

# Table of Contents

## Preface

## Chapter 1: Building Materials

<b>Effect of Perlite Composition on Compressive and Split Tensile Strength of Fly Ash-Based Geopolymer Concrete</b> M. Sofyan, M.A. Thariq Arifin, A. Dasar and I.W. Kustanrika	3
<b>Experimental Study of Cement Setting Time Using Naptha Belide E121 Admixture on 24-Hour Fast Track Concrete Quality K-500</b> A. Kurniawan and R.H. Purba	10
<b>Mortar Characteristics with the Addition of Lignin Using 1M NaOH as Biopolymer Admixture</b> M.T. Romdoni, A.O. Irlan, T. Triastuti and A. Nugroho	31
<b>Effect of Activator Solution Molarity on the Performance of Perlite-Substituted Geopolymer Concrete</b> F.B. Rifalqhi, E.V. Lumbantoruan, M.A. Thariq Arifin, M. Sofyan and R.R.M. Ageng Kinasti	39
<b>Effect of Hydrothermal Carbonization of Coconut Coir on Mechanical Properties of Cement Mortar</b> W. Ellyta, A. Okvianti Irlan, A. Nugroho and T. Triastuti	45
<b>Study of Corrosion Rate of Steel Plates due to Natural Exposure in Corrosive Environments in Tropical Regions</b> A.R.J. Satundan, R. Djamaluddin and F. Fakhruddin	54
<b>The Influence of Variations in the Thickness and Density of Hot Asphalt Pavement Layers on the Results of the Marshall Test Field Test of Laston AC-WC Mixture</b> E.P. Jaya and S. Sugito	63

## Chapter 2: Structural Behavior of Reinforced Concrete Beams

<b>Flexural Behavior of Hybrid Geopolymer Fly Ash Beams with Addition of PVA (Polyvinyl Alcohol) Fiber</b> H. Ikhsan Sugianto, R. Irmawaty and J.J. Ekaputri	75
<b>Shear Strengthening Behavior of Reinforced Concrete Beams with Varying Blot Spacing and Wire Mesh Presence in Geopolymer Mortar Panels</b> M.A. Irsyad, R. Irmawaty and F. Fakhruddin	86
<b>Effectivity of the Hybrid Fiber Reinforced Polymer in Strengthening of RC-Beams</b> R. Djamaluddin, F. Fakhruddin, I. Aiman and R.T. Wahyuningsih	96

## Chapter 3: Seismic Design of Buildings

<b>Properties of Composite Panel as Wall Structure for Housing</b> M.R. Fatriady, R. Djamaluddin, M.W. Tjaronge and A.A. Amiruddin	107
<b>Evaluating the Impact of Skybridge on the Analysis, Design, and BIM Integration of a Multi-Tower Structure: A Case Study in Laboratory Building Construction</b> J. Sjah, M.L.S. Tambunan and A.D. Rarasati	114

## Chapter 4: Geotechnical Engineering

<b>Slope Stability Analysis in Jeneberang Watershed, Gowa Regency</b> D.D.A. Arsdin, P. Purwanto, G.B. Sahetapy and S. Bundang	135
<b>Investigating the Impact of Mixing the Fine-Grained with Bentonite on its Physical Properties and Consistency Limits</b> H. Hairulla, T. Hariyanto, A.R. Djamaluddin and A. Arsyad	141

<b>Combining of Rock Mass Classifications for Preliminary Design of Excavation Method and Support System of Diversion Tunnel at Rongkong Dam, South Sulawesi, Indonesia</b> S. Permatasari, I.G.B. Indrawan and I.W. Warmada	148
<b>Analysis of Excavation Method and Support System Using Empirical Method of Pamukkulu Dam Intake Tunnel, South Sulawesi, Indonesia</b> M.A. Tappang, I.G.B. Indrawan, D.H. Amijaya and D.H. Kunindra	160
<b>Effect of Water on Shear Strength Parameter of Clay Shale</b> D.P. Kusumastuti, B. Wicaksono, A.S.N. Chairat, M. Misbahudin, P.R.D. Perdana, D.Y. Fatimah and F.F. Amanda	168

## **Chapter 5: Hydrodynamics in Water Resources Management**

<b>2D Hydrodynamic Analysis Using HEC-RAS in the way Sulan Watershed</b> P.F. Sari and A. Aprizal	177
<b>Modeling of Flood Prone Areas in the Remu Watershed</b> D.A. Asiyono, M.S. Pallu and M. Putra Hatta	192
<b>Wave Characteristics Simulation in the Waters of Pesisir Barat Lampung with the Wind Data Approach of the Bengkulu Recording Station</b> R. Hendriawan and A. Nurhasanah	202
<b>Current Measurement Accuracy in Open Channel Instruments</b> E. Affandy, M.S. Pallu, F. Maricar and B. Bakri	212
<b>Seawater Influence on Groundwater in Pisang Island, Lampung</b> S.M. Sinaga, H. Hendrayana and G.J. Laksono	220
<b>The Occurrence of Springs in Scarce Groundwater Condition Area in Taebenu Sub-District, Kupang Regency</b> I.M. Deonal de Fatima and D.P.E. Putra	229
<b>Flood Discharge Using Creager Graph Based on DAM Data in Jeneberang River Region</b> M. Rifaldi Mustamin, F. Maricar, R. Tahir Lopa and R. Karamma	237
<b>Wave Running on the Oscillating Water Column (OWC) Breakwater Model</b> S. Sugianto, R.T. Lopa, R. Karamma and C. Paotonan	244
<b>Hydrogeology Conceptual Model of Ponorogo-Ngawi Groundwater Basin in Ngawi Regency</b> R. Septiani, H. Hendrayana and N. Mulyaningsih	251
<b>Horizontal Distribution of Salinity in the Estuary of Palu River</b> A. Sucipto, M.A. Thaha, M. Putra Hatta and F. Mahmuddin	259
<b>Determination of the Groundwater Recharge Areas of Aquifers on the Northern Slope of Lawu Volcano Using the Isotope Method</b> I.N. Handayani, D.P.E. Putra and F. Abdurrachman	267
<b>Application of GOD Method to Identify the Groundwater Vulnerability to Pollution in the Sub-District of West Limboto, Gorontalo Regency, Indonesia</b> R. Patanduk, W. Budianta, I.M. Deonal de Fatima and D. Umar	275
<b>Modelling Analysis of Flow Patterns in the Palu River Estuary</b> R.R. Basalem, M.A. Thaha and M. Putra Hatta	284
<b>Application of Oxygen-18 and Deuterium Isotopes to Determine the Groundwater Recharge Area of Dumoga Area, Bolaang Mongondow Regency, North Sulawesi Province</b> N.H. Kalo, W. Wilopo and D. Umar	292

## **Chapter 6: Wastewater Treatment**

<b>Pilot Scale Study of Tubular Continuous Flow Electrocoagulation for Color Removal in Textile Industry Wastewater Treatment</b> R. Ardianto, V.S. Maharani and A. Rokhman	303
<b>Analysis of well Water in the South of Ternate by Applying Silica Sand, Zeolite, and Activated Carbon Filter Media</b> B. Ahmad, S.H. Umar and M.T.Y. Saputra	313

## **Chapter 7: Safety and Disaster Management**

<b>Analysis of Stakeholder Perceptions of Safety-Risk Construction in High-Rise Building Projects to Increase Construction Safety Performance in Indonesia</b> R.A. Machfudiyanto and M.F. Faizan	321
<b>Evaluation of Operational Safety Risk in Tank Development Project</b> Y. Olanta, R.U. Latief and M.A. Abdurrahman	332
<b>A Review of Pedestrian in Rantepao North Toraja</b> A.T. Arrang, E.A.R. Dendo, A. Sombolinggi and R.T. Bua	342
<b>Risk Mitigation of Buried High Temperature Gas Pipeline Construction</b> M. Yusuf, S. Kartohardjono, Y. Latief and A.D. Rarasati	351
<b>Community Preference-Based Tsunami Disaster Mitigation Strategy in Barru Coastal City Area</b> A. Akil, R. Ibrahim, R. Rasyid, W.W. Osman, M.A. Massinai, S.A. Yanti and A.P. Yudono	363