Advances in Civil Engineering and Architecture

PART 7

Selected, peer reviewed papers from the 2011 International Conference on Civil Engineering, Architecture and Building Materials (CEABM2011),
June 18-20, 2011, Haikou, China

Edited by

Chaohe Chen, Yong Huang and Guangfan Li
Part 7

Computer Method for Tower Crane Foundation Design
H.X. Zhang, J. Jin, J.D. Qian, S. Li and Y. Jiang ................................................................. 6097

Change Characteristics Analysis of the Aged Pavement Asphalt Components
Y.Y. Liu, Z.W. Huang and J.J. Li ................................................................. 6101

The Exploration of Water-Saving in Building Water-Drainage
S.M. Cao and G.Y. Feng ................................................................. 6106

Key Construction Technology for Highway on Soft Foundation
Y. Lin and Y.B. He ................................................................. 6113

Chapter 22: Computer Simulation and CAD/CAE

Prediction of Concrete Strength Using Fuzzy Neural Networks
J. Xu and X.L. Wang ................................................................. 6121

Aggregate Shape Effect on Mesoscale Modeling of Concrete under High Strain Rate Tension
X.Q. Zhou, Y. Xia and W. Huang ................................................................. 6127

Modeling Method of Analysis of Complicated Bridge Structures Based on Design Drawings
X.J. He, N.P. Anh, J.S. Liu, J.J. Xiang and X.Y. Luo ................................................................. 6131

Study on Virtual Building Electricity Laboratory
Y.X. Wang ................................................................. 6138

The Application of Iteration and Functional Analysis in Numerical Calculation of Beams with Large Deformation
J. Yan, Y.W. Zeng and R. Gao ................................................................. 6144

Application Analysis of Form-Finding on the Large Building Construction Tower Crane Flexible Attachments

Integration Research for Steel Shelf CAD/CAE Calculation and Analysis System
B. Chen, Z.J. Yin, J. Yang and C.Y. Wang ................................................................. 6154

Thermomechanical Analysis System for Building Structures under Fire Based on MSCPATRAN Platform

The Assembled Structure Analysis of Energy Conservation and Material Saving Unit Sheet Aluminum Curtain Wall
Z.G. Han, X.F. Song and R.Q. Hao ................................................................. 6165

The Study of BP Neural Network in Predicting Concrete Strength
Z. Ming ................................................................. 6169

Accuracies of Finite Beam Element in Prediction of Inelastic Material Behaviors
S. Li, C.H. Zhai and L.L. Xie ................................................................. 6174

Simulation of Hydrostatic Drive System of Crawler Bulldozer
P. Xing, S.L. Luo, C.B. Liu and C.F. Tian ................................................................. 6178
Research on Optimizing Precast Water Head on Preloading Filling Spiral Case of a Large-Scale Hydropower Station
H.L. Wu, S.H. Qin, Y. Li and X.F. Du .......................... 6183

Optimization Design of the Gas Station Roof Based on Analysis
J.L. Wang .......................................................... 6188

Research and Development of Post-Process Software System Based on 3D Solid Model for New Type Residence Structure
Z.G. Chang .......................................................... 6192

Collapsed Form Simulation of Styles of Different Structures under Earthquake Based on ANSYS/LS-DYNA
Y.L. Fang, B.Y. Gao and J.Y. Duan ................................ 6197

Numerical Simulation of Progressive Collapse and Study of Resisting Progressive Collapse of Spatial Grid Structures Based on ANSYS/LS-DYNA
Y.L. Fang and Z.Z. Zhao ........................................... 6202

Numerical Simulation of Earth-Contact Heat Transfer
K.J. Shao, S. Rees and P. Cleall .................................... 6206

Improvement Method about Design Norms' Implementation Based on AutoCAD 2007
D. Li ................................................................. 6212

Comparative Analysis between Dynamic Simulation and Practical Result of Demolition of Building Structures by Blasting
X.B. Gong, C.M. Li and J.G. Yang .................................. 6216

Activity Recognition via Feature Decomposition
Q. Wei, H. Zhang and Z.J. Liu ...................................... 6221

Global Bifurcation of a Tuning Mass Damper with Plastic Impacts
A.Z. Yan and X.H. Li ................................................. 6225

Numerical Simulation of Ship-bridge Collision Based on LS-DYNA Technique
L. Tian and C. Zhu ................................................... 6230

Exploration Method for Extra Heavy Oil Reservoir with Top Water
Y.J. Ji, J.J. Liu and N. Zhang ........................................ 6237

The FEM Analysis and Optimization Design of Main Beam of Horizontal Directional Drilling
Z.G. Han, H. Min and R.Q. Hao .................................... 6241

Analysis and Research of Wind Environment of Energy Saving Buildings
Q. Feng ............................................................... 6246

Chapter 23: Engineering Management

Reuse of Building Construction and Demolition Waste, a Xi'an Example
Q. Du, L. Zhao and R. Yang ........................................... 6257

On the Negative Impact of Defects Liability Period
Y.C. Gu and W.D. Zhang ............................................. 6261

Internal Incentive Mechanism of Public Agent-Construction Enterprises Based on Common Agency Model
Z.B. Wu, B. Yao, Y.S. Liu and H.D. Wang ........................ 6268

Compare Business Process between Construction and Manufacturing on the Application of ERP
Y.F. Sun ............................................................ 6273

Applied Research on Fuzzy Comprehensive Evaluation of BOT Projects in the Transfer Phase
X. Wang, Y.X. Wang and Z.K. Yang ............................... 6279
Research on the Social Discount Rate for the Whole Life Cycle Engineering Cost Management
X.D. Han and T. Luo..........................................................6284

Integrated Management of Construction Project Based on Knowledge Base
X.J. Tu and W.M. Feng..........................................................6288

Estimation of Construction Waste Generation and Management in Taiwan
R.Y. Huang, L.H. Yeh, H.H. Chen, J.D. Lin, P.F. Chen, P.H. Sung and J.T. Yau..........................................................6292

Cost Estimation of Construction Project Using Fuzzy Neural Network Model Embedded with Modified Particle Optimizer
X. He, Y. Yao, H.W. Xia, Y.W. Su and G. Liu..........................................................6296

Research on the Decision Making of Large Public Building Maintenance Cycle
Q. Wu, S.H. Gao and H. Tang..........................................................6302

Designing and Evaluating Safety Accident Emergency Management for Construction Project under Fuzzy Environment
C.H. Li, Y.X. Sai and H. Mao..........................................................6307

Study of Subway Construction Risk Assessment Based on the Triangular Fuzzy Numbers
G. Liu and F. Li..........................................................6312

An Application of the FAHP to High-Rise Building Fire Risk Indexes Analyzing
C.J. Ma and G.L. Cao..........................................................6319

Strategy Evaluation System of Large-Scale Public Buildings in Emergency Crisis
Q. Wu, S.H. Gao and H. Tang..........................................................6327

Case Study of the Bird's Nest: Risks and Opportunities in China's PPP Implementations in Major Sports Facilities
W. Liang, X.Y. Song and S.Q. Wang..........................................................6332

Ontology-Based Interorganizational Knowledge Management in Sustainable Construction Project
G.B. Wang, G.Y. He and L. Bian..........................................................6339

Material Price Risks Impact on Project Costs Research
J.F. Li, Y. Shen, L.J. Xu and Y. Suo..........................................................6344

Construction Claims Management of Civil Engineering
S.S. Yang and J. Xu..........................................................6348

Research on Construction Risk Management System for Beijing Subway Suzhou Street Station
A.J. Zhang, M.Z. Bai and Z.Y. Xu..........................................................6352

Evaluation of Team Learning in Expressway Projects
F.L. Zhang, W.W. Han and Y. Chen..........................................................6357

Fuzzy Analytic Hierarchy in Project Risk Management - New Stadium Construction Project in Weifang City
Y. Zhang and C.J. Liu..........................................................6362

Bidding Evaluation of Construction Engineering Using Extend Data Envelopment Analysis Method
Q. Shuang, Y.B. Yuan and K. Shuang..........................................................6369

The Research of Technical System about Safety Management during the Construction of the Beijing Subway Line 10

The Application of Fuzzy Logic Inference in Construction Vibration Risk Prediction
Z. Zhang and Y.B. Yuan..........................................................6377

Practice and Exploration on the Training Mode of Architectural Engineering Technology Professional
P. Dong, Z.Q. Zhang and R. Fang..........................................................6381
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research on the Sustainable Developing Construction Space Design of Primary and Secondary Schools</td>
<td>S.T. Li, K. Zhou and Z.M. Li</td>
<td>6474</td>
</tr>
<tr>
<td>The Space Design of Modern Villa With Reference to Traditional Residential Culture</td>
<td>C.F. Liu, J. He and J. An</td>
<td>6479</td>
</tr>
<tr>
<td>The University Teaching Space for Promoting Information Exchange</td>
<td>L. Jing and T.L. Li</td>
<td>6483</td>
</tr>
<tr>
<td>Study on the Architectural Heritage Value from the View of Cultural Economics</td>
<td>M. Liu, N. Aoki and S.B. Xu</td>
<td>6489</td>
</tr>
<tr>
<td>Architecture Inspiration from the Microstructure and Bending Behavior of Nacre of Molluscan Shell</td>
<td>Y.L. An, Z.M. Liu, G. Wang and W.J. Wu</td>
<td>6494</td>
</tr>
<tr>
<td>Psychological Analysis of Hui Merchants' Humanistic Complex Reflected by Huizhou Houses</td>
<td>X. Zhang</td>
<td>6499</td>
</tr>
<tr>
<td>Out of Form Town the Globalize Background Chinese Architect the Thinking Creation</td>
<td>J.G. Ye, Y. Lin and H. Yi</td>
<td>6514</td>
</tr>
<tr>
<td>China Lingnan Tourism Hotel Architectural Spatial Design Combined with Environment</td>
<td>H.N. Xu, Y. Li and Q.B. Mo</td>
<td>6519</td>
</tr>
<tr>
<td>Flexibility and Adaptability, Minute Integration-Study on the Design of the Dwelling with Small and Medium Size Residential Units</td>
<td>L. Li, Y.H. Hao and X. Gao</td>
<td>6524</td>
</tr>
<tr>
<td>On the Space Analysis of Shopping Mall</td>
<td>Y.Y. Zheng</td>
<td>6530</td>
</tr>
<tr>
<td>Study on the Ecological Experience of Inner Mongolia Grassland Traditional Herdsmen Settlement Construction</td>
<td>M. Ma and J. Kong</td>
<td>6543</td>
</tr>
<tr>
<td>The Design Method Study on Nationality Architecture Based on the Image of Local Landscape: A Case Study on the Creation of Li County Non-Material Cultural Center</td>
<td>B. Cheng and J.P. Liu</td>
<td>6554</td>
</tr>
<tr>
<td>Stability Analysis on the Structure of a Multipurpose Gymnasium</td>
<td>W.B. Bao, L.H. Fu and Y.Y. Hu</td>
<td>6558</td>
</tr>
<tr>
<td>The Traditional Elements and Modern Architectural Design</td>
<td>Y. Luo</td>
<td>6562</td>
</tr>
</tbody>
</table>

Chapter 25: Building Technology Science

A Study on the High-Rise Housing Repair Work's Types in New York City - In the Case of Eldorado | C.T. Liao | 6569 |
The Research of Traditional Villages Protection Based on Virtual Reality
S.M. Li, J. Yan, Z.Y. Liang and Y. Wang .............................................................. 6574

Influence of the K Values and D Values on Heat Insulation Performance of the Wall
Y.W. Yu, Z.Y. Liang and J. Yan ................................................................. 6578

The Application of Ecotect in Architectural Design
Z.Y. Liang, J. Yan, S.M. Li and H. Guo ......................................................... 6582

The 3D Coordinated Building Design Based on Building Information Modeling
X.B. Lv, Y.Q. Zou, Y.Y. Huang and J. Xu ................................................. 6587

Evaluation of the Optimum Index of Target Analysis for Rural Residential Building Products
T.B. Liu, F.J. Luan and S.J. Wang ............................................................. 6592

The Application of Architectural Technology in Architecture Planning Optimization
Y.J. Li, J. Ye, B. Fan and J.D. Xu ............................................................... 6597

Fracture Toughness of A572 Gr.50 Steel Built-Up Box-Section Welds Joined by Electroslag Welding
H.Y. Chang, C.C. Yu, K.T. Liou and K.C. Lin ............................................ 6601

Study on the Evaluation Standard of Ecological Residential Area Acoustic Environment
Y.P. Wang, M.X. Sun and L. Gai ................................................................. 6605

Study on Jinan Heihu Spring Soundscape
Y.P. Wang, Y.Y. Tao and Z.H. Cheng ......................................................... 6609

Chapter 26: Urban Planning and Design

Research on the Guidance for Traditional Village Protection and Development Based on Functionalism Perspective
S.H. Song, C.D. Huang and X.Q. Zhu .......................................................... 6615

Analysis of the Elements of the Urban Context
G. Li and S.G. Wu ................................................................. 6620

Building a Commonsense Knowledge Model of Activities in Urban Plaza with the Spreading Activation Theory
C.H. Chen ................................................................. 6624

Residential Design Idea - As a Case of Xinyang Greentown Estate in Mudanjiang
L. Yang ................................................................. 6629

Some Thoughts on the Development of Digital Technology in the Construction Industry
L. Yang ................................................................. 6637

Strategies for City Ecosystem Restoration Based on Theories of Urban Plan
H.B. Guo, L.L. Zhang and X.Y. Fan ......................................................... 6644

Structure Analysis of Xuanfu in Ming Dynasty
L.F. Wang and Y.L. Guo ................................................................. 6650

Analysis and Application of the Landscape Expression on the Contrary Space Sequence in Historical Town
P. Yao and L. Yuan ................................................................. 6654

Landscape City: The Ideal Direction of Cities Development of 21st Century in China
P. Ye, L.Q. Wu and D. Wang ................................................................. 6660

Discussion on the Distribution of Geothermal Resources Related to Urban Planning - Taking Dongying City, Shandong Province as an Example
Z.L. Li and H.Y. Yu ................................................................. 6664

Research of City Ecological Green Space Design Base on CITYgreen
X. Li, Y. Wei and L. Li ................................................................. 6668
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology Community Construction Based on Low-Carbon Idea</td>
<td>C.R. Zhao and Y. Zhang</td>
<td>6672</td>
</tr>
<tr>
<td>The Classic Essence of Landscape City - Re-Discuss the &quot;Philosophy of Landscape City&quot;</td>
<td>P. Ye, F.F. Zhang and D. Wang</td>
<td>6677</td>
</tr>
<tr>
<td>Regional Characteristics of Niche and Planning Principles in City Streets</td>
<td>Q.B. Liu, C. Liu and J.Y. Zhao</td>
<td>6681</td>
</tr>
<tr>
<td>The Research on Theme Park Planning of Mountainous City Based on Natural Factor</td>
<td>Y.H. Xu, D.C. Luo and Y.K. Lv</td>
<td>6692</td>
</tr>
<tr>
<td>The Planning Research of Street Space for Fringe Residential Areas in Main city of Guiyang - Based on the Concept of &quot;Place Theory&quot;</td>
<td>Y.H. Xu and Q.F. Wang</td>
<td>6696</td>
</tr>
<tr>
<td>Deduction and Demonstration of an Urban Planning Model Based on “CAS” Theory</td>
<td>H. Guo and W.M. Zhao</td>
<td>6700</td>
</tr>
<tr>
<td>Research on the Protection and Renewal of Historical and Cultural Cities Based on Cultural Geography</td>
<td>T. Zhou</td>
<td>6706</td>
</tr>
<tr>
<td>Create the Pleasant Urban Public Space</td>
<td>Y. Fang, J.P. Liu and F.Y. Wang</td>
<td>6710</td>
</tr>
<tr>
<td>The Study on Low-Carbon Urban Ecological Planning</td>
<td>Y. Li</td>
<td>6714</td>
</tr>
<tr>
<td>Residential Design of Circular Economy</td>
<td>M. Yuan, B.Y. Pan and S.J. Wang</td>
<td>6718</td>
</tr>
<tr>
<td>Probe into &quot;Green Distance&quot; - One of the Methods on Optimizing Contemporary Urban Human Settlement</td>
<td>W.M. Zhao and X.F. Wei</td>
<td>6721</td>
</tr>
<tr>
<td>Urban Growth Management: Approaches, Experiences and Implications to China’s Urban Planning</td>
<td>Z.L. Zhang</td>
<td>6725</td>
</tr>
<tr>
<td>The Street System Plan Based on the Townscape Conservation of Historic Urban Area</td>
<td>J.M. Zhang, H.F. Qi and L. Liu</td>
<td>6734</td>
</tr>
<tr>
<td>Discussing the Ideas of Existing Renovation of Parks in the City under the Demand of Disaster Prevention and Reduction</td>
<td>J. Ren</td>
<td>6739</td>
</tr>
<tr>
<td>The Research on the Issues Concerning the “Stub-end Type” Spatial Development</td>
<td>J.M. Zhang, Y. Xu and S.F. Chen</td>
<td>6743</td>
</tr>
<tr>
<td>Ecological Developing Methods of Spatial Pattern of Water-Network Small Towns in Southern Area of Yangtze River</td>
<td>Y.Z. Huang and Q.Y. Li</td>
<td>6759</td>
</tr>
<tr>
<td>Study on the Ecologically Sensitive Tourism Development of Suburban Scenic</td>
<td>Y.Z. Huang, Y.J. Zhou and Y.S. Wang</td>
<td>6768</td>
</tr>
</tbody>
</table>
Chapter 27: Landscape Planning and Design

Landscape Analysis of Typical Yao-Dong Villages on Gentle Gully Slope in Semi-Arid Loess Plateau - Case Study of Shi-Jia-Gou Village in Fen-Xi County Shan-Xi Province
Q. Wang, F. Wang and Q. Dang ................................................................. 6801

Systematic Planning of Public Art in Suzhou-City
Y.Z. Huang ................................................................. 6806

Building Pleasant Landscape of Urban Plaza
Y. Fang, J.P. Liu and X.J. Zhu ................................................................. 6814

Interpretation of Contemporary Landscape Architecture Design in System View of Nature
L. Cui and J. Zhang ................................................................. 6818

Ecological Design of Ternary of Artificial Landscaping Lake
K.J. Wen, L.P. Wu, Q.Q. Yan, J. Liu, Q. He and S.Q. Li ................................................................. 6822

The Discussion on the Construction of City Waterfront Landscape Based on the Visual Angle of Ecology Restoration
G.Y. Li, Z.Y. Duan and Y. Xu ................................................................. 6827

Creation for Urban Landscape to Improve Ecological Environment - Turn Urban Idle Land into Landscape
M.Y. Zeng, Q.S. Xian and Y. Zhang ................................................................. 6834

From Accrete with Nature to Mutual Benefit - The Planning and Landscape Design of Dayuanhe Reservoir
X.Q. Wang, L.Y. Fan and C.Y. Long ................................................................. 6838

Landscape Design of Urban Green Space Adaptive to Global Climate Change a Review
J. Zhang, Y.H. Sui and X.B. Geng ................................................................. 6842

The Strategy for Plants Uses in the Construction of Conservation-Oriented Landscape
Y.Y. Kong ................................................................. 6846

Analysis on the House Garden Design
X. Yang and Q. Zhang ................................................................. 6850

Chapter 28: Other Related Topics

Study on Thermal Environment of Traditional Architecture in Tropic Climate
L.J. Wang, J.P. Liu, Y.F. Liu, Y.Y. Wang and J. Chen ................................................................. 6857
The Research of Economic Evaluation Model for Construction Conserves Energy Retrofitting Technology of Existing Buildings
G.Q. Xing and W.W. Wang

Analysis of Unconfined Compressive Strength Calculation Formula of Soil-Cement
Y.X. Wang and J.Q. Ma

Analysis of Ecological Adaptability of Traditional Residential Settlement of Hani Nationality
L.L. Wang, Z. Yang and T. Shang

Fly Ash-Desulfurization Gypsum Mortar and Concrete Part II: Performances
Y. Chen and Y.L. Gao

The Implication of Solar Hot Water System in Small High-Rise Buildings
H. Cao and Q.Y. Liao

The Study of Information Asymmetry on Construction Market in Towns and Villages Energy-Saving Housing
G. Liu and M.Q. Huang

The Mode by Combining into Development of Underground Space and Protection of Cultural Relics - In the Famous Historical City of Luoyang as an Example
Y.J. Sun and G.J. Dong

Survey and Analysis on the Residential House Energy Consumption in Wuhan City
J. Ye, Y.J. Li and B.L. Zhou

The Applicability of Shading Technique in Energy Coefficient Building of Sichuan Rural Seismic Disastrous Area
X.N. Li

The Radioactivity Levels and Safety Assessment of Building Materials in Nanjing, Jiangsu Province, China
J. Lu, H. Yang and M.L. Zhang

Dongtan vs. Masdar: A Tale of Two Zero-Carbon Cities
J.L. Zhao, Y.W. Kong and C.A. Liu

Urban Agriculture as Low-Carbon Strategy for Cities
J.L. Zhao, C.A. Liu and Y.K. Zhang

Study on the Systems Theory of Building Energy Efficiency
X.P. Yu and X.Z. Fu

Energy-Saving Test and Analysis of a Steel Residential Building in Cold Regions of China
X.T. Peng and C. Lin

Sensitivity Analysis of Influence Factors on Residential Building Energy Consumption in Hot Summer and Cold Winter Zone
N. Li, Y.Q. Zhao and Q. Liu

The Air-Conditioning Rtilization of Natural Cold Resource of Lakes and Reservoirs
L. Ma and Y.Y. Li

Development and Validation of a Numerical Model of Fouling within Spiral-Grooved Tubes
D. Yu, Y.C. Chen and C.F. Ma

Interval Finite Element Computation Based on INTLAB for Statical Analysis of Truss Structures with Large Uncertainties
X. Shi, R.P. Wang and W.T. Huang

Idea on Low-Tech Ecological Evolution of Seaweed House in Jiaodong Peninsula
N. Zhang, M. Chen and X.X. Wang

Kang Bai-Wan’s Mansions from the Ecological Perspective
H. Zhang
Green Construction Evaluation of Wall Project Based on Grey Clustering Method
Q. Luo, N. Li, M.H. Shi and Q. Liu .................................................................6971

Study on the Large Fire Tests Temperature Spread Properties of External Thermal Insulation System
Z.R. Niu and Z.L. Huang .............................................................................6976

Study on the Impact of Aggregate Size to SCC Segregation
L. Zeng, Y.H. Zhang, Z. Gao and E.H. Tu ......................................................6984

Analysis on Non-Balance Insulation in Lhasa
E. Li and J.P. Liu .........................................................................................6990

The Analysis of the Impact of the Louver on the Natural Ventilation
Y. Wang, P. Lu, J.P. Liu, H.B. Yao and L.L. Chen ........................................6997

Effects of Initial Geometric Imperfections on the Stability of Steel-Concrete Composite Ribbed Shell
L.L. Wang and Y.Z. Chang ..........................................................................7001

The Influence of Different Restrained Boundary Conditions on the Stability of Steel-Concrete Composite Ribbed Shell
Y.Z. Chang and L.L. Wang ...........................................................................7005

Analysis Application Research of an Improved Value Coefficient Method in the Scheme Optimization of the Existing Building Energy Saving Reconstruction
Y.X. Wang and L. Xie ................................................................................7009

Energy Consumption Profile of Hotel Buildings in Chongqing
M. Liu, C.Y. Huang and Q.Y. Cheng ............................................................7018

The Visual Expression in the Shape Design of Ecological Architecture
X.M. Sun and J.H. Li ....................................................................................7022

Intelligent Optimization of Material Mixing Ratio and Process Parameters for Aerated Concrete
F. Yang, L.Z. Sun, Z.L. Xie and Y.G. Zhou ..................................................7026

Study on Sintered Wall Materials Made Use of Iron Tailings and Waste Rock
S.W. Jian, L. Yuan, Y. Lv, H.B. Tan, X.G. Li and B.G. Ma ............................7036

Keyword Index ...............................................................................................7041

Author Index ..............................................................................................7083