

# ICE Proceedings

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## Bridge Engineering

174, No. 4, December 2021, 239–300  
PAPERS

### Humber bridge hanger replacements and testing

A. Arundel, D. Bishop, C. R. Hendy and C. Mundell

### Economic impact of bridge functionality loss from a resilience perspective: Queensferry Crossing, UK

A. W. Smith, S. A. Argyroudis, M. G. Winter and S. A. Mitoulis

### Non-linear soil–structure interaction of multi-span reinforced concrete integral bridge

M. Verma and S. S. Mishra

### Steel and composite tied-arch bridges: a conceptual approach to structural design

M. F. Granata, M. Arici, G. Longo and A. Recupero



## Construction Materials

174, No. 6, December 2021, 273–318  
PAPERS

### Characterisation of soils derived from different parent rocks from north central Nigeria

O. O. Owoyemi and G. O. Adeyemi

### Using index tests to predict the compressive strength of crystalline rocks

L. O. Afolagboye

### Steady-state and dynamic hygrothermal performance of rendered straw bale walls

A. Thomson, K. Dick and P. Walker

### A novel approach to evaluation of the cooling performance of pavement coatings

S. H. Liang, J. G. Niu, W. H. Zeng, Y. M. Ying and W. C. Hui



## Energy

174, No. 4, November 2021, 145–193  
PAPERS

### Performance and emissions of spark-ignition engines fuelled with petrol and methane

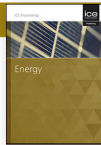
Y. Karagöz, Ö. Balcı, O. Gezer, H. Köten and Ö. Işın

### Impact of particulate matter and dust on photovoltaic systems in Shanghai, China

J. Ren, T. Chen, Z. Xu, N. Nick, S. Chen, X. Wu, C. Zhao and Y. Liu

### Prospects of shallow geothermal systems for sustainable heating and cooling of buildings

I. A. Gondal



## Engineering and Computational Mechanics

### 'Mechanics of Masonry Gravity Structures - part II'

174, No. 4, December 2021, 177–236  
PAPERS

### Understanding the rigid-block equilibrium method by way of mathematical programming

G. T. C. Kao, A. Iannuzzo, S. Coros, T. V. Mele and P. Block



## Behaviour of masonry walls strengthened with fibre-reinforced cementitious materials

T. Celano, F. Ceroni and G. P. Lignola

## A discrete rotating links model for the nonlinear torsion-shear behaviour of masonry joints

B. Pantò, C. Casapulla and I. Calió

## Engineering History and Heritage

Shells

174, No. 4, November 2021, 139–166  
PAPERS

### The Membrio Bridge, Spain: Roman origins with many rebuilds

P. Plasencia-Lozano

### The railway bridge in Meissen, Germany: a structure with a long history

M. Bartzsch, H. Heinz and R. Stein

### Pre-deflecting a steel platform to support a new organ at Manchester Cathedral, UK

E. Cochrane and C. Blackett-Ord



## Engineering Sustainability

174, No. 6, December 2021, 265–315  
PAPERS

### Studies on biocementation using natural growth ingredients for bacterial growth

S. P. Bhutange, M. V. Latkar and T. Chakrabarti

### New hybrid simulation model for urban construction waste management: an empirical study

Z. Ding, X. Cao, M. Shi, V. W. Y. Tam and I. M. C. S. Illankoon

### Life-cycle study of concrete bridges strengthened with carbon-fibre-reinforced polymer

C. Shi, J. Wang, Y. Liu, W. Luo, S. Mei, Y. Wang and J. Yu

### A new circular economy framework for construction projects

E. M. Medina and F. Fu



## Forensic Engineering

### Non-destructive testing – part I

174, No. 4, November 2021, 87–117  
PAPERS

### Assessing the suitability of bridge-scour-monitoring devices

P. J. Vardanega, G. Gavriel and M. Pregonolato

### Condition assessment and analysis of a reinforced concrete building in India: a case study

N. Anand, D. Andrushia, D. Paul and P. Arulraj



## Geotechnical Engineering

174, No. 6, December 2021, 611–706  
PAPERS

### Improved method for settlement prediction of shallow foundations on sand

R. Berardi and L. Cambiaggi

### Performance of geosynthetic-reinforced pile-supported embankment on soft marine deposit

R. P. Chen, Q. W. Liu, H. L. Wang, Y. Liu and Q. L. Ma

### Study on transient unloading loosening simulation test of excavation of jointed rock mass

Y. Luo, J. H. Huang, W. B. Lu, G. Zhang, X. P. Li and K. W. Song

### Discrete-element modelling of the trapdoor arching effect in sand and rubberised sand

H. Khatami, A. Deng and M. Jaksa

### Improved performance of calcareous sand subgrade reinforced by soilbags under traffic load

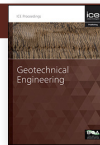
G. Ding, Y. Zhou, M. Wu and J. Wang

### Pile contribution to slope stability: application to open quays

F. R. Lopes, T. C. Freire, T. D. G. Campos, W. A. Lacerda and R. M. Gomes

### Effects of fines content and plasticity on liquefaction resistance of sands

K. Ranga Swamy, M. Akhila and N. Sankar



## Ground Improvement

174, No. 4, November 2021, 219–287  
PAPERS

### Introducing a novel tubular geotextile (braid structure) to reinforce sand beds

M. Noorbakhsh, M. Rowshanzamir, S. M. Abtahi and S. M. Hejazi

### Influence of cold curing temperature and freeze–thaw on the UCS of stabilised silty sand

M. Rothhämel and J. Laue

### Laboratory improvement of liquefiable sand by colloidal silica and weak cementation

A. Vranna and T. Tika

### Test studies on soil with cemented-soil piles under bidirectional cyclic loading

Y. Chen, J. Wang, K. Zhu, F. Liu, X. Hu and H. Fu

### Uniaxial compressive strength prediction of cement-treated granular soils

A. Majdi and P. Shakerifar

### Reinforcement of floating stone columns with spaced reinforcing rings

A. E. Yamchi and M. Ghazavi



## Management, Procurement and Law

174, No. 4, November 2021, 139–184  
PAPERS

### Influence diagrams for off-site construction manufacturing risk assessment in China

L. Zhang and A. Agapiou

### The influence of fees on the quality of professional services in South Africa

S. Laryea, R. Watermeyer and N. Govender



## MONITOR ICE Proceedings

### Maritime Engineering

174, No. 4, December 2021, 100–133  
PAPERS

**Study on characteristics of turbine wake and the effect of array arrangement**

E. Hou, M. Du, B. Jiang, L. Han, G. Wu and X. Wang

**Effect of tie rod anchor on the behaviour of berthing structures**

P. Premalatha, K. Muthukkumaran and P. Jayabalan

**Bottom-supported tension leg towers with inclined tethers for offshore wind turbines**

M. Ishtiyak, A. Sarkar, T. Fazeres-Ferradosa, P. Rosa-Santos and F. Taveira-Pinto



### Municipal Engineer

174, No. 4, December 2021, 191–254  
PAPERS

**Mining city resilience research**

J. Tian

**Effects of changes in locations of fault zones on property values**

N. Erdem

**Geomatic tools for sustainable planning: application for locating appropriate landfills**

A. El Maguiri and S. Souabi

**Effect of Syrian refugees on housing rents in the southeast of Turkey**

N. Erdem

**Prediction of the California bearing ratio from some field measurements of soils**

Y. Gül and H. M. Çayır



### Smart Infrastructure and Construction

The application of machine learning in smart infrastructure and construction  
173, No. 4, December 2020, 73–106  
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**Machine learning to inform tunnelling operations: recent advances and future trends**

B. B. Sheil, S. K. Suryasentana, M. A. Mooney and H. Zhu

**Effective stress parameter in unsaturated soils: an evolutionary-based prediction model**

A. A. Asr and A. A. Javadi



### Structures and Buildings

174, No. 12, December 2021, 902–980  
PAPERS

**A robust updated normal plane scheme for geometric non-linear structural analysis**

M. Rezaiee-Pajand and R. Naserian

**Development and application of large-scale model test system for underwater shield tunnels**

J. C. Yue, W. J. Li, P. Gao and S. X. Zhang

**Seismic behaviour of reinforced concrete frames with steel-plate shear walls**

M. Gholhaki, R. Barhemat and O. Rezaifar

**Tiny house/single-family house construction using ferrocement wall panels**

M. A. Saleem, M. M. Saleem and M. Irfan-ul-Hassan

**Study of load combination values for existing frame structures**

K. Cheng, J. Yao and Z. Cheng



### Transport

174, No. 7, December 2021, 405–466  
PAPERS

**Implications of different road pricing schemes in urban areas: a case study for Budapest**

M. M. Zefreh, D. Esztergar-Kiss and A. Torok

**Follower behavioural change based on natural patterns in traffic oscillation**

A. Salehikalam and A. A. Kordani

**Naturalistic measurement of driver eye height and object height using photogrammetry**

R. Llewellyn, P. Sarkar and M. D. Taylor

**Proposing new traffic operation index to improve interchange type selection procedure**

H. Behbahani, S. M. Hosseini, H. Asadi, S. A. Samerehi and A. Taherkhani

**Changing accessibility and connectivity from high-speed rail development in metropolitan China**

L. Wang and Y. Huang



### Urban Design and Planning

174, No. 4, November 2021, 131–183  
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**Role of aesthetics in conviviality of public open spaces in new market, Bhopal: A case study**

L. Thombre and C. Kapshe

**Continuity in tradition: a narrative on the cultural heritage of para and adda in Kolkata**

A. Biswas

**Spatial planning of the coastal alluvial plains in the North Central of Vietnam**

N. D. Thi, L. H. Dan, and M. Q. Khai

**Construction and energy aspects of affordable housing developments for formal settlements**

R. Presswood, H. L. Thadani, Y. I. Go, S. Afshan and A. K. Rweyora



### Waste and Resource Management

174, No. 4, November 2021, 97–122  
PAPER

**Influences of disposable wastewater addition on biodegradation of pretreated solid waste**

A. T. Tesseme and S. Chakma

**Visual detection of construction and demolition waste using multi-sensor fusion**

J. Zhuang, J. Yang, H. Fang, Y. Ku, W. Xiao and X. Zhang



### Water Management

174, No. 6, December 2021, 267–320  
PAPERS

**Comparative study of groundwater level forecasts using hybrid neural network models**

S. Afkhamifar and A. Sarraf

**A novel 'pressure index' for predicting number of pipe bursts in water distribution system**

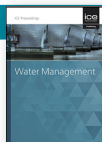
S. P. Akbarkhiavi and M. A. Imteaz

**Spatial analysis of blue and green water footprint of agricultural crop pattern in Turkey**

A. Muratoglu and Z. Avanoz

**Scouring of sand beds by short impinging turbulent jets**

M. R. Amin, N. Rajaratnam and D. Z. Zhu



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