

4th International Conference on Buildings, Construction and Environmental Engineering

IOP Conference Series: Materials Science and Engineering
Volume 737

Istanbul, Turkey
7-9 October 2019

Part 1 of 3

Editor:

Mustafa Al-Mukhtar

ISBN: 978-1-7138-4694-9
ISSN: 1757-8981

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.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.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

TABLE OF CONTENTS

PART 1

Preface

Peer review statement

STRUCTURAL AND CONSTRUCTION ENGINEERING MANAGEMENT

Effect of steel fiber on the shear transfer strength across a crack in reactive powder concrete	1
<i>Raad Abdulkhudhur, Hussein Al-Quraishi, Oday H Abdullah</i>	
Effect of web openings on effective flange width of reinforced concrete T-section	10
<i>E K Sayhood, N S Mohammed, A S Hanon</i>	
Stress-strain behavior of normal and high strength self-compacting concrete	20
<i>Mohammed Hashim Mohammed</i>	
Flexural behavior of self-compacting concrete voided slabs under monotonic loads	29
<i>Ihsan A Al-Shaarbaf, Abbas Ali Amar, Mohammed A Ahmed</i>	
Implication of Yield Lines Theory in Method Three of the ACI Code for Two-Way Reinforced Concrete Slabs	40
<i>Ali Hussein Ali Al-Ahmed, Mushriq Fuad Kadhim Al-Shamaa, Hasan Hussein Ali</i>	
Control of footstep vertical vibration for Vierendeel truss – supported steel footbridges	51
<i>Thamir K Al-Azawi, Mustafa W Abdulmajeed, Ali A Hashoosh</i>	
State of Building Information Modelling (BIM) adoption in Iraq	60
<i>Firas Alsaeedi, Mouhamed Jessam Lafta, Abdulazeez Ahmed</i>	
Flexural behavior of hybrid ultra-high-performance concrete	68
<i>L S Danha, Z A Abdul-Hussien, M S Abduljabbar, L A G Yassin</i>	
Punching shear strength of flat slabs strengthened with internal flexible CFRP patches	77
<i>Malik H Assi, Noor S Taresh</i>	
Effects of steel fibers on flexural strength and impact resistance for self-consolidating concrete plates	85
<i>Ahlam Sader Mohammed, Ali Attiea Jaber, Sura Amoori Abbas</i>	
Behavior of hybrid Reinforced Concrete Beams made with two types of concrete (Normal Weight and Reactive Powder Concrete)	95
<i>Khudhayer Najim Abdullh Kammash, Ayad Hameed Mseer, Osama Abd Alameer Eedan</i>	
Effective length and area of bolted steel plates attached externally to strengthen reinforced concrete beams	105
<i>Yaarub G Abtan</i>	
CFRP strengthening of steel plate girders with web openings subjected to shear and bending.	112
<i>Mohammed Abdulkareem Kadhim, Wael Shawky Abdulsahib, Ammar Abbas Ali</i>	

Development of steel structure connections for seismic resistance using composite steel bolts/rubber.....	120
<i>Suhaib J Ali, Amer M Ibrahim, Sarmad Shafeeq</i>	
On the general requirements for design of earthquake resistant buildings in the Turkish Building Seismic code of 2018.....	131
<i>K Güler, Z Celep</i>	
Structural Evaluation for Iraqi Ministry of Trade Building Exposed to Fire During 2003 War.....	141
<i>Aamer Najim Abbas, Wameedh Ghassan Abdul-Hussein, Luma Abdul Ghani Zghair</i>	
Flexural behavior of composite open web steel joist and concrete slab	149
<i>Marwah Sami Abduljabbar, Mohammed J Hamood, Wael Shawky Abdulsahib</i>	
Semi-Active Control Performance Index for magneto-rheological dampers considering s-structure interaction.....	159
<i>Arcan Yanik</i>	
Seismic Vulnerability of Rural Masonry Buildings After 2019 Acipayam Earthquake, Denizli, Turkey	168
<i>Kadir Güler, Fatih Sütçü, Ali Sari</i>	
Behavior of light weight reinforced concrete beam under elevated temperature	176
<i>Haitham Al-Thairy, Sajida Kadhem Al-Jasmi</i>	
Adaptation of local wisdom in contemporary mosque design for achieving good building physics and earthquake resistance	185
<i>Laina Hilma Sari, Izziah, Erna Meutia</i>	
Nonlinear analysis of hybrid reinforced concrete beams under flexural load	193
<i>Saja Jabbar Mohsin, Nisreen S Mohammed</i>	
Structural behavior of SCC continuous deep beam strengthening and retrofitting with carbon fiber reinforced polymer strips.....	203
<i>W J Al-Bdari, Nabeel Al-Bayati, A S Al-Shaarbaf</i>	
Flexural performance of conventional and reactive powder concrete built-up beams.....	214
<i>Ghazwan K Mohammed, Kaiss F Sarsam, Iqbal N Korkess</i>	
Free vibration of non-prismatic beam on variable Winkler elastic foundations.....	222
<i>Adel A Al-Azzawi, Khalida A Daud</i>	
Structural behaviour of SCC continuous deep beam strengthened with carbon fiber NSM and hybrid techniques	231
<i>W J Al-Bdari, Nabeel Al-Bayati, A S Al-Shaarbaf</i>	
The influence of RPC thickness on hybrid beams under torsion.....	243
<i>Alyaa H Mohammed, Qais A Hasan, Kaiss F Sarsam</i>	
Shear Strengthening of Composite Concrete Steel Plate Girders with Web Openings Using Steel Strips.....	252
<i>Wael Shawky Abdulsahib, Mohammed J Hamood, Ahmed Mohammed Majeed</i>	
Shear strength enhancement of reinforced self-compacting concrete box T-beams with different walled webs thickness using CFRP strips	262
<i>Ali Hameed Aziz, Mutaz Kahdom Madhloom, Muhammad Ali Jasem</i>	

Lap splices in steel fiber-reinforced reactive powder concrete beams under dynamic loading	272
<i>Husain Abdul Zinah Asaad, Maha Ghalib Ghaddar, Mohammed J Hamood</i>	
Seismic Performance Assessment of Istanbul Airport Viaduct According to Turkish Building Seismic Code 2007 by Pushover Analysis	283
<i>Ecem Sengül, Kadir Güler, Mgökhan Güler</i>	
Effect of external prestressing strands on the Yielding Stage behaviours of steel beams	291
<i>Kamal Sh Mahmoud, Mustafa A Yousif, Mohammed M Rasheed</i>	
Behavior of hybrid reinforced concrete columns	301
<i>Marawan M Hamid, Layla A G Yassin, Alyaa H Mohammed</i>	
Influence of steel fibers on the behavior of spirally RC short columns.....	311
<i>Raid I Khalel, Kaiss F Sarsam, Bilal A Al-Shamma</i>	
Structural Behavior of a Coupled Concrete Dam-Reservoir system under Effect of Earthquake loads Using Concrete Damaged Plasticity Model	323
<i>Qais Abdulmajeed Hasan, Saad Faik Abbas Al-Wakel, Aia Jaafar Sadeq</i>	
Performance Of Steel Beams With Circular Openings Under Static And Dynamic Loadings	333
<i>Raad Abdulkhudhur, Saba M Sabih, Nada Alhusayni, Mohammed J Hamood</i>	
Construction project planning using integration of crashing and concurrency techniques.....	343
<i>Haider Najy Hady, Luma Adnan Al-Kindi, Mahmoud A Mahmoud</i>	
Potential assessment of immersive visualization for better cost definition during semi-detailed engineering phase	353
<i>F Arif, R A Farooqi, M E Bayraktar</i>	
Influence of soil structure interaction on wind flow of tall building frames	361
<i>Mohammed Aelwi Al-Hamdani, Marawan Mohammed Hamid</i>	
Value Engineering and Constructability Assessment Relating Infrastructure Projects	369
<i>Suaad Khaleel I Al-Fadhli</i>	
Applying Earned Value to Construction Projects	380
<i>Suaad Khaleel I Al-Fadhli, Shahlaa Hikmat Al-Bazaz</i>	
Post-Blast Axial Capacity of CFRP Strengthened RC Columns	386
<i>Bessam Kadhom, Husham Almansour, Murat Saatcioglu</i>	

BUILDING MATERIAL AND NANO TECHNOLOGY

Evaluation of CO ₂ sequestration efficiency by Pozzolime concrete.....	395
<i>A J Alsaad, T S Al-Attar, B S Alshathr</i>	
Effects of palm fronds fibers on properties of high-volume fly ash concrete.....	403
<i>Basil S Al-Shathr, Osama A Eedan, Ruaa M Hussain</i>	
Upgrading of normal concrete service life by using SIFCON layers	412
<i>Dalya H Hameed, Shakir A Salih, Galib M Habeeb</i>	
The effect of using different percentages of soil and fine aggregate on stabilized earth bricks	422
<i>Ziyad M Abed</i>	

Experimental investigation on protection methods of Slurry Infiltrated Fiber Concrete in corrosive environments	431
<i>Mays Fouad Alrubaie, Shakir Ahmed Salih, Waleed Abd Alrazaq Abbas</i>	
Behaviour of square steel anchor plate in autoclaved aerated concrete block masonry	444
<i>V Verba, P Kholod</i>	
Sustainable metakaolin based pervious geopolymer concrete with recycled concrete aggregate	451
<i>Qais J Frayyeh, Wasan I Khalil, Haider T Abed</i>	
Experimental evaluation of stress-strain relations in compression for Pozzolime concrete	460
<i>T S Al-Attar, S S Abdulqader, R M Rashid</i>	
Relationship between steel mass loss and accelerated corrosion regimes in reinforced concrete columns	467
<i>Mushtaq Sadiq Radhi, Maan S Hassan, Iqbal N Gorgis</i>	
Some properties of green concrete with glass and plastic wastes	475
<i>W I Khalil, N F Al Obeidy</i>	
The effects of different polymer materials on concrete properties containing superabsorbent polymers (SAP)-experimental study	485
<i>Mustafa M Khattab, Sameh Badry Tobeia, Mouhamed Jessam Lafta</i>	
Properties of self-compacting mortar containing nano blast furnace slag	495
<i>Alaa Ab Atiyah, Shakir A Salih, Ahmed S Kadhim</i>	
Strengthening of reactive powder concrete T-beams with openings	505
<i>M B Abdulrahman, H M Rashid</i>	
Evaluation of the effect of the mechanical properties on the performance of interlocking concrete block pavement under the influence of petroleum products	515
<i>Safaa A Mohamad, Mohammed M Hasan, Sanaa A Mohammed</i>	
Modification of microstructure of cement mortars by water-soluble polyvinyl alcohol	524
<i>Waleed A Abbas, In Gorgis, M J Hussein</i>	
Effect of incorporating hydrated lime on strength gain of high-volume fly ash lightweight concrete	535
<i>M E Mohammed, B S Al-Shathr, T S Al-Attar</i>	
Evaluation of factors influencing the compressive strength of Portland cement statistically	543
<i>M A Salih, M R Aldikheeli, K A Shaalan</i>	
Studying the effect of waterproofing admixtures on some properties of cement mortar	553
<i>Rawa Shakir Muwashee, Hamid Athab Al-Jameel</i>	
Evaluation and nonlinear quantification of early age strength of concrete containing PCE polymer	564
<i>Lajan Burhan, Kawan Ghafar, Ahmed Mohammed</i>	
Microstructural investigation on fiber reinforced SCC subjected to sulphuric acid attack	576
<i>Mohammed M Salman, Qais J Frayyeh, Luma A Zghair</i>	
Investigating set-controlling additives for Pozzolime mixtures	586
<i>T S Al-Attar, B S Al-Shathr, R S Hadi</i>	
Behaviour of cement mortar containing Iron waste powder as substitute for sand	592
<i>Besma M Fahad, K S Jassim</i>	

Residual strength and degradation of cement mortar containing polypropylene fibers at elevated temperature.....	603
<i>Safa Saib Alani, Maan S Hassan, Ali A Jaber</i>	
Testing and Evaluation of Flowability, Viscosity and Long-Term Compressive Strength of Cement Modified with Polymeric Admixture WR Superplasticizer.....	613
<i>Lajan Burhan, Kawan Ghafor, Ahmed Mohammed</i>	
Influence of using different percentages of waste materials on the strength properties of polymer concrete	623
<i>Ahmed I Thari, Shakir A Salih, Shatha S Hasan</i>	
Properties of slag-based geopolymer pervious concrete for ambient curing condition	629
<i>Omer Ariož, Dillshad K H Bzeni, Rafah R A Zangy, Evren Ariož</i>	
Study the behavior of Slurry infiltrated fibrous concrete (SIFCON) under impact loading.....	638
<i>Manolia Abed Al-Wahab Ali, Shakir Ahmed Salih, Qais Jawad Frayyeh</i>	
Investigation of Mechanical and Physical Properties of Papyrus Reeds Reinforced Composites with Polyester.....	647
<i>M A Al Hassan, R A Azeez, W A Kadhim, M G Albarazanji</i>	
Impact resistance and mechanical properties of High Strength Concrete containing local material	653
<i>Rana Shabbar</i>	
Flexural Behavior of Square Ferrocement Panels Enhanced with Recycled Tires Sim Strengthened by CFRP	663
<i>Muyasser M Jomaah, Zeyad T Ismael, Marwah Q Majeed, Banan M Hameed</i>	
Some properties of sustainable concrete with mixed plastic waste aggregate.....	673
<i>W I Khalil, H M Mahdi</i>	
Strength and thermal conductivity of geopolymer pervious concrete made from artificial lightweight aggregate	682
<i>I F Nasser, W I Khalil, Wa Abbas</i>	
Study the effect of using different quenching mediums on erosive wear behavior of high chromium white cast iron	690
<i>Zainab Azeez Betti, A H Ataiwi</i>	
Mechanical and durability properties of cementitious brick containing Nano Ferrite.....	698
<i>Rasha R Rawdhan, Ghaed K Salman, Muaid M Ismail</i>	
Improvement of polyurethane thermal insulation materials by using corn stalk	707
<i>I Sanri Karapinar</i>	
Smart textiles for the architectural façade	713
<i>W D Abdul Jalil</i>	

GEOTECHNICAL AND GEOLOGICAL ENGINEERING

A New Proposed Type of Open-Ended Pipe Pile (Open-Ended Pipe Pile with Tapered Tip Pile (OE-TTP))	723
<i>Wissam Hs Al-Soudani, Bushra S Albusoda</i>	

Settlement assessment of gypseous sand after time-based soaking.....	736
<i>Mohammed Sh Mahmood, Ali Akhtarpour, Rusul Almahmodi, Mustafa Mabdal Husain</i>	
Performance of piled raft foundations under the effect of dewatering nearby an open pit.....	746
<i>G S Al-Qaisee, M D Ahmed, B A Ahmed</i>	
The morphology and elemental variation for contaminated clay soil using Energy Dispersive X-Ray Spectrometry	755
<i>K A Saeed, S A Hashim</i>	
Field study of the effect of jet grouting parameters on strength based on tensile and unconfined compressive strength	765
<i>Ali M Al-Kinani, Mahmood D Ahmed</i>	
Improvement of the Gypseous soil properties by using Copolymer and Styrene-butadiene rubber.....	776
<i>Balqees A Ahmed, Maysam Th Al-Hadidi, Dhay Wadday Mohammed</i>	
Behavior of pile embedded in different soil types under the effect of earthquake	785
<i>Ruba H Sa'Ur, Qassun S Mohammed Shafiqu</i>	

PART 2

Measuring pile shaft and tip capacities of a single pile embedded in saturated and unsaturated expansive clayey soil.....	797
<i>Shaimaa Hasan Fadhil, Raid R Al-Omari, Mohammed Y Fattah</i>	
Effect of Tire Layer on Bearing Capacity of Foundation	813
<i>Khalid W Abd Al-Kaream, Ahmeed S Abdulrasool, Zainab H Shaker</i>	
Behavior of batter pile group models embedded in sandy soil under monotonic loading	820
<i>M A Al-Neami, F H Rahil, K S Al-Bayati</i>	
Effect of mode of vibration on the response of machine foundation on sand.....	832
<i>Khalid Wabd Al-Kaream, Mohammed Y Fattah, Zeyad S M Khaled</i>	
Numerical evaluation of rock strength with different sizes of circular opening.....	842
<i>Moataz A Al-Obaydi, Yussra H Al-Jobory</i>	
Dynamic response of pile group model in sandy soil to lateral excitation	851
<i>Mohammed Y Fattah, Hussein H Karim, Makki K M Al-Recaby</i>	
Effect of fly ash on bearing capacity of clayey soil.....	866
<i>H H Karim, K Y Al-Soudany, M K Al-Recaby</i>	
The Effect of Group of Piles on Existing Tunnel	876
<i>Nahla M Salim, Sherine Jafaar Lafta</i>	
Load carrying capacity of rectangular foundation on geogrid reinforced sloped sandy soil	886
<i>Mohammed Y Fattah, Sinan A Al-Haddad, Mudhafar K Hameedi</i>	
Clay Columns Stabilized with Fly Ash in Soft Soils.....	895
<i>Husam Hikmat Baqir, Kawther Yhal-Soudany, Ahmed Sa Al-Gharbawi</i>	
Effect of diameter on the load carrying capacity of Closed-Open Ended Pipe piles	904
<i>Wissam Hs Al-Soudani, Mohammed Y Fattah</i>	

Application of energy absorbing layer to soil-structure interaction analysis.....	914
<i>Ahmed S Abdulrasool, Mohammed Y Fattah, Nahla M Salim</i>	
Comparison of results of pre-consolidation of soft soil using analytical and finite element software	924
<i>Muhamd D Abdulnafaa, Ayman W Al-Dabbagh, Mohammed S Mahmood</i>	
Geotechnical characteristics correlations for fine-grained soils	934
<i>Nihad Bahaaldeen Salih</i>	
Penetration of warm heavy fuel oil waste in gypseous soil	946
<i>A A Al-Obaidi, R A Homemade, D Kh Thieban</i>	
Bearing capacity of piles in unsaturated soil from theoretical and experimental approaches	955
<i>Raid R Al-Omari, Mohammed Y Fattah, Abbas M Kallawi</i>	
Analysis of piled raft foundation in sandy soil using full scale models	971
<i>H H Hussein, H H Karim, K T Shlash</i>	
Collapsibility of gypseous soil under suction control.....	980
<i>Q A Al-Obaidi, H H Karim, A A Al-Shamoosi</i>	
Implementation of the Space and Terrestrial information to Use Geological Deposits in Engineering Construction in Western Desert/Iraq.....	988
<i>Raad Mwafur Abdulrazzaq</i>	
Behavior of passive single pipe pile in sandy soil.....	1003
<i>M O Karkush, An Aljorany, G S Jaffar</i>	
The Behavior of Plugged Pipe Piles Strengthened with Biaxial Carbon-Fiber under the Effect of Lateral Loads.....	1015
<i>Saad Faik Abbas Al-Wakel, Karim Hadi Ibrahim, Iman Abd Ul Kadhim Ali</i>	
Effect of Relative Compaction on the Bearing Capacity of Cohesive Soils.....	1027
<i>Anwar Luay Al-Obaidi, Mustafa A Yousif, Alaa Ihssan Hamid</i>	
Behavior of grouting pile in sandy soil.....	1037
<i>H H Hussein</i>	
Mitigation of collapse of marshes soil by nano silica fume.....	1045
<i>Alaa D Almurshedi, Jawad K Thijeel, Khabeer Al-Awad</i>	
Comparative study of theoretical methods for estimating pile capacity using 1-g model pile tests in cohesionless soil	1053
<i>Husain Ali Abdul-Husain</i>	
Study the behavior of square footing in clayey soil subjected to vertical loading.....	1064
<i>Mohanned Q Waheed, Awf A Khalid, Falah H Rahil</i>	
Effect of Flange to Web Ratio of H-Pile On Compression Bearing Capacity	1070
<i>Mahmood R Mahmood, Nahla Mn Salim, Mohammed F Abdulsamad</i>	
Effect of Track Speed on the Behavior of Railway Track Ballast System underlain by Clay.....	1086
<i>Mohammed Y Fattah, Mahmood R Mahmood, Mohammed F Aswad</i>	
Geotechnical properties of gypseous soil contaminated with crude oil.....	1097
<i>Rana Aj Al-Adhamii, Falah H Rahil, Yasser M Kadhim, Thaer A Atia</i>	

Multiple Regression and ANN (MLP) Model for Predicting Swelling index of Ramadi Cohesive Soil	1108
<i>Ahmed H Abdulkareem, Dalal O Aziz</i>	

EVALUATION OF PULL-OUT CAPACITIES OF DIFFERENT PILE MODELS EMBEDDED IN UNSATURATED SANDY SOIL	1116
<i>Mahmood Rashid Mahmood, Shaymaa T Kadhim, Waleed K Sarhan</i>	

TRANSPORTATION AND HIGHWAY ENGINEERING

Enhancement of porous asphalt mixture for resisting environmental conditions using modified asphalt.....	1132
<i>Miran Bahyam Ahmed, Alaa Hussein Abed, Yasir Mawla Hammood Al-Badran</i>	

Developing International Roughness Index (IRI) Model from visible pavement distresses	1145
<i>Hasan H Joni, Miami M Hilal, Muataz S Abed</i>	

Properties of modified asphalt mixtures with additives of fillers materials.....	1154
<i>Hasan H Joni, Hussein H Zghair</i>	

Evaluation of moisture-induced damage of stone matrix asphalt mixture with polymer modified binder.....	1167
<i>K H Ibrahim Al Helo, Z I Qasim, D A Khalaf</i>	

Carbon Fiber-Reinforced Asphalt Concrete: An Investigation of Some Electrical and Mechanical Properties.....	1179
<i>Faten I Mussa, Ali M Al-Dahawi, Qais S Banyhussan, Muna R Baanoon, Mariam A Shalash</i>	

Comparative study for safety performance measures of signalized intersection sites	1189
<i>Raghad Zeki Abdul Majeed, Hussein A Ewadh</i>	

Investigating hospital parking demand characteristics in Iraq: Al-Sadar Hospital as case study	1198
<i>Hamid Athab Eedan Al-Jameel, Husam Abdul Ridha Hasnawi, Mohammed Abbas Al-Jumaili</i>	

Evaluation of Warm Mix Asphalt Performance Involving Synthetic Zeolite.....	1209
<i>Humam H Mohammed, Ahmed Naji Mustafa</i>	

Characteristics of asphalt binder modified with waste vegetable oil and waste plastics	1220
<i>Hasan H Joni, Rasha H A Al-Rubae, Mahdi A Al-Zerkani</i>	

Prediction models for distress noise generated due to tire-pavement surface interaction.....	1230
<i>Ammar A M Shubber, Rasha H A Al-Rubae, Mustafa Hadi Taher</i>	

Evaluation of rigid pavement using the Pavement Condition Index: A Case Study.....	1239
<i>Rasha H A Al-Rubae, Ammar A M Shubber, Hussein Saad Khaleefah</i>	

Study the effect of adding crumb rubber on the performance of hot mix asphalt	1257
<i>Teba Tariq Khaled, Ghufraan Mohammed Aboud, Rwayda Khs Al-Hamd</i>	

Evaluations of traffic flow on Al-Yarmouk Overpass Bridge	1268
<i>Abdul-Razak T Ziboon, Zaynab I Qasim, Almas Faraj</i>	

Effect of laboratory aging on moisture susceptibility of polymer-modified bituminous mixtures.....	1279
<i>K H Ibrahim Al Helo, Z I Qasim, M A Abdulhussein</i>	

Off-street parking characteristics in Al-Hilla City Center.....	1289
<i>Hasan Jony, Muhand Jawad, Hamid Athab Al-Jameel</i>	
Investigations of the road pavement surface conditions using MATLAB image processing.....	1300
<i>Hasan Hamodi Joni, Imzahim Abdulkareem Alwan, Ghazwan Adnan Naji</i>	
Investigation of Rheological Properties of Iraqi Asphalt Cement.....	1309
<i>Abdulhaq Hadi Abedali Al-Haddad</i>	
Design of an Expert System for Airport Rubber Removal.....	1321
<i>Ahmed S Abduljabbar, Nawal Dawood Salman, Zeena Tariq Jaleel</i>	
Simulation of traffic flow in unsignalized roundabout using SIDRA software evaluation in Baghdad City.....	1333
<i>Maysam Ali Yousif, Abdulrazzak T Ziboon, Zaynab Ibrahim Qasim</i>	
Numerical solution of rainfall infiltration beneath flexible pavement.....	1341
<i>Aqeel Sh Al-Adili, Rasha H Al-Rubae, Mays O Fouad</i>	
Evaluating the rutting resistance for half warm bituminous emulsion mixtures comprising ordinary portland cement and polymer.....	1353
<i>Muna Al-Kafaji, Shakir Al-Busaltan, Hussein A Ewadh</i>	
Land use of Al-Ramadi City and its Impact on Sustainable Transport Strategies Using (AHP).....	1362
<i>Thaer Sh Mahmood, Arwa H Ibraheem</i>	
Analysis of traffic accident severity in Baghdad city using Binary Logistic Regression Model.....	1370
<i>Hasan H Joni, Ali M Al-Dahawi, Omar J Al-Tamimi</i>	
Assessment of the mechanical properties of concrete pavement containing crumb rubber of tires.....	1381
<i>Muhaned G Al-Khuzai, Basim H Al-Humeidawi, Ra'Id F Al-Sa'Idi</i>	
Measuring the Pavement Distress by Implementing the Tire Sound Noise.....	1394
<i>Ammar Am Shubber, Rasha H A Al-Rubae, Hawraa Faisal Jabar</i>	
Traffic signs comprehension study.....	1401
<i>Ahmed S Abduljabbar, Zeena Tariq Jaleel, Nawal Dawood Salman</i>	
Using Airport Geographic Information Systems (AGIS) to develop a comprehensive digital library for Erbil International Airport.....	1410
<i>Waseem W Hammodat, Asmaa Th Ibraheem, Yusuf K Demir</i>	
Subgrade stabilization strategies effect on pavement thickness according to AASHTO pavement design method. (Review).....	1419
<i>Khawla Hh Shubber, Ahmed Abedulridha Saad</i>	
Evaluating the Negative Impact of Traffic Congestion on Air Pollution at Signalized Intersection.....	1430
<i>Maan K Alobaidi, Rawand M Badri, Mohammed M Salman</i>	
Effect of Silica fume on Cold Mix Asphalt Mixture.....	1440
<i>Ahlam Khudair Al-Zarjawi, Zaid Abdulzahra Mahdi, Haneen Hamza Abbas</i>	
Effect of Silica on Hot Mix Asphalt Mixture.....	1448
<i>Ahlam Khudair Al-Zarjawi, Bahaa Turki Mashkur, Zaid Abd Al-Zahra</i>	

WATER RESOURCES ENGINEERING

Estimation of reliable Stage-Discharge Curve in meandering river using Conveyance Estimation System (CES) Model.....	1458
<i>Jaafar S Maatooq, Luay K Hameed</i>	
Investigation and evaluation of Discharge Coefficient for the trapezoidal labyrinth weir	1466
<i>Marwah Abdullah Shlash, Hayder Sami Mohammed, Safaa Khashim Aal-Khalaf</i>	
Three-dimensional numerical model of Baghdad metro with fluctuation of ground water.....	1475
<i>Aqeel Al-Adili, Muammer Al-Tae</i>	
The rationing system effect on seepage from the cement-treated gypsum canals	1486
<i>Maysam Th Al-Hadidi, Wissam S Al-Jassim</i>	
Water Hammer Analysis in the main pipe-line for the proposed Taq-Taq Dam irrigation project in Iraq	1496
<i>I R Karim, S A Sahib, H H Abdullah, R R Aziz</i>	
Generalize new method to determine the location of the control setion in the box culvert under inlet control.....	1507
<i>J S Maatooq, H A Omran, M M Taha</i>	
Modelling water quantity parameters using Artificial Intelligence techniques, A case study Abu-Ziriq Marsh in south of Iraq.	1516
<i>Mustafa Al-Mukhtar, Fuaad Al-Yaseen, Jamal Sahib</i>	
Experimental Investigation of the Debris Configurations Effects on the Scour Hole Morphology at Circular Bridge Piers	1525
<i>Mahmoud Saleh Al-Khafaji, Aysar Tuama Al-Awadi</i>	
Dissipation energy of Flow by Stepped Type Gabion Weir	1535
<i>A M Al-Fawzy, F M Al-Mohammed, Th J Al-Fatlawi, R Z Al-Zubaidy</i>	
Simulation of groundwater fluctuation for Baghdad City and its effect on soil properties	1545
<i>R H Irzooki, A A Al-Obaidi, H F Al-Dulaimy</i>	
Hydrological study and analysis for proposed Al-Arkhama Dam, Iraq	1556
<i>Saad Sh Sammen, Qasim H Jalut, Ala Hassan Nama</i>	
Regional flood frequency analysis for flood index estimation in hydrologic regions with limited flood data.....	1565
<i>Abdulwahab M Younis</i>	
Hydrogeological characteristics of Dammam confined aquifer, West Razzaza Lake, Iraq.....	1577
<i>Moutaz Al-Dabbas, Qusai Al-Kubaisi, Tariq A Hussain, Shahad Al-Qaraghuli</i>	
A Rainfall-Runoff model for highly urbanized areas: A case study at Istanbul Technical University main campus.....	1586
<i>S Samouei, M Özger</i>	
Location of the Outlet of the West Part of Al Hammar Marsh.....	1593
<i>Jamal S Makki, Riyadh Z Al Zubaidy</i>	
Generation of rainfall for Mosul city using statistical downscaling method (SDSM).....	1604
<i>A S Abbas, T M Abdulateef</i>	

PART 3

- Definition of the best probability distribution functions for annual minimum flows in the rivers of the Upper Euphrates River Basin, Turkey 1612
Fatih Tosunoglu, Ercan Kahya

ENVIRONMENTAL ENGINEERING AND SUSTAINABILITY

- CWWQI on the Evaluation of Effluent Wastewater from Al-Dora Refinery WWTP..... 1619
Afaf J Obiad, Ammar A Al-Sultan
- 3D Filtration Membrane prepared from ceramic 1629
Ghasaq Abd Ali, Riyadh Al-Anbari, Abdul Hameed Al-Obaidy
- Decolorization of Crystal Violet from Aqueous Solution Using Electrofenton Process 1638
Hadis Fattahi, Hazhir Karimi, Samira Amiri, Shohreh Heshmati, Fatemeh Hosseini, Hooshyar Hossini, Yaseen T Mustafa
- Urban landscape improvement by small architectures Case study: Al-Kadhimiya Shrine..... 1646
Khawla K Kawther, Rasha Hussien
- Biochar from date palm waste, production, characteristics and use in the treatment of pollutants: A Review..... 1664
Aola Hf Tahir, Abdul Hameed Mj Al-Obaidy, Faris H Mohammed
- Studying the performance of an Activated Carbon Filter using almond shell 1674
Ayat H Mahdi, Ghaidaa Majeed Jaid, Nada S Assi
- Flexural behaviour of reinforced concrete beams containing waste plastic fibers 1687
Ai Al-Hadihi, Mb Abdulrahman, M I Al-Rawi
- Comparative analysis of weighted arithmetic and CCME Water Quality Index estimation methods, accuracy and representation..... 1698
Mohammed Dheyaa Noori
- Occurrence of Residual Organophosphorus Pesticides in soil of some Asian countries, Australia and Nigeria 1708
M Pirsasheb, M Nouri, Hazhir Karimi, Yaseen T Mustafa, Hooshyar Hossini, Zohreh Naderi
- Production of friendly cementations materials containing nano limestone powder 1719
Hasan N Tawfeeq, Shakir A Salih, Qais J Frayyeh
- Reusing of condensate water harvesting from spilt units for domestic and irrigation purposes: residential complex in Al-Mussiab Technical Institute and College, Iraq, as a case study 1727
A Z Al-Qaisi, Z H Ali, M A Mahdi
- Removal of heavy metals from industrial wastewater by use of Cyclopentane - Clathrate Hydrate formation technology..... 1734
Shurooq T Al-Hemeri, Riyadh S Al-Mukhtar, Marwa N Hussine
- The place attachment value, measurement of place potentials 1747
Safiya M Khalil, Mustafa A Ebrahim
- Equation of mixed land use that achieve sustainability 1754
Samir Nori Alourafi, Areaj Khairy Alrawi

Analyzing Urban Attraction Nodes by using GIS and Space Syntax (case study-Al-Adhamiya).....	1759
<i>M J Hamzah, M A Ebraheem</i>	
Measuring Accessibility in low density Housing: The Role of neighbourhood design.....	1770
<i>Zainab I Abass, Richard Tucker</i>	
Using GIS Technique for evaluating water quality of Abu Zarag marsh during the flood season	1779
<i>Ahmed Zamel Hassan, Nawar Oa Al-Musawi</i>	
Disaster and crises management strategy	1789
<i>A N Shamkhi, M A Ebraheem</i>	
Effect of porosity on thermal conductivity of porous materials	1800
<i>H H Humaish</i>	
Lead, Nickel and Cadmium in the coating of children's toys effects and influencing factors	1809
<i>G Y Al Kindi, Z H Ali</i>	
Microbial community structure of activated sludge in treatment plants with different seasons.....	1817
<i>G Y Al Kindi, A H Alwan, A A Al-Kemawee</i>	
Nitric Oxide Reduction by Applying Various Coating Methods of TiO ₂ on Cementitious Materials.....	1828
<i>Ayat Hussein, Riyadh H Al Anbari, Maan S Hassan</i>	
Degradation of Organic Cibacron Navy FN-B Dye by Photocatalysis Process Using ZnS	1837
<i>Safaa Nasser Hassan Al-Hussaini, Eman Abd Mohammed, Nadia Matter Almhana</i>	
The Impact of the distribution of Fuel Stations on the Urban Environment Case Study Kut-Iraq	1848
<i>A J Ihsan, A E Mustafa, A A Akeel</i>	
Electrocoagulation treatment of oil-based mud wastewater	1856
<i>N A Al-Rubaiey, M G Albrazanji, M Abdulkareem</i>	
Dyes removal by use carbon nanotube and carbon nanotube functional group.....	1864
<i>Ahmed Abdulabbas, Zainab Bhaa, Abdulkhaleq Kamal</i>	
Effect of ceramic waste as an adsorbent.....	1873
<i>Sa Khaleefa Ali, Bm Fahad, Ht Hamad</i>	
Improvement in demulsification of Iraqi crude oil with water removal demulsifiers in oil fields	1882
<i>Haider Ahmed Hadi, Thamer Jasim Mohammed</i>	
Optimization Process for Removing of Copper ions from Groundwater of Iraq Using Watermelon Shells as Natural Adsorbent	1896
<i>Raheek I Ibrahim</i>	
Urban multicultural space.....	1907
<i>S A Hasan, R M Hassan</i>	
The prospect and challenges of renewable hydrogen production in Iraq.....	1918
<i>May Ali Alsaffar, Bamidele Victor Ayodele, Mohamed A Abdel Ghany, Zainab Yousif Shnain, Siti Indati Mustapa</i>	
Removal of oil from produced water using biosorbent	1926
<i>Tagreed Lutfee, Jenan A Al-Najar, Firdos M Abdulla</i>	

Evaluate education in the Marshes of Southern Dhi-Qar toward a new paradigm of sustainability.....	1933
<i>Sophia Rezaq Al-Timimy, Moheb Al-Rawe</i>	
Reducing steel scrap in fabrication of steel storage tanks	1943
<i>Luma A H Al-Kindi, Wadood K K Al-Ghabban</i>	
Producing a sustainable type of concrete enhanced by industrial polystyrene	1953
<i>Faaeza Ahmed Abdulkareem, Zainab Bahaa Mohammed, Ali Sadiq Resheq, Ahmed Abdul Abbas</i>	
Evaluation of selected landfill sites using Landfill Site Rating Method (Diyala Governorate as a Case Study).....	1963
<i>G F Jumaha, Z Yi Jasem, M Alshweikh</i>	
Production of environment friendly diesel fuel from sunflower oil over Iraqi limestone synthesized catalyst.....	1970
<i>A N Saeed, F T Al-Sudani</i>	
Assessment of Tigris River Water Quality in Mosul for Drinking and Domestic Use by Applying CCME Water Quality Index	1977
<i>Amina F Farhan, Kossay K Al-Ahmady, Nawfal Abd-Aljabbar Al-Masry</i>	
The theoretical and practical dimension of sustainability in architecture: Analytical study of a number of architectural projects	1990
<i>Oday Abbas Abood, Enas Salim Abdl Ahad, Nawal Abdul Amir Khamis</i>	
Management of solid waste in two hospitals in Baghdad-Iraq	2005
<i>Faten Gh Dawood, D A Hussien, Bz Lateef, M Raad, I Muthanna</i>	
Optimization of oxytetracycline sorption onto iron modified montmorillonite.....	2012
<i>Mahmood M Barbooti, Najah M Alshuwaiki, Haiyan Su</i>	
Creation and Operation of Recreational Footpath System	2027
<i>S M Romanov, A A Popov</i>	
The pavements by precast concrete flags	2036
<i>Khawla K Kawther, Rasha Hussien, Narjis Sabih</i>	

GEOMATIC AND SURVEYING ENGINEERING

Evaluation of existing transportation in Holy Najaf.....	2052
<i>Hisham M Jawad Al Sharaa, Israa Hatem, Heba Abdul Razzak T Ziboon</i>	
MODIS and Landsat satellite images comparison for modeling near surface air temperature.....	2061
<i>O Z Jasim, R H Al-Anbari, Z T Mohammed</i>	
Toward City Web Mapping in developing countries using satellite and stereo aerial imagery: A Case Study.....	2073
<i>Haval Abduljabbar Sadeq</i>	
Accessibility indicators from a gender perspective	2083
<i>Zahraa Imad Hussain Al-Hussaini, Shaimaa Hussain Hameed Al-Ahbab</i>	
Designing a building facility using GIS	2093
<i>Hameed Sarhan Ismael</i>	

Urban expansion of Baghdad city and its impact on the formation of Thermal Island based upon Multi-Temporal Analysis of satellite images.....	2099
<i>Oday Jasim, Abdul-Rahman B Ali, Noor Hashim Hamed</i>	
Selection of Suitable Site for Solid Waste Landfill : a case study in Kirkuk City, Iraq	2106
<i>Najat Q Omar, Iman A Shawkat, Sami H Ali, Sohaib K M Abujayyab</i>	
Comparison between Saaty's approach and Alonso and Lamata's approach in site selection process	2115
<i>Amjed Naser M Al-Hameedawi</i>	
Assessment of Heavy Metal Contamination in the Soil of Al-Muthanna Storage Site using Geospatial techniques.....	2122
<i>Hisham M Jawad Al Sharaa, Abdul Hameed M Jawad Al Obaidy, Abdul Razzak T Ziboon</i>	
Desertification categorisation based on spatial analysis and remote sensing technology.....	2129
<i>Tay H Shihab, Amjed N M Al-Hameedawi, Ammar M Hamza</i>	
Change Detection of harvested palm areas by using spectral angle mapper algorithm case study Dora in Baghdad.....	2136
<i>S K Aal-Hummadi, A L Obeydi, N S Nuaimy</i>	
Early flood detection using SAR images and remote sensing techniques-case study Kut city in Iraq	2144
<i>A L Obeydi, S K Aal-Hummadi, A H Al-Saady</i>	
Building HEC-RAS model to detect the areas of Water Cycle Interruption in river stream and their sections	2153
<i>Ali Dhafer Abed, Shahad Anees Al-Chalabi, Maythm M Al-Bakri</i>	
Integrating various satellite images for identification of the water bodies through using machine learning: A case study of Salah Adin, Iraq	2165
<i>Ahmed Fouad Nashait, O Z Jasim, M M Ismail, F H Saad</i>	
Geotechnical maps for Salah Al-Deen-Iraq.....	2174
<i>Mohammed Sahib Mohammed, Musaab Falih Hasan, Khaldoon Satea Al-Bayati</i>	
Optimal spatial distribution of fire stations using geographic information systems Baghdad case study	2185
<i>Mufeed Ehsan Shok</i>	
Combination of visible and thermal remotely sensed data for enhancement of Land Cover Classification by using satellite imagery	2194
<i>Aysar Jameel Abdalkadhum, Mohammad Mejbil Salih, Oday Zakariya Jasim</i>	
The Error in Calculated Distance due to the propagation of Positions Error.....	2203
<i>Mohammed Anwer Jassim</i>	
Change detection in city of Hilla during period of 2007-2015 using Remote Sensing Techniques	2211
<i>Z M Kadhum, B S Jasim, M K Obaid</i>	
Evaluating the life efficiency of Mosul before liberation	2219
<i>T A Jaber, A K Ebraheem, M A Ebraheem, A A Abdujalil</i>	
Revealing the potentials of 3D modelling techniques; a comparison study towards data fusion from hybrid sensors.....	2233
<i>Abbas S Jaber, Fanar M Abed</i>	

How geometric reverse engineering techniques can conserve our heritage; a case study in Iraq using 3D laser scanning.....	2243
<i>Zahraa S Thamir, Fanar M Abed</i>	
MATLAB image processing tool-based GUI for high-throughput image segmentation and analysis to study structure and morphology of skin H&E stained sections.....	2252
<i>O S Osman</i>	
The Distribution of Accidents and Work Injuries using GIS technique: Baghdad as a Case Study.....	2260
<i>Tamarah S Abduljabbar, Fouad H Saad</i>	
Analysis of Error in Geodetic Networks using Different Observation Methods.....	2267
<i>Mohammed A Abid, Haifaa Nasser Husein, Noor Hashim Hamed</i>	
Spatial analysis of the geomorphic evolution of Tigris River basin using developed ArcGIS-Morphometric toolbox.....	2273
<i>A A F Beg</i>	
The Compact city and urban image of the traditional city center.....	2284
<i>E H Abid, A S Alkinani, S A Abudmunim</i>	
Assessment of the drought impacts on the vegetation cover over Iraqi lands.....	2295
<i>A A F Beg</i>	
The environmental planning vision for development of human settlements in marshes by using GIS techniques.....	2306
<i>Nada Khaleefah Alrikabi, Abbas Oudah Alumery</i>	
The use of Yehya Abu Al Qasim shrine and Al Tahra church and surrounding space for social and mixed religious group development.....	2317
<i>Shatha A Hasan, Mustafa A Ebraheem, Mowaffaq Altaey</i>	
Environmental assessment of land use in the city of Samawah using spatial techniques.....	2327
<i>N K Mohammed Ali, A K Ebraheem, M A Ebraheem, S J Laffta</i>	
Using Geomatics methodology to study gentrification indicators of urban heritage districts case study (Alkurd and Altaees neighbourhood) in Babylon Province - Iraq.....	2337
<i>S A Hasan, G Hazem</i>	
Integration urban land use planning with transportation planning: an evaluation toward sustainable transportation for the holy city of Karbala.....	2349
<i>Samir Nori Alourafi, Areaj Khairy Alrawi</i>	
Architecture and urban of the Islamic Arabic city “Study in unlimited their properties”.....	2357
<i>Mahdi Sf Al-Ataabi, Tuqa M Hameed</i>	
Detecting similarity in color images based on perceptual image hash algorithm.....	2365
<i>Nada Hussein M Ali, Marwa Emad Mahdi</i>	
Building-up Affordable Data Collection System to Provide 3D Scaled Image for Heritage Documentation.....	2374
<i>Nadia Abood, Imzahim Abdul Kareem, Hameed Sarhan</i>	
GIS-based approach for rainwater harvesting site selection.....	2383
<i>K N Sayl, A S Mohammed, A D Ahmed</i>	

Spatial analysis of Private school sites in Al-Jihad neighborhood in Baghdad-Iraq by using geographic information systems	2393
<i>S Abdul Jabbar, S J Laffta</i>	
Temporal Analysis of Ramsar Sites via Remote Sensing Techniques – A Case Study of Meke Maar	2404
<i>N Yagmur, N Musaoglu</i>	
Detection of oil spill pollution on water surface using microwave remote sensing techniques	2413
<i>Hussain Joma Abbas Al Bayaty, Abdulrazak Tarrish, Ziyad Alsultan</i>	

Author Index