
Internationalization of Construction Services: A Comparison between Emerging and Developed Economies' Construction Contracting Firms	862
Ahsen Maqsoom, Chotchai Charoenngam, Yasir Ali, and Adil Quddos Khan	
Empirical Study on the Information Spilling Effects of Real-Estate Stocks	870
Yi Zhao and Dong Li	

Development Path Exploration of China’s Housing Industry from the Perspective of Market Analysis	877
Zhiye Huang, Guijun Li, and Ziyang Song	
Research on Customer Satisfaction in the Market of Pension Real Estate.....	885
Xuan Zhou, Shoujian Zhang, and Shijing Yang	
The Impact of Diversification Strategy on a Firm’s Value in Real Estate Listed Companies: From the Perspective of Capital Investment.....	893
Haixu Song, Hongcai Dai, and Tao Cai	
Evaluation of the Real Estate Economic Development Level in Heilongjiang Province Based on Factor and Cluster Analysis.....	902
Yingpeng Zhu and Le Wang	
An Analysis of Down Payment Constraint on Chinese Real Estate Price Fluctuations: Based on DSGE Models.....	910
Chengcai Li, Jingjing Chen, and Yonghong Ju	
Grey Correlation Degree Analysis and Comprehensive Evaluation of the Real Estate Investment Model of Heilongjiang Province.....	919
Yang Li and Juan Qin	
Empirical Research on the Relationships between Population Structure and Housing Price Fluctuations: Taking Beijing as an Example	929
Junlin Shao and Chao Ni	
A Study on the Comparison and Selection of Agent-Construction Modes in Chinese Government Investment Projects	938
Zhongyi Li and Dequn Zhang	
<i>Construction Enterprise Management</i>	
Empirical Study on the Determinants of Internal Control Information Disclosure Quality for China’s Real Estate Listed Companies.....	946
Ping Tao, Wenqiang Peng, and Chenxi Fan	
Construction Projects’ Key Performance Indicators: A Case of the South African Construction Industry	954
Mandisa Sibiya, Clinton Aigbavboa, and Wellington Thwala	
Measuring the CSR of Construction Enterprises: A Literature Review.....	961
Yue Shi, Xiaolong Xue, and Caixia Li	

Empirical Study on the Micro Network Structure of a Building Industrialization Project Based on Social Network Analysis	967
Guiwen Liu, Hongjuan Wu, and Chao Mao	
Correlation Analysis of Board Characteristics and Financial Restatement in Real Estate Listed Companies	977
Zhenzhen Ma and Ying Chang	
Research on the Relations of Listed Real Estate Companies' Governance Structure and Social Responsibility	987
Xuejun Hou and Tingting Zhu	
Study on the Building Enterprise Innovation Ability Evaluation Index	996
Caixia Li, Xiaolong Xue, and Yue Shi	
Business Performance Evaluation for Listed Real Estate Companies Using DEA	1002
Ling Chen and Sheng Liang	
Gray Correlation Analysis on the Tax Cost and Core Competence of Real Estate Enterprises.....	1014
Chencheng Zhao and Xiuhua Li	
Research on the Dynamic Investment Efficiency of Listed Real Estate Enterprises in China.....	1023
Yong Ma, Jianuo Liu, and Zhejian Yang	
The Relationship between Executive Compensation and the Performance of Listed Real Estate Corporations.....	1031
Jiaxin Chen	
Research on the Safety Performance Mechanism of Construction Companies	1040
Lili Yuan, Siyue Ma, and Ting Xiong	
Empirical Research on Executive Incentives and the Corporate Performances of Chinese Listed Real Estate Companies	1048
Yue Gao and Jianying Zhang	
An Exploratory Study of the Causes of Failure in Construction Small Businesses: A Case of the Johannesburg Construction Industry, South Africa	1055
Chikezie Eke, Clinton Aigbavboa, and Wellington Thwala	

Correlation of Corporate Income Tax and Debt Financing: An Analysis for the Real Estate Industry	1063
Mengwei Tan and Yanru Gao	

Facility Management and Infrastructure Construction and Management

A Model for Assessing Embodied Energy and GHG Emissions in Infrastructure Projects.....	1070
Jan Krantz, Weizhuo Lu, Farshid Shadram, Johan Larsson, and Thomas Olofsson	

Transport Noise and Residential Property Markets	1078
Chris Eves and Andrea Blake	

A Study on the Equilibrium of Chinese Urban Infrastructure Construction Investment Based on the Gini Coefficient	1085
Xiaoyun Zheng and Yilu Zhang	

Estimation on the Cumulative Amount of Rural Infrastructure Investment in Henan Province Based on the PIM Method: 2000-2012	1094
Shuhong Xu	

Research on the Coupling Effect of Vulnerability and Emergency Management Availability of Critical Infrastructure	1101
Jingxin Shi, Xishuang Han, and Guofeng Wang	

The Outlet of Real Estate College Education in Industry Transformation	1108
Yanjing Huo, Jingjing Sun, and Gang Li	

Deriving Optimal Competition in Infrastructure Procurement	1114
Pauline Teo, Adrian Bridge, and Peter Love	

An Integrated Framework for Exploring the Vulnerability Due to Passengers' Aberrant Behaviors in an Urban Metro System	1124
Xin Wan, Jingfeng Yuan, and Qiming Li	