



# CONTENTS

## **Building Economics (W055)**

The Application of Life Cycle Costing for Building Retrofit Wilkinson, S. and Ying, F.J. ....	1
Managing Mega Construction Projects - Learning from Two Case Studies: London Underground's Jubilee Line Extension and BAA's Heathrow Terminal 5 Potts, K. ....	11
Improving the Design Process Confino-Rehder, S. ....	23
Innovations in Tunnel Construction and the Associated Economical Consequences for Supplier, Contractor and the Client Schaiter, B. and Girmscheid, G. ....	29
The Implications of Incomplete Contracting for Construction Management Chang, C-Y. ....	41
The Price of Risk in Construction Projects: Choosing of an Appropriate Research Methodology Laryea, S., Badu, E. and Hughes, W. ....	51
Poor Quality Costs in Medium-Sized Construction Companies: What can be Learned from other Industries Dobrescu, L., Holm, K., Låstbom, M., Mjårdne, C., Ottosson, P. Josephson, P.E. and Lindström, J. ....	63

## **Performance Concept in Building (W060)**

Risk Management in PPP Maintenance Projects of Communal Street Networks Pohle, T. and Girmscheid, G. ....	75
Risk Management in Different Forms of Contract and Collaboration – Case of Sweden Osipova, E. and Apleberger, L. ....	88
Client Involvement in Performance based Briefing in Public Private Partnerships Procurement and the use of ICT: Dutch Best Practice Zeegers, A. and Ang, G. ....	98
Risk Management: A Bottom-up Approach to Ascertain Responsibility Mahesh, G. and Kumaraswamy, M.M. ....	110
Portuguese Thermal Code's Evolution and its Contribution to the Sustainable Construction Ramos, A.F. and Mendes da Silva, J.A.R. ....	119
Decentralized Energy Generation and Waste (Water) Treatment in Residential Districts: The 'Sustainable Implant' van Timmeren, A. ....	130
Why Insulate? The Arguments for Sustainability Vaz-Sá, A., Rangel, B., de Sousa, H. and Abrantes, V. ....	142
Autonomy or Heteronomy of Essential Services in the Built Environment? van Timmeren, A. and Röling, W. ....	155
Dynamic Model of Energy Saving Projects Market Vytlačil, D. ....	167
Ecology of the Building Geometry - Environmental Performance of Different Building Shapes van den Dobbelen, A., Thijssen, S., Colaleo, V. and Metz, T. ....	178
Solar Energy Conversion with Flexible Photovoltaic Modules Integrated Into Single Ply Roofing Membranes Beer, H-R. and Hillebrand-Hansen, E. ....	189



Smart Materials: Self-Regulating Envelopes Clifford, D. and Moore, E. ....	200
Integrating Ventilated Façades in Hot and Humid Climates Haase, M. and Amato, A. ....	206
<b><u>Organisation and Management of Construction (W065)</u></b>	
Complexity of Megaprojects	
Brockmann, C. and Girmscheid, G. ....	219
Stakeholder Perceptions of Contractor Time, Cost and Quality Management on Building Projects	
Michell, K., Bowen, P., Cattell, K., Edwards, P. and Pearl, R. ....	231
Effective Financial Incentive Mechanisms: An Australian Case Study	
Rose, T. and Manley, K. ....	241
Hunters and Farmers? The HRM Implications of 'Product-Service' in Construction	
Johnstone, S., Dainty, A. and Wilkinson, A. ....	254
Generic Axiomatic Requirement Management Model (GARM-M) – Accelerated Target Oriented Handling of Total Service Contracts	
Girmscheid, G. and Mehnert, F. ....	266
Supply Chain Systems Engineering in Construction	
Vrijhoef, R. and de Ridder, H. ....	279
The Evaluation of the Delays in the Portuguese Construction	
Couto J.P. and Teixeira, J.C. ....	292
Whither Partnering? A Trade-off Analysis using a Hong Kong Case Study	
Mahesh, G., Kumaraswamy, M.M. and Anvuur, A.M. ....	302
A Method to Evaluate and Manage Client Requirements in Housing Projects	
de Paula Barros Neto, J., Mourao, Y.R., Ferreira de Freitas, A.A. and da Costa Lago Alves, T. ....	310
Ethics and Authenticity of Leadership in the Construction Industry	
Toor, S. ur R. and Ofori, G. ....	322
Strategic Cooperation Networks for Life-Cycle Service Provisions in Building Construction	
Lunze, D. and Girmscheid, G. ....	335
Workforce Issues in the Knowledge Age	
Roper, K.O. ....	346
Implementing Innovation: Transforming Practices and Technologies in Construction Work	
Harty, C. ....	357
A Locus for Dynamic Competitiveness in Construction	
Elmualim, A.A. ....	371
Measuring Performance in Construction Projects: The Case of the Swedish "Best Practice tool"	
Josephson, P.-E. and Lindström, J. ....	383
Evaluation of Individual Characteristics in Partnering Projects	
Åkerström, S. and Lindahl, G. ....	395
Human based Value Creating Cooperation in Construction Projects	
Sunding, L. and Ekholm, A. ....	408
Culture in Construction: Characteristics and Paradigms	
Ferrada, X. and Serpell, A. ....	421
The Roots to Conflicting Interests among Different Partners in a DBFM Consortium	
van Heuckelum, J.M., Favié, R., Peekel, P.J.A., van Eekelen, A.L.M. and Maas, G.J. ....	433
The Design of the Organisation of a Building Process of an Underground Multimodal Station with a Case-Study of Station Amsterdam Zuid/ WTC, a PPP-Project	
Ketelaars, P.F.H.C.W., Favié, R., Kleine, R.H., Jense, A., Heemskerk, G.J.M. and Maas, G.J. ....	442



The Harmony Model: A Case Study on New Contractors Approach Wagemakers, G., Favié, R., van Eekelen, A.L.M., Willemsen, J.G.L. Bergen, J.A. and Maas, G.J. ....	454
Internal Logistics at the Building Site Mortin, L. and Larsson, B. ....	462
Strategic Purchasing 'from Project-Related Collaboration to Sustainable Strategic Collaboration' van de Water, J., Favié, R., Mulder, J., van Eekelen, B. and Maas, G.J. ....	475
Procurement Policy and the Adoption of Integrated Contracts for Civil Works by Local Authorities: A Case Study for the Netherlands Boes, H. and Dorée, A. ....	485
What Makes a Leader in Construction? An Analysis of Leaders in the UK Construction Industry Chan, P.W. and Cooper, R. ....	498
Integrated Solutions in Construction: Combining Products and Services in the PFI Context Leiringer, R., Green, S.D. and Raja, J. ....	511
Constructing Strategy: Practitioners, Practices and Practice Larsen, G.D., Green, S.D. and Kao, C-C. ....	524
Living Building Concept for Adding Value in an Unpredictable Future de Ridder, H. and Vrijhoef, R. ....	536
Project Risk Management in Oman: A Survey of Risk Practices in the Construction Industry Ballal, T., Elhag, T. and Ambusaidy, S. ....	549
Value Creation by Process-Oriented Project Management Geijtenbeek, W., Geradts, P., van Eekelen, B., Kleine, H., Favié, R. and Maas, G.J. ....	558
Development of Construction Process Optimal Designed Decision Viliuniene, O. and Viliunas, G. ....	572
The Crossover of Burnout and Engagement Yip, B. and Rowlinson, S. ....	580
Evidence-based Design for Health Facilities: Benefit Realisation and Assessment of the Business Case Ruddock, S., Aouad G. and Ruddock, L. ....	589
<b><u>Facilities Management and Maintenance (W070)</u></b>	
A Facilities Management Resource Consumption Model Then, D. S-s. and McEwan, A. ....	600
Advances in ETICS Behaviour Analysis and Consequences for Planning Maintenance Mendes da Silva, J.A.R and Falorca, J.G.F. ....	612
An Integrated Approach to the "Relife" of Office Buildings Yang, J. and Lim, S. ....	623
Public Private Partnership for Maintenance Activities – System Boundaries for a Life Cycle Oriented Economic Efficiency Analysis Fastrich, A. and Girmscheid, G. ....	636
Building Condition Assessment: A Performance Evaluation Tool towards Sustainable Asset Management Abbott, G.R., McDuling, J.J., Parsons, S. and Schoeman, J.C. ....	649
The Jerusalem Eco-Housing Project: Integrated Design Solutions Peled, G. ....	663
Issues and Actions for Sustainable Renovation Botta, M. ....	670
Integrated Plan Analysis (IPA) of Buildings Zijlstra, H. ....	686



The Ventilation Implication of a Combined Life Cycle Assessment (LCA), Life Cycle Costing (LCC) and Health Impact Assessment (HIA) Study for Public Housing in Hong Kong Wong, F.Y-h. and Amato, A. ....	699
Sustainable Cities for a Sustainable Development: Building Renewal as a Mean of Increasing the Sustainability of the Existing City Mele, C. and Piantanida, P. ....	709
Performance Measurement to Communicate Strategy Räisänen, C. and Björnström, J. ....	721
Diagnostic System for Monitoring and Revaluing of Building Constructions Koppány, A. ....	730
A Survey of Operation and Maintenance Budgetary Practices for Commercial Buildings in Hong Kong – Preliminary Findings Lai, J.H.K. and Yik, F.W.H. ....	742
Pervasive Technologies for Workspace Management at Nationwide Building Society Clifford, C., Elmualim A.A. and Child, F. ....	755
Selection Framework for Domestic Subcontractors by Contractors in the Construction Industry Talukhaba, A.A. and Mapatha, M. ....	768

## **Procurement Systems (W092)**

Rethinking the Contractors Trilogy: Identifying the Missing Dimension in the Traditional Construction Delivery System Hindle, B. and Rwelamila, P.M.D. ....	781
From Bureaucracy to Value-Based Procurement: The Client as Change Agent Haugbølle, K. and Gottlieb, S.C. ....	790
Introducing Innovative Procurement Methods for Supply Chain Integration – Implementing the Challenge Khalfan, M.M.A. and McDermott, P. ....	802
Defining the Conditions of a Contractors' Past Performance Measurement System for Dutch Construction Clients Geraedts R.P. and Koolwijk, J. ....	814
The Construction Contract as a Means for Improving the Contractors' Performance Serpell, A. and Samudio, R. ....	826

## **Architectural Management (W096)**

Designing Risk on International Projects Grisham, T. and Srinivasan, P. ....	838
Why is Design Delivery always Behind Schedule? A Critical Review of the Design Planning Techniques Adopted for Real Estate Projects in São Paulo - Brazil Manziona, L. and Melhado, S.B. ....	850
A Comparative Study of Architects' use of Briefing Documents Interim Report Heintz, J.L. and Overgaard, F. ....	863
Designing in the Virtual World Sher, W., Williams, A., Sherratt, S. and Gameson, R. ....	878
The Strategy of Building System Design based on the Influence of "Feng Shui" in Traditional Culture Huang W-H. and Tzeng, C-T. ....	889
Managing Intellectual Capital Strategically: A Core Competence for Architectural Design Firms in the Turkish Construction Sector Gozde B., Barlak, O., Yitmen, I. and Murat Gunaydin, H. ....	902
Towards Sustained Competitiveness in UK Construction: A Multi-Methodological Approach Goodier, C.I., Soetanto, R., Dainty, A.R.J., Larsen, G.D. and Quigley, M. ....	915





Building Information Management for AEC - The Recording and Integration of Concept and Detail Design Data using Ubiquitous Sources Paterson, J.J.G., Kouider, T. and Scott, J.R. ....	928
Design Process of a Temporary Light Weight Emergency Shelter with Integrated Climate Control Meijers, M.H.M., Cox M.G.D.M. and Gijsbers, R. ....	939
Residential Window Selection Model for Different Climates of Turkey Tavil, A., Cetiner, I., Yaman, H. and Coskun, K. ....	950
A Study of a Recreation Area for the Application of Ecological Engineering in Taiwan Tzeng, C. and Shen, C. ....	964
General Managers' and Building Managers' Different Evaluation of Building Value and Quality - As Built and Over Time Jensen, P.A. ....	977
Influence of Local Cultural Peculiarities on National and International Design Process and Results Stauskas, V. ....	989
The Prototype of Land- Architecture in Taiwan: The Case of Yami-Aboriginal Housing in Lanyu Island Huang L-M. and Tzeng C-T. ....	999
Sustainable Briefing for Sustainable Buildings van Ree, H.J. and van Meel, J. ....	1011
Using Digital Information for Hybrid Project Design Adeyeye, K., Bouchlaghem, D. and Pasquire, C. ....	1024
The Capture and Reuse of Design Cost Information in Architecture Walker, P.A. and Kamara, J.M. ....	1037
Role of Cultural Capital towards the Development of a Sustainable Business Model for Design Firm Internationalisation London, K. and Chen, J. ....	1049
Web Supported Process Management to Achieve Consistent International Project Team Integration and Performance Gray, C., Al Bizri, S. and Atkin, B. ....	1062
Managing Design with the Effective use of Communication Media: The Relationship between Design Dialogues and Design Team Meetings Emmitt, S. and den Otter, A. ....	1072
Integrating Design and Construction from a 'Lean Perspective' Jørgensen, B. and Emmitt, S. ....	1080
Intelligent Library and Tutoring System for EURASIA Project Kaklauskas, A. ....	1093
<b><u>Intelligent and Responsive Buildings (W098)</u></b>	
Design Strategy for the Integration of Climate-Responsive Building Elements in Dwellings Looman, R. ....	1106
The Climate Adaptive Skin: The Integral Solution to the Conflict between Comfort and Energy Performance Hasselaar, B. and Looman, R. ....	1115
Intelligent Buildings for Sustainable Construction Tetior, A. ....	1126
Towards a Continuum of Computational Building Simulation Tools to Support the Design and Evaluation of Complex Built Environments Conradie, D.C.U., Gibberd, J., Mentz, F. and Ras, H. ....	1135
Design of Intelligent Two-Storey Residential Buildings, Made of Ecologically-Safe Structures of Prefabricated Elements Aleksandrov, Y.T. ....	1151



## **Safety and Health in Construction (W099)**

Keeping Older Workers in Construction: Project Brief Leaviss, J.C., Gibb, A.G.F. and Bust, P.D. ....	1160
Characteristics of Accidents on Construction Work in Thailand and Prevention Guide Srinavin, K. ....	1168
Evaluating Health and Safety Performance of Nigerian Construction Site Olatunji, O.A., Aje, O.I. and Odugboye, F. ....	1176
Usability in the Workplace Case Study of Pamela Youde Eastern Hospital, Hong Kong Gilleard, J.D. and Granath, J.A. ....	1191
The Effect of Awareness of and Compliance with the Duty to Manage Asbestos Regulations Bust, P., Gibb, A. and Sinclair, A. ....	1198
Analysis of Accidents on Building Construction Sites Reported in Uganda during 2001 - 2005 Alinaitwe, H., Mwakali, J.A. and Hansson, B. ....	1208
Powered Aerial Access Platforms (PAAPs): Their use and Benefits Smallwood, J.J. ....	1222
Uptake of an OHS Code of Practice by Australian Construction Firms Charles, M.B., Furneaux, C., Pillay, J., Thorpe, Castillo, C.P. and Brown, K. ....	1238
Dealing with Cost and Time in the Portuguese Construction Industry Moura, H.P., Teixeira, J.C. and Pires, B. ....	1252
Developing the Management Practices and Cultural Values for the Deployment of Construction Quality Assessment Systems (CONQUAS): the MP&CV-AM approach Chileshe, N. and Sim, Y.L. ....	1266
A Review of Recent Legislative Developments in South Africa and Turkey Haupt, T.C., Müngen, M.U. and Türkoğlu, K. ....	1284
Social Housing Building Stock Renewal Needs: A Case Study Fernanda Rodrigues, M. and Cardoso Teixeira, J.M. ....	1299
Evaluating the H&S Performance of Nigerian Contractors Idoro, G.I. ....	1310
The Influence of Architectural Designers on Construction Ergonomics Smallwood, J. ....	1316
Health and Safety (H&S) in Roofing Smallwood, J. ....	1329

## **Information and Knowledge Management in Building (W102)**

Using the French EPDs to Compare and to Choose Building Products Lemaire, S., Chevalier, J., Guarracino, G. and Humbert, H. ....	1339
Innovative Housing Projects for Low Income Groups in Urban Central Areas: An Approach of Information and Knowledge Claper, J.R. and Salgado, M.S. ....	1352
Knowledge Creation and Absorptive Capacity: Influences of Social Capital Kurul, E., Colantonio, A. and Otsuka, N. ....	1363
Knowledge Sharing and Reuse for Improving Construction Project Earned Value Ribeiro, F.L. and Cintra, M.A.H. ....	1383
Technology and Knowledge Transfer for Capability Building in the Ghanaian Construction Industry van Egmond, E. and Erkelens, P. ....	1393



The Construction of the Knowledge Base of Fuzzy Expert System in Building Pathology – From a Functional Access Molnárka, G.....	1406
Towards a Sustainable Building Approach: Arenas of Enactment, Models of Diffusion and the Meaning of Demonstration Projects for Change Rubino, B., Edén, M. and Femenias, P.....	1418
FMEA Software to Enhance Innovation in Building Hans, J., Joffre, C., Boileve, C. and Fies, B.....	1430
Ready? Go the National E-Tendering Initiative – A Malaysian Experience Lou, E.C.W.....	1442
Innovation Circles Stimulating Construction Knowledge Exchange Abbott, C. and Jones, V.....	1456
Sharing Knowledge through the Construction Knowledge Exchange: A Demand-led Approach Lees, M., Wharton, A. and Williams, A.....	1479
Successful Collaboration with the Client - A Comparative Study of Three Public Project Networks Lonka, H., Haapalainen, P. and Naaranoja, M.....	1491
The Current Development of China's Construction Management Wang, H.....	1504
Open Residential Building in Iranian Context Mirmoghtadaee, M.....	1518
Knowledge Modelling for Performance Measurement of Built Environment Durmisevic, S., Sariyildiz, S. and Ciftcioglu, O.....	1531
<b><u>Open Building Implementation (W104)</u></b>	
Open Building within the Practice of Polish Architects Rynska, E.....	1542
Renovation and Alternation: An Efficient Way for the Existing Residential Building to Keep up with Social Life Gao, G., Guo, X. and Mei, Y.....	1553
Development of an Adaptable Integrated Façade System for Housing in Taiwan Wei, H.-Y., Tu, K.-J. and Lee, W-W.....	1561
Worlds of Difference: Constructing Urban Landscapes for Inhabitation Read, S.....	1576
Time as the Main Factor Krebbes, C. and Stojanović, P.....	1589
The Systemic Nature of the Construction Industry Fernández-Solís, J.L.....	1598
Urban Regeneration and Renewal: A Case Study of Gaziosmanpasa Municipality in Istanbul Tut, O., Tirampaci, M. and Kus, H.....	1626
Feng Shui: An Alternative Framework for Complexity in Design Mak, M.Y. and Ng, S.T.....	1638
Operable façade: An Open Building Approach for User Responsive Architecture Jia B.....	1652
Re-architecture of Industrial Heritage Bonsignori, C., Post, J. and Roders, A.P.....	1665
Study on the Development of Korean-Style Residential Open Building through the Remodelling of the Experimental Open Building of KICT Lee, S.O., Kim, S.A., Lim, S.H. and Hwang, E.K.....	1674



A Study on the Amendment of Regulations for the Activation of Long life Span Multifamily Housing Eun-Kyung, H.E., Am, K-S., Ho, L-S. and Ok, L-S. ....	1685
Teaching Architecture Students to Work with Distributed Design Kendall, S. ....	1694
Space and Time to Dwell Santa Ursula through 50 years Andrade, J. ....	1705
Designing for Diversity in South Africa: Opportunities for Inclusive Design through the Application of Open Building Karuseit, C. and Osman, A. ....	1718
Partnering and the Problem Resolution Process in Practice Mustafa, N.E. and Bowles, G. ....	1731
Urban Harvest, and the Hidden Building Resources Rovers, R. ....	1739
Participation Supported, Flexible and Appraisable Model - PSFAM in Urban Transformation Çelikhan S. and Türkoğlu, K. ....	1752
<b><u>Construction in Developing Countries (W107)</u></b>	
Side Stepping Poor Infrastructure: Enabling Environments in Developing Countries Gibberd, J. ....	1761
Construction as a Driver for Sustainable Regional Development: Focussing on Practice and People Tijhuis, W. ....	1772
Public Private Partnerships: The Provision of Social Infrastructure in Australia Jefferies, M., McGeorge, D., Cadman, K. and Eng, C.S. ....	1782
Joint Construction of Community Schools in Disadvantaged Areas Giebels, E.J.M., Favié, R., van Eekelen, A.L.M. and Maas, G.J. ....	1793
The Challenge of Engaging South Africa's Unemployed in Construction Sector Delivery Havemann, G. ....	1804
International Technology and Knowledge Flows among Foreign and Local Contractors in Ghana van Egmond, E. and Vulink, M. ....	1815
Mapping the Australian Regulatory Environment: Implications for Construction Firms Furneaux, C., Brown, K. and Hampson, K. ....	1827
Developing a Systems Framework for Sustainable Infrastructure Technologies (SIT) in the Built Environment Focussing on Health Facilities: A Case for Cape Town Saidi, M. ....	1840
Factors of Construction Time for Commercial and Residential Projects in India Choudhury, I. and Desai, A. ....	1853
Improving Housing Quality as a Marketing Strategy Fernandes, S., Cardoso Teixeira, J. and Lopes, J. ....	1859
Defining a Strategic National Agenda on the Theory of Construction for Development van Wyk, L. and Knoetze, T. ....	1870
The Declining Role of the General Contractor in the Kenyan Construction Sector Wachira, N., Root, D., Bowen, P. And Olima, W. ....	1883
School Infrastructure Performance Indicator System (SIPIS) Gibberd, J. ....	1894
The South African Construction Micro Enterprise Development Challenge Shakantu, W. and Kajimo-Shakantu, K. ....	1902





Student's Perception of the Service Learning Component of the Construction Studies Programme at the University of Cape Town Massyn, M. and le Jeune, K. ....	1916
Developing a Systems Analytical Framework for the National Poverty Alleviation System (NPAS): The Community Based Public Works Programme (CBPWP) Case Study Saidi, M. ....	1928
The Effect of Political Unrest on Construction Time for Food Grain Warehouses in Bangladesh Choudhury, I. ....	1941
Procurement Reform: A Research Agenda for Construction in Developing Countries Ofori, G. ....	1949

## **Informal Settlements and Affordable Housing (W110)**

Community Participation in the Upgrading of Informal Settlement & Housing at the River Bank of Surabaya Santosa, H.R. ....	1964
The Role of Urban Design in Developing Communities Giddings, B. ....	1972
People-Planet-Profit-(re)searching for Sustainable Urban Development – How Students from Hogeschool Utrecht, Institute for the Built Environment work in the Tshwane Region of South Africa van Keeken, E. and Goedknecht, D. ....	1985
High- Rise Buildings – Needs and Impacts Ibrahim, E. ....	1998
Adobe Technology - A Possible Solution to Urban Housing Problems in Ethiopia Hjort, B. and Sendabo, T. ....	2009
Reducing Construction Fall Accidents in the Maintenance Sector: An Industry-Based Survey from Hong Kong Chan, A.P.C., Wong, F.K.W., Chan, D.W.M., Yam, M.C.H., Kwok, A.W.K., Yiu, E.C.Y., Chan, E.H.W., Lam, E.W.M. and Cheung, E. ....	2021
Nature and Performance of Portuguese Real Estate Investment Funds Vasques, F., Teixeira, J. and Brandão, E. ....	2032
Low-Cost Housing: A Continuous Struggle (Overview, Research, Future) Erkelens, P.A. ....	2045
Opportunities for Clients' Requirements Management in a New Form of Housing Provision in Brazil Ferreira, F.P., Lima, L.P., Formoso, C.T. and Leite, F.L. ....	2055
Ready-made Shacks: Learning from the Informal Sector to meet Housing Needs in South Africa Lizarralde, G. and Root, D. ....	2068
Optimization of Building Materials and Designs towards Sustainable Building Construction in Urban Tanzania Makenya, A.R. and Nguluma, H.M. ....	2083
Ethics In Construction: Examples from Uganda Irumba, R. and Mwakali, J.A. ....	2094
Sustainable Construction Industry for Sustainable Environment: Trees for Shelter and Alternative Building Materials Elinorata, M. ....	2106
An Evaluation of Small Contractor Development Programme in Swaziland Thwala, W.D. and Mvubu, M. ....	2116
Harnessing the Informal and Formal SMME Construction Sectors to Resolve the South African Construction Skills Shortage Shakantu, W.M. and Kajimo-Shakantu, K. ....	2132



## **Law and Dispute Resolution (W113)**

Teaching Law to Undergraduate Surveyors and Construction Managers: A Problem based Learning Approach Donohoe, S. ....	2140
Recent Developments in Letters of Intent Naylor, D. and Green, M. ....	2155
The Contractor's Quality Obligations: Different Concepts under English and German Contract Law Hillig, J.-B. ....	2169
Application of Public Participation Provisions in Environmental Regulation: Implementation of the Water Framework Directive in UK and Germany Adshead, J. ....	2182
"What do you think of it so far?" The Views and Experiences of Specialist Contractors on Partnering in the UK Mason, J. ....	2192
Regulatory Systems for Building in Europe Meijer, F. and Visscher, H. ....	2207
Teaching and Learning Ethics: The Construction Manager's Perspective Mondejar, R., Cheung, S-O. and Suen, H. ....	2220
Tasks and Responsibilities for Building Control in Europe Visscher, H. and Meijer, F. ....	2234
The Evolution of Adjudication Law in the Construction Industry in New South Wales Uher, T.E. and Brand, M.C. ....	2245
Expert Evidence in Rights to Light Litigation: A Review of Judicial Attitudes to Current Practice in the UK Chynoweth, P. ....	2261
Incentives in Construction Contracts: Should we Pay for Performance? Hughes, W., Yohannes, I. and Hillig, J-B. ....	2272
Liability for Building Operations in Singapore: Sorry and then Safe? Christudason, A. ....	2284
A Facility Manager's Approach to Standardized Construction Contracts Thomas-Mobley, L. and Khuncumchoo, N. ....	2296

## **Smart and Sustainable Built Environments (TG55)**

Geosynthetics: Some Sustainable Design Concepts for Developing Countries Davies, P. ....	2309
Ecological Sustainability in Construction: A Vision for 2025 Amod, S. ....	2319
Innovation in Buildings: A Socio-Eco-Technical Approach Carassus, J. ....	2331
Managing Building Projects through Enhanced Communication – An ICT Based Strategy for Small and Medium Enterprises Yang, J., Ahuja, V. and Shankar, R. ....	2344
Steel and Zinc as an Important Component of Sustainable Construction White, R. ....	2358
Possibilities of Indoor Air Pollution due to Conventional Construction Industry Practices Debashis, S. ....	2370



The Building Material Selection Importance at the Building Design Process for its Sustainability Marques, F.M. and Salgado, M.S. ....	2384
The Construction Portuguese Industry seems to Ignore the Deconstruction Method Couto, A.B. and Couto, J.P. ....	2397
Environmental Criteria and Indicators used in Environmental Assessment of Buildings Haapio, A. and Viitaniemi, P. ....	2406
Sustainability Assessment of Buildings: Would LEED Lead Brazil Anywhere? da Silva, V. G. ....	2417
Sustainable Management of Construction Projects Schultmann, F. and Sunke, N. ....	2428
A Methodology for Predicting the Magnitude of Environmental Impacts Related to the Building Construction Process Gangoells M., Casals, M., Gassó, S., Forcada, N. and Roca, X. ....	2441
Energy Potential Mapping – A Systematic Approach to Sustainable Regional Planning based on Climate Change, Local Potentials and Exergy van den Dobbelsteen, A., Jansen, S., van Timmeren, A. and Roggema, R. ....	2450
The Impact of the Spanish Built Environment on Climate Change and the Implication to Legal Frameworks Gangoells M., Casals, M., Forcada, N. and Roca, X. ....	2461
Environmental Impact of Construction Products: Leaching Behaviour During Service Life Schiopu, N., Jayr, E., Méhu, J. and Moszkowicz, K. ....	2471
Project Performance Measurement for Productivity Improvements Gyadu-Asiedu W., Scheublin, F.J. and van Egmond-de Wilde de Ligny, E.L.C. ....	2484
Finding Complementary Lines for a Sustainable Development of Buildings in a Worsened Climate Radu, A. and Vasilache, M. ....	2496
<b><u>Industrialisation in Construction (TG57)</u></b>	
Advantages and Limitations of Precast Concrete Construction in High-rise Buildings: Hong Kong Case Studies Jaillon. L. and Poon, C.S. ....	2504
Innovative Sales Concept and Knowledge-Platform for Prefabricated Building Construction Girmscheid, G. and Kröcher, M. ....	2515
Strategy to Enhance use of ICT in Construction Frits, S. ....	2527
Applying Future Industrialised Processes to Construction Buswell, R.A., Gibb, A.G.F., Soar, R.C., Austin, S.A. and Thorpe, A. ....	2536
Design of One-Storey Residential Houses, made of Prefabricated Elements, Intended for Building in South Africa Aleksandrova, L. ....	2548
Designing Communications on International Projects Grisham, T. and Srinivasan, P. ....	2556
Reducing Construction Waste by Decisions within the Design Process Baldwin, A., Poon, C-S., Shen, L-Y., Austin, S. and Wong, I. ....	2568
A Systems Approach to Generate Integrated Design Solutions Richard, R-B. ....	2584
Industrializing the Construction Sector through Innovation – Tolerance Dilemma Landin, A. and Kämpe, P. ....	2596



Investigation into the Feasibility of Hybrid Concrete Construction (HCC) in South Africa Jurgens, C.J. and Wium, J.A.....	2607
Re-Architecture: Reality or Utopia? Roders, A.P., Post, J. and Erkelens, P.A.....	2619
Reusing and Recycling Construction Aggregates as Mitigation Measures to Environmental Destruction - The Case of Dar es Salaam, Tanzania Mufuruki; T.S., van Egmond; E.F.C. and Scheublin, F.J.M. ....	3033
Development in Assembling Sandwich Facade Units Vastert, E.W. ....	2640
Effect of Contract Programming on Project Performance in Nigeria Idoro, G.I. and Olalusi, O.C.....	2650
<b><u>Built Environment Complexity (TG62)</u></b>	
The Exponentialoid of Resource Consumption Fernández-Solís, J.L. ....	2655
A Decision making Tool based on Ontologies for Risks Evaluation and Systems Integration Forcada, N., Casals, M., Gangoellis, M., Roca, X. and Fuertes, A.....	2675
The Exponentialoid of Emissions Generation Fernández-Solís, J.L. ....	2685
The Cyclical Nature of Construction Industry Employment and Higher Education Recruitment Hurst, A., Hodgkinson, M. and Mutch, A. ....	2699
The Forces Behind the Exponentialoid Growth in Construction Fernández-Solís, J.L. ....	2710
Defining the Force that Tames an Exponentialoid Fernández-Solís, J.L. ....	2730
Complexity Theory and the Maintenance Paradigm Sharp, M. ....	2744
Systems Dynamics, Sustainability and Construction Complexity Fernandez-Solis, J.L. ....	2752
Models and Metaphors: Some Applications of Complexity Theory for Design, Construction and Property Management Rooke, J., Molloy, E.M., Sinclair, M., Koskela, L., Kagioglou, M., Siriwardena, M. and Siemieniuch, C. ....	2764
Inflation, Profit and Building Stojanović, P. and Krebbers, C. ....	2776
Comparison of Construction Materials and Techniques in New and Refurbished Housing Projects Cuperus, Y., Kawano, N., Lin, K., Marosszeky, M. and Murakami, S.....	2788
Principle Solutions with SILA Stojanović, P. and Krebbers, C. ....	2798
The Human Factor in Building Stojanović, P. and Krebbers, C. ....	2807
A Complexity-based Conceptual Framework for Whole Life Risk Assessment Boussabaine A. ....	2819
The Complexity of Issues Surrounding the Implementation of Continuing Professional Development for Construction Managers Hurst, A., Hodgkinson, M. and Mutch, A. ....	2829
The Contractor's Liability for Workmanship and Design: Is it a Matter of Competence or Status? Adriaanse, J. ....	2839





A Preliminary Report on Applications of the Most Economically Advantageous Tender (MEAT) Award Mechanism Dreschler, M., de Ridder, H. and Beheshti, R.....	2852
The Impact of the Workplace Safety and Health Act 2006 on the Developer Chan, P.....	2864
Project Contract Strategy Knowledge Base of Civil Engineers -the Time to Reflect Rwelamila, P.D. and Ruwaida Edries, R.....	2875

## **Disasters and the Built Environment (TG63)**

A Tale of Two Floods: Reconstruction after Flood Damage in New Zealand Wilkinson, S., Zuo, K., le Masurier, J. and van der Zon, J.....	2895
Modular Building Solutions for Emergency in Developing Countries Maiellaro, N., Lassandro, P., Lerario, A., Regina, G. and Zonno, M. ....	2907
Construction for Development (but also for Security?) Gueli, R.....	2920
PRE-EMPT: Developing a Protocol for Built-in Resilience to Disasters Bosher, L., Dainty, A., Carrillo, P. and Glass, J. ....	2931
Synergising Disaster Risk Management and Construction Research: A Multi-Disciplinary Initiative from the UK Goodier, C., Bosher, L., Fleming, A. and Soetanto, R. ....	2942
Regulatory Frameworks for Post-Disaster Reconstruction: Improving Resilience in the Process le Masurier, J., Rotimi, J.O. and Wilkinson, S. ....	2954
EURASIA: Role of Construction Education in Capacity Building for Facilities and Infrastructure Development within a Developing Country Setting Keraminiyage, K., Haigh, R., Amaratunga, D. and Baldry, D.....	2968
Knowledge Sharing in Disaster Risk Management Strategies: Sri Lankan Post-Tsunami Context Pathirage, C., Amaratunga, D., Haigh, R. and Baldry, D.....	2981
Improving Infrastructure to Reduce Future Vulnerabilities to Natural Disasters: Review of Infrastructure Development Associated with Post Tsunami Reconstruction in Sri Lanka Palliyaguru, R., Amaratunga D. and Haigh, R.....	2994
Improvement of Basic Functions for Visualizing Schedule and 3D Object in 4D CAD System Kang, L.S., Park, S.Y., Moon, H.S. and Kim, C.K.....	3009
The use of E-commerce Applications in Construction: An Interpretative Model Costantino N. and Pietroforte R. ....	3019

## **Miscellaneous**

The Role of Women in Construction Industry Development: The UK Perspective Shanmugam, M., Amaratunga, D. Haigh, R., Elvitigala, G., Baldry, D. and Ruddock, L.....	2627
The Structure of the South African Building and Construction Industry; Preliminary Results Milford, R., Ngozwana, N. and Dlungwana, S.....	3046
Uniqueness, Complexity and Risks in Construction Projects: Implications for Small/Medium Scale Contractor Development Programmes of South Africa Egbeonu, E.....	3064
Success Factors of Women Entrepreneurs in Construction Verwey, I.....	3081
Use of Steel-making Co-Products and Marble and Granite Industry Waste in the Production of Low Impact Building Components Gomes, V., Silva, J.G., Souza Filho M.L.S. and Silva, M.G.....	3103



Structural and Finishing Costs in Yemen Basel, S. ....	3116
The Challenges of Quantifying Construction Works for Project Control in Ghana Nani, G. and Adjei-Kumi, T. ....	3134
Regional Construction Markets: The Example of Bremen, Germany Brockmann, C. and Nolte, L. ....	3146
Liberalisation of Construction and Related Engineering Services Somba, J.J. ....	3159
A Comprehensive Framework for Building Design Support Yahiaoui, A. ....	3168
An Integrated Emerging Contractor Development Model for the Construction Industry: Practical Implementation and Statistical Quantification Hauptfleisch, D., Lazarus, S., Knoetze, T. and Liebenberg, S. ....	3181
The Importance of the Project Coordinator in Construction Management: The Entrepreneur's Vision Adesse. E. and Salgado, M.S. ....	3194

## **Additional Papers**

PPP Process Model for Service Provision - PPP tender and Award Process Model Dreyer, J. and Girmscheid, G. ....	3212
Sustainable Building Design - case study for Rio de Janeiro - Brazil Motta, A.L.T.S., Mainer, F.B., Valladão, A.L.R., Monteiro, L.P.C., Florentino, E. and Barroso, A.C.T. ....	3225
The Role of Women in Construction Industry Development: The UK Perspective Shanmugam, M., Amaratunga, D., Haigh, R., Elvitigala, G. Baldry, D. and Ruddock, L. ....	3233
Improving the Skills and Competencies of Knowledge Management 'Specialists' through Targeted Education and Training Egbu, C.O. and Ilozor, B.D. ....	3248
Construction Clients and Industry Innovations: an Understanding of their Roles and Impact Egbu, C.O. and Ilozor, B.D. ....	3259
Collaborative Teamwork in Construction: An Exploratory Study of the Role of Project Insurance Ndekugri, I. and Daeche, H. ....	3268
Sustainability as the Force that Tames an Exponentialoid Fernández-Solís, J.L. ....	3280
Safety and Quality in the Portuguese Construction industry Moura, H.P., Teixeira, J.C. and Pires, B. ....	3294
Holistic Enterprise Risk Management - Risk Coverage and Risk Control Girmscheid, G. ....	3307
Integrated Design and Production. Decision-making Tools for Optimal Industrialization of Housing Construction Monjo-Carrió, J., Oteiza, I. And Queipo de Llano, J.A. ....	3317

## Additional Papers

Upgrading Vecindades in downtown Mexico City	
Martin-Chavez, A.....	3327
Theoretical Study on solar and pellet heating systems to reduce electricity demand for residence heating	
Lundh, M and Wäckelgård, E.....	3337
Strategies for minimizing the whole of life cycle cost of reinforced concrete Bridge exposed to aggressive environment	
Humphreys, M. Setunge, S. Fenwick, J and Alwi, S.....	3349
The EU enlargement – a threat to health and safety on Norwegian construction sites	
Aslesen, S and Oedegaard, A.....	3361
Logistics in construction – Economic and environment sustainability in harmony	
Vidalakis, C. Tookey, J and Sommerville, J.....	3384
Human Resource Management Croatia Case	
Anita, C and Mladen, R.....	3397
Emotional Intelligence of Project Managers	
Mak, M and Cornwell, N.....	3409