



Civil Engineering Dimension

JOURNAL OF CIVIL ENGINEERING SCIENCE AND APPLICATION

DIMENSI TEKNIK SIPIL – Jurnal Keilmuan dan Penerapan Teknik Sipil

Performance Analysis of Eccentrically Braced Frames (EBF) using Metallic Yielding Damper (MYD) with Hysteretic Steel Damper (HSD) Type

Suswanto, B., Ghifari, F., Triwulan, Sugihardjo, H., and Pangestuti, P.A.

Pavement Performance Prediction of Semarang–Solo Toll Road, Indonesia, using Markov Chain Model

Istikomah, H., Setiadji, B.H., and Riyanto, B.

Least-squares Smoothed Shape Functions for Constructing Field-Consistent Timoshenko Beam Elements

Wong, F.T., Tjahyono, H.G., Hartono, S., and Setiabudi, T.A.

The Value of Passenger Car Equivalent using the Time Headway Method on Urban Roads

Irwandi, Sutandi, A.C., and Mukti, E.T.

Effectiveness of Elastomeric Bearings in Reducing Pounding Effects between Reinforced Concrete Buildings under Seismic Condition

Rahman, M.R.A., Saputra, A., and Satyarno, I.

Performance Evaluation of Simple Regular Buildings using FBD and DDBD Methods with a Consistent Target Drift

Pudjisuryadi, P., Sumargo, W., Kho, A., and Lumantarna, B.

Evaluating U-Turn Capacity with Modified Geometry Designs and Various Conflicting Traffic Flows: A Traffic Microsimulation Approach

Muharam, F.R., Nugroho, T.S., and Weningtyas, W.

Utilization of Steel Aggregate and Iron Sand as Heavyweight Concrete for Gamma Radiation Shielding

Abdurrahman, H., Satyarno, I., and Wijatna, A.B.

Axiomatization of Transit Flow Estimation

Teknomo, K.

CIVIL ENGINEERING DIMENSION

Journal of Engineering Science and Application

Volume 27, Number 1, March 2025

ISSN 1410-9530 (print)/ISSN 1979-570X (online)

Editor in Chief:

Prof. Dr. Djwantoro Hardjito

(Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 6508089898)

Associate (Handling) Editors:

Prof. Dr. Benjamin Lumantarna

(Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 54179537600)

Dr. Doddy Prayogo

(Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 55959834900)

Advisory International Editorial Boards:

Prof. Dr. David Arditi

(Armour College of Engineering, Chicago, USA, SCOPUS ID = 35614735000)

Prof. Dr. Stephen Olu Ogunlana

(Heriot-Watt University, Edinburgh, UNITED KINGDOM, SCOPUS ID = 6701638480)

Prof. Dr. Priyan Mendis

(University of Melbourne, Melbourne, AUSTRALIA, SCOPUS ID = 7003700296)

Prof. Dr. Hu, Hsuan Teh

(National Cheng Kung University, Tainan, TAIWAN, SCOPUS ID = 55805441800)

Prof. Dr. Henk Marius Jonkers

(Delft University of Technology, Delft, NETHERLAND, SCOPUS ID = 7004676830)

Prof. Dr. Buntara S. Gan

(Nihon University, Tokyo, JAPAN, SCOPUS ID = 53864786800)

Prof. Dr. Worsak Kanok-Nukulchai

(Chulalongkorn University, Bangkok, THAILAND, SCOPUS ID = 7004839869)

Prof. Dr. Jeff Budiman

(Armour College of Engineering, Chicago, USA, SCOPUS ID = 6603239355)

Prof. Dr. Iswandi Imran

(Bandung Institute of Technology, Bandung, INDONESIA, SCOPUS ID = 6603209142)

Prof. Dr. Masyhur Irsyam

(Bandung Institute of Technology, Bandung, INDONESIA, SCOPUS ID = 6505844516)

A/Prof. Dr. Riza Yosia Sunindijo

(University of New South Wales, Sydney, AUSTRALIA, SCOPUS ID = 21741351400)

A/Prof. Dr. Benny Suryanto

(Heriot-Watt University, Edinburgh, UNITED KINGDOM, SCOPUS ID = 36618184800)

Journal Manager:

Ambrosius Matthew Junius Reynaldo, S.T., M.T.

(Petra Christian University, Surabaya, INDONESIA, SINTA ID = 6872799)

Administrative Assistant: **Sarita Budiyan**

Editor and Administration Address:

Institute of Research and Community Outreach

Petra Christian University

Jl. Siwalankerto 121-131, Surabaya 60236 – Indonesia

Phone: +62-31-2983392; +62-31-2983147

E-mail: dimensi-sipil@petra.ac.id; Home page: <https://ced.petra.ac.id/>;

Also available at: <http://infotrac.galegroup.com>.

The Civil Engineering Dimension (Dimensi Teknik Sipil) was first published in March 1999 to replace the civil engineering edition of Dimensi a journal published by Petra Christian University early in March 1980. The Civil Engineering Dimension was first accredited by the Directorate General of Higher Education of Indonesia in 2000, with its decree no 395/DIKTI/Kep/2000, dated 27 November 2000.

The Civil Engineering Dimension (Dimensi Teknik Sipil) is a refereed journal, published twice a year, in March and September. Subscription (Incl. postage) Rp. 150.000/year (for Indonesia), US \$65/year (for abroad), and should be transferred to Univ Kristen Petra Yayasan, acc no: 5820020029 Bank Negara Indonesia (BNI) cab. Graha Pangeran Surabaya, Indonesia.

International Peer-Reviewers List:

Dr. Robby Soetanto

Loughborouh University, Loughborough, UNITED KINGDOM, SCOPUS ID = 8870442200

Dr. Andreas Nataatmadja, MIEAust, M.ASCE.

University of Southern Queensland, Toowoomba, AUSTRALIA, SCOPUS ID = 6602640350

Prof. Dr. Han Ay Lie

Diponegoro University, Semarang, INDONESIA, SCOPUS ID = 57199323133

A/Prof. Dr. Andi

Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 7409720298

Dr. Elisa Lumantarna

University of Melbourne, Melbourne, AUSTRALIA, SCOPUS ID = 6504537022

Prof. Dr. Lin Shibin

Jiangnan University, Wuhan, CHINA, SCOPUS ID = 56118969700

A/Prof. Dr. Kardi Teknomo

Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 14012002200

Prof. Dr. Antoni

Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 57212352092

A/Prof. Dr. Hartanto Wibowo

Iowa State University, Ames, USA, SCOPUS ID = 35249850200

Dr. Dario Rosidi

CH2M HILL Corporation, Oakland, USA, SCOPUS ID = 6506775115

A/Prof. Dr. Muslinang Moestopo

Indonesian Society of Civil and Structural Engineers, INDONESIA, SCOPUS ID = 36696777500

A/Prof. Ir. Johannes I. Suwono, M.Eng.

Petra Christian University, Surabaya, INDONESIA

Dr. Gogot Setyo Budi

Petra Christian University, Surabaya, INDONESIA, SCOPUS ID = 57170817700

Dr. Febri Zukhruf

Institut Teknologi Bandung, Bandung, INDONESIA, SCOPUS ID = 57189269549

Prof. Ir. Ary Setyawan, M.Sc., Ph.D.

Universitas Sebelas Maret, Surakarta, INDONESIA, SCOPUS ID = 55561571400

CIVIL ENGINEERING DIMENSION

Journal of Civil Engineering Science and Application

Volume 27, Number 1, March 2025

ISSN 1410-9530 (print)/ISSN 1979-570X (online)

CONTENTS

Performance Analysis of Eccentrically Braced Frames (EBF) using Metallic Yielding Damper (MYD) with Hysteretic Steel Damper (HSD) Type Suswanto, B., Ghifari, F., Triwulan, Sugihardjo, H., and Pangestuti, P.A.	1-11
Pavement Performance Prediction of Semarang-Solo Toll Road, Indonesia, using Markov Chain Model Istikomah, H., Setiadji, B.H., and Riyanto, B.	12-21
Least-squares Smoothed Shape Functions for Constructing Field-Consistent Timoshenko Beam Elements Wong, F.T., Tjahyono, H.G., Hartono, S., and Setiabudi, T.A.	22-32
The Value of Passenger Car Equivalent using the Time Headway Method on Urban Roads Irwandi, Sutandi, A.C., and Mukti, E.T.	33-46
Effectiveness of Elastomeric Bearings in Reducing Pounding Effects between Reinforced Concrete Buildings under Seismic Condition Rahman, M.R.A., Saputra, A., and Satyarno, I.	47-58
Performance Evaluation of Simple Regular Buildings using FBD and DDBD Methods with a Consistent Target Drift Pudjisuryadi, P., Sumargo, W., Kho, A., and Lumantarna, B.	59-72
Evaluating U-Turn Capacity with Modified Geometry Designs and Various Conflicting Traffic Flows: A Traffic Microsimulation Approach Muharam, F.R., Nugroho, T.S., and Weningtyas, W.	73-84
Utilization of Steel Aggregate and Iron Sand as Heavyweight Concrete for Gamma Radiation Shielding Abdurrahman, H., Satyarno, I., and Wijatna, A.B.	85-94
Axiomatization of Transit Flow Estimation Teknomo, K.	95-112