

World Conference on Timber Engineering 2025

Advancing Timber for the Future Built Environment

Brisbane, Australia
22-26 June 2025

Volume 1 of 8

Editor:

Kelly Rischmiller

ISBN: 979-8-3313-2089-8
eISBN: 979-8-3313-2090-4
DOI: <https://doi.org/10.52202/080513>

PROCEEDINGS FROM THE 14TH WORLD CONFERENCE ON TIMBER ENGINEERING (2025)

EDITORS

Kelly Rischmiller

The University of Queensland, School of Civil Engineering / Australian Research Council Industrial Transformation Research
Hub to Advance Timber for Australia's Future Built Environment (ARC Advance Timber Hub)

CO-EDITORS

From The University of Queensland, School of Civil Engineering

Mahmoud Abu Saleem

Chloe Downey

Joe Gattas

Duncan Hossy

Lisa Ottenhaus

Wenxuan Wu

Zidi Yan

Yuhao Zhang

All authors have submitted two-page extended abstracts, which were peer reviewed by the WCTE 2025 International Scientific Committee. The full papers have not been further reviewed but checked for conformity. Many of these papers represent ongoing research and it is expected that many of the papers will appear in a more comprehensive form in scientific journals in due course.

PHOTO COVER

Murdoch University, Boola Katitjin Building – Perth, Western Australia – *image courtesy of Aurecon Group*

25 King Street Commercial Tower – Brisbane, Queensland – *image courtesy of Lendlease*

Monterey Apartments – Brisbane, Queensland – *image courtesy of Aurecon Group*

Library at the Dock – Melbourne, Victoria – *image courtesy of Lendlease*

25 King Street Commercial Tower – Brisbane, Queensland – *image courtesy of Lendlease*

The individual contributions in this publication and any liabilities arising from them, remain the responsibility of the authors. The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the World Conference on Timber Engineering 2025, concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitations of its frontiers or boundaries. The publisher is not responsible for possible damages, which could arise due to the content derived from this publication.

Copyright ©(2025) WORLD CONFERENCE ON TIMBER ENGINEERING 2025 (WCTE 2025) All rights reserved.

ISBN: Print 979-8-3313-2089-8

ISBN: e-proceedings 979-8-3313-2090-4

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact WCTE 2025 at the address below.

Email: wcte2025@civil.uq.edu.au

Additional copies of this publication are available from:

Curran Associates, Inc, 57 Morehouse Lane, Red Hook, NY 12571 USA

Phone: +1 845-758-0400, Fax: +1 845-758-2633, Email: curran@proceedings.com

www.proceedings.com

PROCEEDINGS FROM THE 14TH WORLD CONFERENCE ON TIMBER ENGINEERING (2025)



TABLE OF CONTENTS

VOLUME 1

1A - TESP - ENGINEERING - EUROCODE 5 - RECENT DEVELOPMENTS

DESIGN OF HOLES IN BEAMS – A NEW SECTION FOR EUROCODE 5	1
<i>Philipp Dietsch, Martin Danzer</i>	
THE SECOND GENERATION OF EUROCODE 5 – FIRE DESIGN	11
<i>Andrea Frangi, Alar Just, Harald Krenn, Joachim Schmid, Norman Werther, Jouni Hakkarainen, Renaud Blondeau, Gordian Stapf</i>	
THE TIMBER CHAPTER OF THE NEW EUROCODE 8 – PART 1-2: NEW FEATURES AND FUTURE IMPROVEMENTS	19
<i>Massimo Fragiaco, Maurizio Follesa, Vincenzo Rinaldi, Martina Sciomenta, Daniele Casagrande</i>	
OVERVIEW OF THE WORK WITHIN CEN TC 250/ SC5/ WG12 ASSESMENT AND RETROFITTING OF TIMBER EXISTING STRUCTURE	28
<i>Vlatka Rajcic, Jorge M. Branco, Robert Jockwer, Eleftheria Tsakanika</i>	
EUROCODE 5: FROM MANDATE TO SECOND GENERATION – REVIEW, INSIGHT AND OUTLOOK	36
<i>Martin Schenk, Junia Ohm, Stefan Winter</i>	
THE 2ND GENERATION OF THE EUROCODE FOR TIMBER BRIDGES	46
<i>Antje Simon, Matthias Gerold, Hauke Burkart, Andreas Müller</i>	

1B - TESP - ARCHITECTURAL

OPTIMIZING MASS TIMBER STRUCTURAL GRID FOR FUNCTIONAL ADAPTABILITY	55
<i>Nastaran Hasani, Mariapaola Riggio</i>	
DESIGN AND FABRICATION OF A WOODEN PAVILION USING UNDERUTILIZED LUMBER, AND PROPOSAL FOR CONVERSION	64
<i>Ayano Koderu, Natsuki Horie, Kazumi Kudo, Yuya Takaiwa</i>	
EXPERIMENTAL AND ANALYTICAL STUDY ON THE SEISMIC PERFORMANCE OF LOAD-BEARING WALLS WITH DIAGONAL WOODEN LATHS AND PLASTER FINISH	70
<i>Naoyuki Matsumoto, Kaori Fujita</i>	
STATIC LOADING TESTS OF THE SINGLE-STORY CLT ROCKING SHEAR WALL STRUCTURE	75
<i>So Momose, Takuya Tsuji, Takafumi Nakagawa, Hiroshi Isoda</i>	
STUDY ON THE EFFECTIVENESS OF CONTROLLED WOODEN HOUSES BASED ON ENERGY BALANCE	85
<i>Mai Kunikyo, Hidemaru Shimizu, Yoshiaki Wakashima, Rika Hosoda, Shin Murakami</i>	

CONCEPT TO CONSTRUCTION: CO-DESIGN AND INTEGRATIVE DEVELOPMENT PROCESSES FOR THE INTCDC MULTI-STORY TIMBER BUILDING SYSTEM.....	90
<i>Simon Treml, Lorenz Riedel, Hans Jakob Wagner, Cristóbal Tapia, Simon Aicher, Jan Knippers, Achim Menges</i>	

MUSASHINO UNIVERSITY SCHOOL GYMNASIUM: DESIGN AND TESTING OF A TIMBER-STEEL HYBRID BEAM STRING STRUCTURE.....	100
<i>Nicolas Giron, Hiroaki Harada</i>	

1C - TESP/TABD - ENGINEERING - SHEARWALLS & PANELS / STRUCTURAL BEHAVIOUR

DYNAMIC AND LONG-TERM PERFORMANCE OF FRICTION-BASED CONNECTORS WITH WOODEN DOWELS.	110
<i>Yoshiaki Wakashima, Hidemaru Shimizu, Akihisa Kitamori, Doppo Matsubara, Shingo Hanai, Mitsuo Fukumoto</i>	

INVESTIGATING THE MECHANICAL BEHAVIOUR OF MULTI-PANEL BALLON-TYPE CLT SHEARWALLS THROUGH FULL-SCALE TESTS	116
<i>Dalu Xing, Daniele Casagrande, Ghasan Doudak</i>	

OPTIMIZED LUMBER ARRANGEMENT IN NLT SUBJECT TO IN-PLANE SHEAR FORCE	124
<i>Yuki Takahashi, Yuji Miyazu</i>	

DEVELOPMENT OF OVERSTRENGTH FACTORS FOR MULTI-PANEL CLT SHEAR WALLS BASED ON PANEL-TO-PANEL CONNECTIONS.....	130
<i>Antoine Bérubé, Ghasan Doudak</i>	

MECHANICAL PROPERTIES AND FAILURE CRITERIA OF WOOD UNDER COMBINED NORMAL-SHEARLOADING	139
<i>Li-Peng Zhang, Reza Andasht Kazerooni</i>	

DEVELOPMENT OF GIR SYSTEM IMPROVED ON-SITE WORKABILITY	148
<i>Yuta Mori, Kota Nagai, Takato Kayukawa, Keita Tanaka, Hikaru Yamane, Yasuyuki Kawano</i>	

SIMPLIFIED TESTING APPROACH FOR PREDICTING PULL-OUT STRENGTH OF GLUED- IN RODS	157
<i>Gwang-Ryul Lee, Jaewon Oh, Kyung-Sun Ahn, Min-Jeong Kim, Sang-Hyun You, Hae Seon Hwang, Haegyul Lee, Chul-Ki Kim, Keon-Ho Kim, Jung-Kwon Oh</i>	

THINK IN CONCRETE BUT BUILD IN WOOD - MODERN LIVING WITH SUSTAINABILITY AND TS3-TECHNOLOGY	167
<i>Sven Bill, Bettina Franke, Lisa Rogatsch, Julian Schori, Stefan Zöllig</i>	

1D - TESP / MPD / STCE - ENGINEERING - SEISMIC

EXPERIMENTAL STUDY AND FINITE ELEMENT ANALYSIS OF RACKING RESISTANCE SUBJECTED TO VARIED MORTISE-TENON JOINTS AND WEDGE CONFIGURATIONS	173
<i>Jiuzhang Chen, Masahiro Inayama, Kenji Aoki</i>	

COMPARISON OF CYCLIC LOADING PROTOCOLS AND CYCLIC BENDING PERFORMANCES OF SELF-TAPPING SCREWS	183
<i>Kenji Kobayashi, Keita Ogawa</i>	

COMPARISON OF A SEISMIC DESIGN OF A 10-STORY ALL TIMBER BUILDING AND OF A 10-STORY HYBRID STEEL-FRAME CLT FLOORS BUILDING USING RESILIENT TECHNOLOGY	190
<i>Pierre Quenneville, Tom Bousquet, Loris Douare, Rostand Moutou-Pitti, Chaimaa Jaafari</i>	
APPLICABILITY OF MID-RISE TIMBER STRUCTURES IN THE METROPOLITAN AREA.....	195
<i>Chia-Lung Yeh, Toshiaki Sato</i>	
INVESTIGATION OF UNDESIRABLE BRITTLE FAILURE OBSERVED IN HIGH-CAPACITY SHEAR WALLS.....	203
<i>Chun Ni, Ruite Qiang, Lina Zhou</i>	
CASE STUDY: SEISMIC AND GRAVITATIONAL DESIGN OF 15-STORY OFFICE AND RESIDENTIAL BUILDING ARCHETYPES WITH A SEMIRIGID CLT DIAPHRAGM AND REINFORCED CONCRETE SHEAR WALLS IN CHILE	211
<i>Sebastian Barrios, Fernando Véliz, Sebastián Berwart, Jairo Montaña, Raúl Araya, Jorge Lagos, Martín Beltrán, Matías Chacón, Diego Valdivieso, Pablo Guindos, José Luis Almazán, Hernán Santa María</i>	
A STUDY ON THE COLLAPSE LIMIT OF CLT PANEL CONSTRUCTION BASED ON STATIC LATERAL LOADING TESTS.....	220
<i>Tatsuya Miyake, Motoshi Sato, Shoichi Nakashima, Masahiro Matsuda, Hiroshi Isoda, Naohito Kawai</i>	

1E - TESP ENGINEERING

SIMPLIFIED ENGINEERING METHOD TO ESTABLISH STRUCTURAL ADEQUACY OF MASS TIMBER COLUMNS FOR FULL FIRE DURATION	227
<i>David Barber, Judith Schulz, Eoin O'Loughlin</i>	
SOLID TEMPERATURE PREDICTION FOR CLT WALLS IN FIRE USING SUPERVISED MACHINE LEARNING	237
<i>Arwa Abougharib, M. Z. Naser, Gregory Paradis, Felix Wiesner</i>	
TEMPERATURE-DEPENDENT BENDING MECHANICAL PROPERTIES OF DENSIFIED WOOD	247
<i>Lei Han, Dick Sandberg, Andreja Kutnar</i>	
STRUCTURAL DESIGN OF TIMBER COLUMNS IN REALISTIC FIRES.....	253
<i>Cameron Douglas, Dennis Pau, Daniel Moroder, Andy Buchanan</i>	
NEW ENCAPSULATION TECHNIQUE FOR STRENGTHENING AND ENHANCED FIRE RESISTANCE OF MASS TIMBER STRUCTURAL ELEMENTS.....	263
<i>Izaz Ahmad, Sam Salem</i>	
FIRE ENDURANCE TESTS ON OPTIMIZED CLT-CONCRETE COMPOSITE FLOOR SLABS WITH INTERLAYER LAYUP AND INDIVIDUAL NOTCHED SHEAR CONNECTIONS	271
<i>Javad Tashakori, Sam Salem</i>	
CASE STUDY OF ENGINEERING THERMAL AND STRUCTURAL ANALYSIS OF TIMBER IN OFFICE TRAVELLING FIRE – FIRE DYNAMICS SIMULATOR AND SAFIR.....	279
<i>Alain Coimbra, Manuel Manthey, Elmehdi Koutaiba</i>	
COMPARING IN-DEPTH TEMPERATURE MEASUREMENT TECHNIQUES IN LARGE-SCALE TIMBER FIRE EXPERIMENTS	287
<i>Ian Pope, Felix Wiesner, José Torero, Juan Hidalgo</i>	

1F - TESP / MPD - ENGINEERING - DIGITAL IMAGING CORRELATION

DERIVATION OF SHEAR MODULUS OF THE RPF ADHESIVE LAYER IN BLOCK SHEAR TESTS USING DIGITAL IMAGE CORRELATION	297
<i>Koki Kawano, Kohta Miyamoto, Kenji Aoki</i>	
WOOD BASED FASTENERS TO PRODUCE TIMBER EARTH SLABS.....	303
<i>Dominik Merk, Janna Vollrath, Kathrin Dörfler, Stefan Winter</i>	
UNDERSTANDING THE EFFECT OF LAMINATION THICKNESS VARIATIONS ON BOND INTEGRITY IN CROSS LAMINATED TIMBER (CLT)	311
<i>Samson M. Idoghor, Lech Muszynski, Fatemeh Rezaei</i>	
ENHANCING THE RACKING RESISTANCE OF TIMBER SHEAR WALLS WITH STRUCTURAL GLASS: AN EXPERIMENTAL AND COMPUTATIONAL STUDY	318
<i>Tine Engelen, Dries Byloos, Bram Vandoren</i>	
INFLUENCE OF KNOTS ON STRAIN DISTRIBUTIONS IN GLUED LAMINATED TIMBER BEAMS	325
<i>Farid Vafadar, Joonas Jaaranen, Gerhard Fink</i>	
FRICITIONAL CHARACTERISTICS OF THE SURFACE OF HINOKI OLD WOOD TAKEN FROM JAPANESE TRADITIONAL WOODEN BUILDINGS IN THE LATE EDO PERIOD	331
<i>Jungyeon Hong, Hina Takizawa, Yuya Takaiwa</i>	
COMPRESSIVE STRENGTH AND STIFFNESS OF GLULAM IN CONTACT WITH MORTAR	341
<i>Yuichi Kanaya, Shun Kosugi, Marina Totsuka, Hiroki Nakashima, Masakazu Ikeda, Kenji Aoki</i>	

1G - TESP - ENGINEERING - MODULAR CONSTRUCTION

SUSTAINABLE AND TEMPORARY USE OF VACANT BUILDINGS AND SITES THROUGH SIMPLE AND MODULAR STRUCTURAL MEASURES	350
<i>Christophe Sigrist, Joaquim Escoda Llorens, Edyta Augustynowicz</i>	
DISCRETE VS. CONTINUOUS REINFORCEMENT: A COMPARATIVE STUDY OF CONVENTIONAL AND NOVEL INTERLOCKING CONNECTIONS IN CLT SHEAR WALLS	359
<i>Zhengyao Li</i>	
A NOVEL HYBRID WOODEN STRUCTURAL SYSTEM FOR MULTI-STOREY BUILDINGS IN SEISMIC PRONE AREAS	366
<i>Alessandro Setti, Giada Zammattio, Matilde Benatti, Enrico Cardillo, Andrea Gaspari, Ivan Giongo, Luca Pozza, Daniele Casagrande</i>	
ADVANCED SEISMIC-RESILIENT CONNECTION FOR MODULAR MASS TIMBER STRUCTURES	374
<i>Rajnil Lal, Ashkan Hashemi, Pierre Quenneville</i>	
VIBRATION RESPONSE OF CROSS-LAMINATED TIMBER-STEEL COMPOSITE FLOORS WITH SAND INFILL	383
<i>David Owolabi, Cristiano Loss</i>	
BENCHMARKING OF A FINITE ELEMENT MODELLING METHODOLOGY FOR TIMBER CONNECTIONS.....	390
<i>Juan S. Zambrano-Jaramillo, Erica C. Fischer, Konstantinos Daniel Tsavdaridis</i>	

ALTERNATIVE LOAD PATH ANALYSIS OF TIMBER POST-AND-BEAM MODULAR BUILDINGS	400
<i>Maria Felicita, Joep Knuppe, Kyle Zutt, Geert Ravenshorst, Michele Mirra</i>	

1H - ECCS - ENGINEERING - STRUCTURAL BEHAVIOUR

PERFORMANCE-BASED SEISMIC DESIGN OF STEEL-TIMBER COMPOSITE STRUCTURES USING ENDURANCE TIME METHOD	410
<i>Alireza A. Chiniforush, Mingchang Yan, Tuan D. Ngo</i>	
VIBRATION SERVICEABILITY ASSESSMENT OF THREE CLT BUILDINGS	418
<i>Blaz Kurent, Boštjan Brank, Noémi Friedman</i>	
VIBRATION BEHAVIOR OF CLT FLOORS IN A 5-STORY BUILDING PROTOTYPE UNDER HUMAN-INDUCED EXCITATION	423
<i>Alexander Opazo-Vega, Alan Jara-Cisterna, Franco Benedetti, Víctor Rosales, Manuel Suazo</i>	
VIBRATION TESTS ON LONG-SPAN CLT-GLT COMPOSITE FLOORS	429
<i>Amin Nabati, Sovanrath Ou, Muzan Williams Ijeoma, Weichi Pang, Michael Stoner, Brandon Ross, Dustin Albright, Patricia Layton, Mik Carbajales-Dale</i>	
CASE STUDY OF A BASE-ISOLATED 6-STOREY TIMBER FRAME BUILDING IN A HIGH SEISMIC REGION	438
<i>Kiran Makan, Laura Whitehurst, Tobias Smith</i>	
TIMBER ROOF STRUCTURE WITH COMBINATION OF RIGIDITY INCREASE EFFECT OF FOLDED PLATE SHAPES AND RECIPROCAL SUPPORT EFFECT OF LATTICE FRAME	447
<i>Yui Amano, Takahiro Yonezu, Takaharu Suzuki, Soichiro Kushima, Hiroomi Tanaka, Hidenori Tanaka, Mizuki Hayashi</i>	
BALLOON-TYPE CLT SHEAR WALL CONSTRUCTION – A REVIEW OF CURRENT PROJECTS AND DESIGN CHALLENGES	456
<i>Kilian Krauss, Minghao Li, Frank Lam, Marjan Popovski, Jasmine McFadden</i>	
DESIGN UNCERTAINTY IN LONG SPAN MASS TIMBER FLOORS: PROPOSED BAND-BEAM SOLUTION.....	466
<i>Adam Faircloth, Hassan Karampour, Benoit P. Gilbert, Tom Watts, Huaizhong Li, Nigel Burdon, Tim Butler, Chandan Kumar</i>	

1I- TESP - ENGINEERING - PROTECTIVE DESIGN

IMPACT BEHAVIOUR OF HYBRID TIMBER BEAMS.....	473
<i>Bryan E. Thevarajah, Alex M. Remennikov, Tuan D. Ngo, Hong Guan, Benoit P. Gilbert</i>	
MODELLING OF CROSS-LAMINATED TIMBER PANELS SUBJECTED TO CONTACT CHARGE DETONATIONS AND NEAR-FIELD BLAST LOADS.....	483
<i>Mehdi Saloo, Christian Viau</i>	
ARENA BLAST TESTING OF REINFORCED CROSS-LAMINATED TIMBER	491
<i>Eric Kjolsing, Mark Weaver, Jalen Johnson, Marco Lo Ricco</i>	
OVERVIEW OF THE BEHAVIOUR OF MASS-TIMBER MEMBERS SUBJECTED TO CONTACT CHARGE DETONATIONS AND NEAR-FIELD BLAST LOADS	501
<i>Trevor Czorny, Mehdi Saloo, Christian Viau, Alexander Helal</i>	

HIGH-FIDELITY FINITE ELEMENT MODELLING OF MASS-TIMBER MEMBERS SUBJECTED TO SIMULATED FAR-FIELD BLAST LOADS	509
<i>Mehdi Saloo, Christian Viau, Ghasan Doudak</i>	

IMPACT BEHAVIOUR OF HYBRID CLT PANELS	517
<i>Bryan E. Thevarajah, Alex M. Remennikov, Tuan D. Ngo, Hong Guan, Benoit P. Gilbert</i>	

OPTIMIZING TARGET PROXIMITY FOR CROSS-LAMINATED TIMBER (CLT) MULTI- IMPACT BALLISTIC EXPERIMENTS	527
<i>Alexis Tri, Juliet Swinea, Gregory Kennedy, Jessica Thangjitham, Lauren K. Stewart</i>	

2A - TESP - ENGINEERING - DYNAMIC TESTING AND MONITORING OF WOOD BUILDINGS: A GLOBAL PERSPECTIVE

THREE DECADES OF US-LED FULL-SCALE WHOLE BUILDING SHAKE TABLE TESTING: FROM LIGHT-FRAME WOOD TO MASS TIMBER	535
<i>John Van De Lindt, Shiling Pei, Steve Pryor, Andre Barbosa</i>	

LARGE-SCALE SHAKING TABLE TESTING OF WOOD BUILDINGS HISTORICAL REVIEW AND RECENT TESTS	545
<i>Hiroshi Isoda, Takafumi Nakagawa</i>	

DESIGN, CONSTRUCTION AND INSTRUMENTATION OF A SIX-STORY ENGINEERED MASS BAMBOO BUILDING	552
<i>Y. Xiao, R. J. Wu, Y. B. Houe, X. L. Li</i>	

CONTINUOUS MONITORING OF A FIVE-STORY CROSS-LAMINATED TIMBER BUILDING IN A SEISMIC-PRONE REGION	554
<i>Alan Jaracisterna, Franco Benedetti, Victor Rosales, José Luis Almazán, Manuel Suazo, Mario Núñezdecap, Alexander Opazovega</i>	

TWO YEARS DYNAMIC MONITORING OF AN EIGHT-STOREY CLT	561
<i>Yue Wang, Dag Pasquale Pasca, Angelo Aloisio, Blaž Kurent, Roberto Tomasi</i>	

STRUCTURAL HEALTH MONITORING OF HISTORICAL TIMBER POST AND BEAM STRUCTURES IN NORWAY AND JAPAN	571
<i>Kaori Fujita, Hiroki Ishiyama, Bunji Izumi, Per Berntsen</i>	

2B- STCE - ARCHITECTURAL

QUANTIFICATION OF WOOD MASS IN THE URBAN ENVIRONMENT WOOD STOCK IN SANTIAGO, CHILE	577
<i>Felipe Victorero, Waldo Bustamante</i>	

DESIGN FOR LOW MATERIAL PROCESSING: SHOW CASE SUSING SALVAGED TIMBER	585
<i>Gengmu Ruan, Joonas Jaaranen, Yishu Niu</i>	

CLARIFYING TERMINOLOGY FOR ASSESSING CIRCULARITY IN TIMBER CONSTRUCTION	594
<i>Marieke Stritzke, Sandra Schuster</i>	

EFFICIENT CONNECTIONS FOR MODULAR PREFABRICATED TIMBER BUILDINGS TO HELP RECONSTRUCTION IN UKRAINE	602
<i>Robert Jockwer, Alar Just, Andrii Bidakov, Eero Tuhkanen, Dmitrii Kochkarev</i>	

DESIGN FOR DISASSEMBLY IN PANELIZED LIGHT TIMBER FRAMING TOWARDS CARBON NEUTRALITY: THE 4PROTRU SHOWHOUSE	610
<i>Valentina Torres, Alejandro Lara, Guillermo Íñiguez-González</i>	

RE-USE OF MASS TIMBER: A CASE STUDY	620
<i>Judith Sheine, Andre R. Barbosa, Mark Fretz, Arijit Sinha</i>	

2C - TESP / MPD - ENGINEERING - BAMBOO

ALTERNATIVE STRUCTURAL FIRE MODEL FOR PREDICTING BENDING CAPACITY IN LAMINATED BAMBOO BEAMS AND CROSS-LAMINATED TIMBER (CLT) HARDWOOD PANELS	628
<i>Mateo Gutierrez, Cristian Maluk</i>	

MECHANICAL PERFORMANCE OF DOWELLED STEEL-TO-TIMBER CONNECTIONS REINFORCED LOCALLY WITH BAMBOO SCRIMBER	636
<i>Haotian Tao, Jiawei Xu, Huifeng Yang, Benkai Shi, Congcong Zhang</i>	

BAMBOO SCRIMBER DOWEL-TYPE JOINTS FOR ENGINEERED WOOD AND BAMBOO STRUCTURES	641
<i>Jianbin Yang, Bernardino D'Amico, Yu Zheng, Aamir Khokhar</i>	

DOWEL TYPE CONNECTIONS IN LAMINATED BAMBOO WITH MULTIPLE SLOTTED-IN STEEL PLATES	649
<i>J. W. G. Van De Kuilen, Peter De Vries, Jules Debije, Johan Hover, Wolfgang Gard, Geert Ravenshorst</i>	

THE EFFECT OF SIZE AND CORE SHAPE ON THE PHYSICAL AND MECHANICAL PROPERTIES OF BAMBOO SANDWICH PANEL	657
<i>Naresworo Nugroho, Salma Rumbiang Winedarwangi, Lastiur Eva Panggabean, Yulianto Purwono Prihatmaji</i>	

WORLD'S FIRST BAMBOO-TIMBER COMPOSITE GRIDSHELL: DESIGN, CONSTRUCTION AND FULL-SCALE EXPERIMENTAL ANALYSIS	664
<i>Yanghao Pei, Hexin Zhang, Yutong Li, Yu Deng, Yihui Ying, Liping Sun, Dongnan Han, Wenming Wang, Biyao Zhou, Ming Ma</i>	

2D - MPD - ENGINEERING - PROTECTIVE DESIGN - MOISTURE SAFETY IN TIMBER BUILDINGS AND CONSTRUCTION PROCESSES.

A MULTISCALE ANALYSIS OF HYGROEXPANSION IN WOOD	672
<i>Sara Florisson, Marie Hartwig-Nair, Nil Tabudlong Jonasson, Klara Hackenstrass, Erik Kristofer Gamstedt, Malin Wohler</i>	

MOISTURE DEPENDENCE OF MECHANICAL PROPERTIES OF BEECH AND BIRCH IN COMPRESSION PERPENDICULAR TO GRAIN AND ROLLING SHEAR	681
<i>Eva Binder, Elisabeth Kuck, Christian Bertram, Zijad Shehadeh, Michael Schweigler, Carmen Sandhaas, Thomas K. Bader</i>	

MOISTURE-INDUCED VARIATIONS IN WITHDRAWAL CAPACITY OF PIN-SHAPED ELECTRODES IN WOOD: EXPERIMENTAL INSIGHTS AND CORRELATIONS.....	688
<i>Zidi Yan, Nina Flexeder</i>	

EXPERIMENTAL STUDY OF MOISTURE MOVEMENT INSIDE CLT USED FOR WOOD FOUNDATIONS	696
<i>Mahiro Kawamoto, Makoto Nakatani, Takuro Mori, Ying Hei Chui</i>	

THE DEVELOPMENT OF COMPOSITE CROSS LAMINATED TIMBER PANELS MANUFACTURED USING C16 IRISH SITKA SPRUCE	704
<i>Emily McAllister, Daniel McPolin, Sree Nanukuttan</i>	

A STUDY ON MOISTURE MIGRATION IN THE MULTIPLE DIRECTION IN LAMINATED GLULAMS EXPOSED TO FIRE INCLUDING MOISTURE MIGRATION ACROSS FINGER JOINTS AND ADHESIVE LINES	711
<i>Kotaro Ara, Mei Yamamoto, Tomoyo Hokibara, Ryo Takase</i>	

2E - TESP/MPD- ENGINEERING - BRIDGES

DEVELOPMENT OF AN OPENABLE DECK TIMBER BRIDGE TO REDUCE SNOW LOADING.....	718
<i>Ryu Noda, Daisuke Oikawa, Humihiko Gotou, Tamotsu Takahashi</i>	

VOLUME 2

INVESTIGATION OF THE PERFORMANCE OF CROSS-LAMINATED TIMBER DECK PANELS ON LONGITUDINAL STEEL BRIDGE GIRDERS	724
<i>Justin M. Dahlberg, James P. Wacker, Zhengyu Liu, Douglas R. Rammer</i>	

ANALYSIS OF THE DURABILITY OF THE ADHESIVE JOINT OF TIMBER-CONCRETE COMPOSITE BRIDGES	733
<i>Johannes Koch, Antje Simon, Paula Schumann</i>	

INVESTIGATIONS ON ADHESIVELY BONDED TCC SPECIMENS UNDER TENSILE, CYCLIC TEMPERATURE AND SHEAR LOADING	743
<i>Andreas Kirchner, Martin Kästner, Henri Paetow, Martin Ganß, Matthias Kraus</i>	

ADHESIVELY BONDED TIMBER-CONCRETE COMPOSITE BRIDGES – ANALYSIS OF THERMAL ACTIONS ON THE SUPERSTRUCTURE	752
<i>Martin Kästner, Martin Ganß, Andreas Kirchner, Henri Paetow, Johannes Koch, Antje Simon, Matthias Kraus</i>	

CASE STUDY OF AN INTEGRAL TIMBER-CONCRETE ROAD BRIDGE WITH SPECIAL CONSIDERATION OF THE INFLUENCES OF CREEP, SHRINKAGE AND TEMPERATURE IN THE PRE-DIMENSIONING PHASE.....	762
<i>Kamyar Tavoussi, Alireza Fadai, Peter Bauer, Jasmin Pruenner</i>	

2F - MPD - ENGINEERING - THERMAL BEHAVIOUR

OAK TREE BARK AS A SUSTAINABLE MATERIAL FOR THERMAL INSULATION	768
<i>Andrija Novosel, Hrvoje Krstic, Vjekoslav Živkovic</i>	

FINGER JOINTING OF THERMALLY COMPRESSED OIL PALM WOOD	774
<i>Suthon Srivaro, Hyungsuk Lim, Sataporn Jantawee</i>	

NATURAL EXPOSURE OF UNTREATED AND THERMALLY TREATED EUROPEAN ASPEN (POPULUS TREMULA)	780
<i>Sebastian Svensson Meulmann, Åsa Rydell Blom</i>	

THERMAL PERFORMANCE CHARACTERISATION OF A NOVEL HYBRID FIBRE REINFORCED TIMBER (HFT) COMPOSITE WALL SYSTEM USING THE TRANSIENT DATA ASSIMILATION (TDA) METHOD	787
<i>G. Soret, Hao Zhou, J. Hidalgo, J. Carrascal, J. L. Torero, D. Fernando</i>	

NATURAL EXPOSURE COMPARISON OF TIMBER JOINTS BONDED WITH POLYURETHANE ADHESIVE IN TWO CLIMATIC CONDITIONS.....	797
<i>Martin Capuder, Gary M. Raftery, Weixi Wang, Zubin Karami, Boris Azinovic, Andreja Pondelak, Luka Naumovski, Tomaž Pazlar</i>	

ANALYSIS OF CARBONIZED SPEED AND RESIDUAL SECTION OF STEEL-TIMBER CONNECTION	806
<i>Sun-Hee Kim, Yonghyun Cho, In-Rak Choi, Inhwan Yeo, Sung-Mo Choi</i>	

2G - TESP - ENGINEERING

SEISMIC BEHAVIOUR

SEISMIC BEHAVIOUR OF HILLSIDE LIGHT TIMBER FRAMED HOUSES.....	813
<i>Angela Liu, David Carradine, Minghao Li, Kexin Wang, Rajesh P. Dhakal</i>	

APPLICATION OF SEISMIC BASE ISOLATION IN A TIMBER MULTI-STORY FRAME BUILDING.....	823
<i>Edoardo Giacobbo, Luca Pozza, Luca Marchi, Roberto Scotta</i>	

STRUCTURAL PERFORMANCE OF TIMBER FRAMES WITH CONCRETE BEAM-COLUMN JOINT EXPOSED TO CYCLIC LOADING	831
<i>Tomoyuki Hayashi, Daiki Hinata, Shinji Takatani, Keisuke Yamaguchi, Jun Kubota</i>	

EVALUATING THE SEISMIC PERFORMANCE OF HYBRID REINFORCED CONCRETE FRAMES WITH CLT SHEAR WALLS: EXPERIMENTAL AND ANALYTICAL APPROACHES.....	839
<i>Hamood Alwashali, Satoshi Kumagawa, Chunri Quan, Kiwoong Jin, Gary M. Raftery</i>	

SEISMIC PERFORMANCE EVALUATION OF MASS TIMBER FRAMES REINFORCED WITH WOODEN SHEAR WALLS.....	849
<i>Keunyeong Oh, Keum-Sung Park</i>	

2H - ECCS - ARCHITECTURAL CASE STUDIES

GLVL PANELS FOR A NEW TIMBER FOOTBRIDGE OVER THE BRUSSELS RING	856
<i>Laurane Néron, Thijs Van Roosbroeck, Benoît Hargot, Samuel Blumer</i>	

INNOVATIVESELF-SHAPING TIMBER CONSTRUCTION: THE WANGEN TOWER.....	863
<i>Martin Alvarez, David Stieler, Laura Kiesewetter, Gregor Neubauer, Monika Göbel, Dylan Wood, Jan Knippers, Achim Menges</i>	

LAMINATED NODES FOR A ROUND TIMBER STRUCTURE	873
<i>Kim Baber, Canhui Chen, Joseph M Gattas</i>	

USING THE DFMA APPROACH IN THE EARLY INTEGRATION OF ACTORS FOR THE DESIGN OF AN INDUSTRIALIZED TIMBER BUILDING – CASE STUDY	882
<i>Daniela Méndez, Fabiana Lorca, Manuel Carpio</i>	

MASS ENGINEERED TIMBER BUILDINGS IN SOUTHEAST ASIA: OVERCOMING OBSTACLES AND UNLOCKING OPPORTUNITIES	891
<i>Andrew Magub, Callum Lillywhite</i>	

RETROFITTING LOW-RISE BUILDING STOCK THROUGH MASS TIMBER ADDITIONS AND PERFORMANCE-BASED FIRE ENGINEERING: DARLINGHURST WORKPLACE.....	901
<i>Adrian Taylor, James O'Neill, Chloe Naughton</i>	

21 - STCE - PRACTITIONER

STUDY ON EMBODIED CARBON FOOTPRINT OF MULTI-UNIT RESIDENTIAL BUILDINGS	911
<i>Caroline Frenette, Rosaline Lariviere-Lajoie, Gabrielle Pichette, Louis Poliquin</i>	

CIRCULAR TIMBER: TIMBER ON THE WAY TO A SUSTAINABLE CIRCULAR ECONOMY.....	917
<i>Alireza Fadaei, Marius Valente</i>	

THE ROLE OF TIMBER BUILDINGS IN CIRCULAR BIO-BASED CITIES.....	925
<i>Diego Elustondo, Dominika Janiszewska-Latterini, Steve Wakelin, Henri Bailleres, Andrea Stocchero</i>	

ADVANCING SUSTAINABLE TIMBER MANAGEMENT: THE ROLE OF RESPONSIBLE WOOD CERTIFICATION	934
<i>Matt De Jongh</i>	

MARKETING OF TIMBER DESIGN AND CONSTRUCTION FROM A SOUND SUSTAINABILITY BASIS.	944
<i>Simon Dorries</i>	

3A- TESP - ARCHITECTURAL

ASO KUMAMOTO AIRPORT: WOODEN TRUSS ROOF USING METAL PLATE CONNECTORS AND WOOD SCREWS.....	953
<i>Azusa Mimatsu, Hiroaki Harada</i>	

COMPRESSIVE LOADING TEST AND BURNING TEST OF STEEL BAR-TIMBER COMPOSITE COLUMNS.....	961
<i>Rin Kamimakise, Toshihisa Ishii, Shinichi Shioya</i>	

THE DUALITY OF THE PROTRUDING JOINT MEMBER IN KOREAN TRADITIONAL WOODEN ARCHITECTURE	971
<i>Woohee Kim, Bonghee Jeon, Harin Lim</i>	

MOCKUP OF PREFABRICATED CLT MODULES FOR SMALL SOCIAL CONDOS: EVALUATION OF MACHINING, MANUFACTURING, ASSEMBLY, AND PERFORMANCE FOR STANDARDIZATION IN CHILE	981
<i>Juan José Ugarte G., Gerardo Armanet, Juan José Ugarte Á., Andrés Sierra, Jorge Romero, Sebastián Cárcamo, Claudio Vásquez, María Jesús González, Daphne Graves, Francisco Cifuentes, Fernando Marcone</i>	

TYPOLOGICAL OPTIMIZATION FOR REAL ESTATE DEVELOPMENTS: 8-9 STORY MASS- TIMBER BUILDINGS FOR SEISMIC ZONES	989
<i>Juan José Ugarte Á., Gerardo Armanet, Juan José Ugarte G., Andrés Sierra, Jorge Romero, Sebastián Cárcamo, María Jesús González, Fernando Marcone</i>	

POSSIBILITIES FOR TIMBER STRUCTURE IN STADIA – FIRE ENGINEERING APPROACH.....	997
<i>Cameron Creamer, David Barber</i>	

3B - TESP - ENGINEERING - PROTECTIVE DESIGN

BLAST TEST OF A MASS TIMBER FAÇADE FOR DIPLOMATIC FACILITIES.....	1007
<i>Mark K. Weaver, Whitney Warman, Sharon Gallant, Christopher Cheung, Keith Nelson, Jalen Johnson</i>	
COMPRESSIVE MECHANICAL PROPERTIES OF RADIATA PINE GRADED SAWN TIMBER CONSIDERING STRAIN RATE EFFECTS IN PROGRESSIVE COLLAPSE AND EARTHQUAKE EVENTS.....	1017
<i>Ayon Das, Nasim Ghasemi, Benoit P. Gilbert, Hong Guan, Chuen Yiu Lo, Minghao Li, Frank Lam</i>	
PROGRESSIVE COLLAPSE AND EARTHQUAKE STRAIN RATE EFFECT ON THE EMBEDMENT PROPERTIES OF DOWEL TYPE FASTENERS IN LAMINATED VENEER LUMBER (LVL)	1026
<i>Ayon Das, Benoit P. Gilbert, Hong Guan, Chuen Yiu Lo, Minghao Li, Frank Lam</i>	
SEISMIC AND PROGRESSIVE COLLAPSE STRAIN RATE EFFECTS ON THE WITHDRAWAL STRENGTH OF SCREWS IN GLUED LAMINATED TIMBER.....	1036
<i>Nasim Ghasemi, Benoit P. Gilbert, Hong Guan, Chuen Yiu Lo, Minghao Li, Frank Lam</i>	
SEISMIC AND PROGRESSIVE COLLAPSE STRAIN RATE EFFECTS ON THE COMPRESSIVE AND TENSILE MECHANICAL PROPERTIES OF SOFTWOOD LAMINATED VENEER LUMBERS (LVL)	1042
<i>Nasim Ghasemi, Ayon Das, Benoit P. Gilbert, Hong Guan, Chuen Yiu Lo, Minghao Li, Frank Lam</i>	

3B- TESP - ENGINEERING - PROTECTIVE DESIGN

PROPOSED APPROACH FOR THE DESIGN OF TIMBER CONNECTIONS SUBJECTED TO BLAST LOADING	1049
<i>Christian Viau, Antoine Bérubé, Ghasan Doudak</i>	

3C - TESP / MPD - ENGINEERING - CLT WALLS

FIRE BEHAVIOUR OF CLT FLOOR TO WALL CONNECTIONS: FINDINGS FROM THE WOODWISE PROJECT	1059
<i>Nicolas Coello, Erica C. Fischer, Laura Hasburgh, David Barber, Kara Yedinak, Ines Pitari</i>	
CROSS-LAMINATED TIMBER WITH GAPS FOR WALL ELEMENTS	1069
<i>Kay Ackermann, Stefanie Christl, Philipp Dietsch</i>	
EXPERIMENTAL TESTING OF AN IN-SITU STRENGTHENING PROCESS FOR CLT PANELS	1078
<i>Tom Watts, Mael Le Marchand, Daniel Jones</i>	
EVALUATION OF CLT SEISMIC RESISTANT WALLS WITH ARBITRARILY ARRANGED GIR JOINTS.....	1086
<i>Daisuke Kadono, Shuhei Uesugi, Shunsuke Toyao, Tsubasa Seguchi, Katsuhide Murakami, Masahide Murakami</i>	

PUSH-OUT TESTING OF ADHESIVELY BONDED LIGHT GAUGE STEEL AND FRP TO TIMBER CONNECTIONS: AN EXPERIMENTAL STUDY	1094
<i>Alireza A. Chiniforush, Philip Christopher, Tuan D. Ngo, Bryan E. Thevarajah, Alex M. Remennikov</i>	

RIBBED CLT ELEMENTS WITH CUT-BACKS	1104
<i>Thomas Bogensperger, Harald Krenn</i>	

3D - TESP - ENGINEERING -

NUMERICAL INVESTIGATIONS

SHEAR FORCE CAPACITY OF CROSS LAMINATED TIMBER BEAMS – NUMERICAL INVESTIGATIONS OF FRACTURE BEHAVIOUR.....	1112
<i>Henrik Danielsson, Erik Serrano</i>	

SHEAR PERFORMANCE INVESTIGATION ON THE NOTCH-SCREW CONNECTIONS FOR TIMBER-UHPC COMPOSITE STRUCTURES	1122
<i>Xiaoyue Zhang, Wanru Huang, Jiajia Ou, Fengjiang Qin, Weiguo Long, Di Chen</i>	

NUMERICAL STUDY OF THE GAP BETWEEN SHEATHING PANELS AND FRAMES FOR SHEAR WALL SYSTEMS	1128
<i>Jianzhong Gu</i>	

NUMERICAL MODELING OF CROSS-LAMINATED TIMBER SHEAR WALLS	1135
<i>Ramin Sarange, Gloria Faraone</i>	

LATERAL TORSIONAL BUCKLING TESTS AND NUMERICAL SIMULA-TION OF GLUED LAMINATED TIMBER BEAMS	1141
<i>Vera Wilden, Benno Hoffmeister, Markus Feldmann</i>	

EFFECT OF CONNECTION NONLINEARITY ON WIND PERFORMANCE OF TALL MASS TIMBER BUILDINGS	1149
<i>Chi Zhang, Yuxin Pan</i>	

3E - TESP / MPD - ENGINEERING USE OF HARDWOODS

MECHANICAL PROPERTIES OF HIGH-PERFORMANCE LVL MADE FROM EUCALYPTUS GLOBULUS L.	1158
<i>Almudena Majano-Majano, Antonio José Lara-Bocanegra</i>	

POTENTIAL FOR HIGH-STIFFNESS ENGINEERED WOOD PRODUCTS FROM EUCALYPTUS FASTIGATA	1166
<i>Rosie Sargent</i>	

IDENTIFICATION OF MATERIALS AND BONDING PARAMETERS FOR CROSS- LAMINATED PANELS MADE IN ASIA	1173
<i>Karol S. Sikora, Aleksander Nical, Sana Amir, Kamal Jaafar, Jianli Hao</i>	

STUDY OF THE SLIP PERFORMANCE OF SCREWS IN EUCALYPTUS NITENS (E. NITENS) FROM TASMANIAN FIBRE-MANAGED PLANTATIONS	1179
<i>Zhiqian Zhong, Assaad Taoum, Nathan Kotlarewski, Gregory Nolan</i>	

GLUED LAMINATED TIMBER AND LAMINATED VENEER LUMBER STRUCTURAL PRODUCTS MANUFACTURED FROM AUSTRALIAN SOUTHERN BLUE GUM GROWN FOR WOODCHIPS.....	1186
<i>Benoît P. Gilbert, Robert L. McGavin, Scott Wicker, William Leggate, Adam Faircloth, Stuart Meldrum</i>	

3F - TESP - ENGINEERING - AUTOMATION / SOFTWARE

NET-ZERO TIMBER BUILDING DESIGN TYPOLOGIES.....	1192
<i>Christophe Sigrist, Camiel Weijenberg, Katharina Lindenberg</i>	
RECLAIMED TIMBER ASSESSMENT SUPPORTED BY LIDAR SCANNING	1200
<i>Jan Pelczynski, Katarzyna Ostapska, Pawel Arendt</i>	
PREFABRICATED MASS TIMBER HYBRID SYSTEMS: INVESTIGATION ON ADOPTING CNC-MADE CARPENTRY JOINTS TO INDUSTRIALIZED LONG-SPAN FLOORS	1208
<i>Yue Diao, Cristiano Loss</i>	
STRUCTURAL PERFORMANCE ANALYSIS OF HOLLOW GLUELAMINATED TIMBER.....	1218
<i>Vlatka Rajcic, Nikola Perkovic, Jure Barbalic</i>	
EQUIVALENT SHELL MODEL FOR CLT SHEAR WALLS	1228
<i>Sebastian Carcamo, Cristopher Gallegos, Diego Valdivieso</i>	

3G - ECCS - PRACTITIONER / ENGINEERING

ANALYTICAL EVALUATION OF PLATFORM-TYPE MULTI-STOEY CLT SHEAR WALLS.....	1235
<i>Mohammad Masroor, Thomas Tannert</i>	
A VERTICAL INSTALLATION METHOD OF CROSS LAMINATED TIMBER (CLT) FOR REINFORCING SOFT GROUND.....	1243
<i>Hong Son Nguyen, Yuji Adachi, Tatsufumi Nishio, Masaho Yoshida, Atsunori Numata</i>	
FROM LAB TO FIELD: IMPLEMENTING ADHESIVE BONDED TIMBER-CONCRETE-COMPOSITES CEILINGS - A PILOT PROJECT	1250
<i>Florian Brosch, Sven Riexinger, Matthias Braun, Benjamin Kromoser</i>	
NEW PERFORMING ARTS VENUE CROSS-LAMINATED TIMBER AUDITORIUM	1258
<i>Carsten Moeller, Toby Hodsdon</i>	
IMPLEMENTATION OF ADAPTABLE DESIGN PRINCIPLES FOR HIGH-PERFORMANCE LIGHT TIMBER FRAMED PANELISED BUILDINGS: AN AUSTRALIAN CASE STUDY	1265
<i>Zidi Yan, Marcus Strang, Lisa-Mareike Ottenhaus, Paola Leardini, Paul Adams, Keith Crews</i>	
FIRE RESISTANCE TESTS AND CHARRING RATES IN AUSTRALIAN PLANTATION EUCALYPTUS NITENS CROSS-LAMINATED TIMBER FLOORS	1275
<i>Mateo Gutierrez, Michael Lee, Dayne Davis, Michael Klippel</i>	

3H - EIC - PRACTITIONER

ADVANCING TALL WOOD BUILDINGS WITHIN CANADIAN PROVINCIAL BUILDING CODES.....	1284
<i>Marc Alam, Vusal Ibrahimli, Noah Fetterly, Cameron McDonald</i>	

OPPORTUNITIES AND BARRIERS ASSOCIATED WITH THE USE OF TIMBER PRODUCTS IN COMMERCIAL BUILDINGS IN TASMANIA, AUSTRALIA.....	1293
<i>Kuluni Millaniyage, Gary Fleming, Louise Wallis</i>	
INNOVATION DIFFUSION OF MASS ENGINEERED TIMBER (MET) CONSTRUCTION: ASSESSING KEY PARAMETERS THROUGH A SURVEY OF BUILDING INDUSTRY PROFESSIONALS	1303
<i>Florence Wong</i>	
MOVING TOWARDS THE MAINSTREAM MARKET ADOPTION OF MASS TIMBER IN THE UNITED STATES.....	1310
<i>Bill Parsons</i>	
PRODUCT DEVELOPMENT FOR A RANGE OF INNOVATIVE MASS TIMBER CONNECTORS	1320
<i>Jon Roebuck</i>	
IMPLEMENTATION OF A PREFABRICATED TIMBER-HYBRID BUILDING SYSTEM SHOWCASED WITH FOUR CASE STUDIES.....	1330
<i>Julia Köhler</i>	

4A - TESP - ENGINEERING - CODES AND MODELLING

PRELIMINARY INVESTIGATIONS OF A DESIGN FRAMEWORK FOR LOW-TO-MIDRISE BUILDINGS WITH ROBOTICALLY SHAPED WHOLE TIMBER STRUCTURAL ELEMENTS WITH LOW-TO-NO STEEL JOINTS	1340
<i>Serena Van Nimwegen, Pierre Latteur</i>	
OVERALL STABILITY SAFETY FACTOR OF K6-TYPE TIMBER RETICULATED SHELLS.....	1350
<i>Jiajia Ou, Di Chen, Weiguo Long, Minjuan He, Yifeng Liu</i>	
SEISMIC TIMBER FRAMES WITH STEEL LINK: MECHANICAL CHARACTERIZATION THROUGH NUMERICAL INVESTIGATION.....	1355
<i>Giacomo Iovane, Beatrice Faggiano</i>	
NOVEL TIMBER-CONCRETE COMPOSITE SLABS USING BEECH DOWELS AS CONNECTION ELEMENTS	1361
<i>Michael Mikoschek-Muggendorfer, François Colling</i>	
NUMERICAL SIMULATION OF FASTENER FORCE DISTRIBUTION AND CRACK PROPAGATION IN MULTI-DOWEL TIMBER CONNECTIONS EXPOSED TO MOMENT AND MOISTURE LOADING	1371
<i>Sigurdur Ormarsson, Le Kuai</i>	
THE EFFECT OF DISPLACEMENT RATE ON THE AXIAL LOAD CAPACITY OF STEEL RODS GLUED INTO GLULAM BEAMS.....	1379
<i>Louis Knight, Eleni Toumpanaki</i>	
SOFTWARE DEVELOPMENT FOR CAPACITY-BASED DESIGN OF TIMBER BRACED FRAMES: METHODOLOGY AND PERFORMANCE EVALUATION.....	1388
<i>Nastaran Cheshmehkaboodi, Dac Hoang Nguyen, Hossein Daneshvar, Ying Hei Chui</i>	
SEISMIC RESPONSE OF BRACED TIMBER FRAMES WITH BOLTED CONNECTIONS.....	1398
<i>Zhiyong Chen, Marjan Popovski, Brandon Rossi, Dorian Tung</i>	

4B - TESP- ENGINEERING

VIBRATIONS & ACOUSTICS

ACCEPTABILITY CRITERIA OF TIMBER FLOOR VIBRATION: A SUBJECTIVE EVALUATION	1408
<i>Haoyu Huang, Wen-Shao Chang</i>	
BALANCING FASTENER SPACING, ACOUSTICS, AND SPAN LENGTH IN EXPOSED CLT FLOOR-CEILING ASSEMBLIES.....	1416
<i>Simon Cleghorn, Aedan Callaghan</i>	
BEHAVIOUR OF TIMBER-TO-TIMBER CONNECTIONS WITH INTERPOSED RESILIENT SOUNDPROOFING PROFILE	1423
<i>Luca Pozza, Luca Barbaresi, Antonella Morganti, Matilde Benatti, Paola Brugnara, Matteo Zoppè, Chiara Luzzani, Luca Sestigiani</i>	
PENDULUM-ROLLING SEISMIC ISOLATION SYSTEM (PR-SIS) FOR MEDIUM AND LOW-RISE WOODEN STRUCTURES: NUMERICAL RESULTS AND EXPERIMENTAL VALIDATION IN SHAKING TABLE TESTS	1430
<i>Jose Luis Almazan, Sergio Reyes, Diego Valdivieso</i>	
EFFECT OF BRACING IRREGULARITY ON SEISMIC PERFORMANCE OF L-SHAPED LIGHT TIMBER-FRAMED RESIDENTIAL HOUSES	1436
<i>Kexin Wang, Minghao Li, Angela Liu, Rajesh P. Dhakal</i>	

VOLUME 3

MECHANICAL PROPERTIES OF AXIALLY LOADED THREADED RODS AFTER DIS- AND REASSEMBLY	1446
<i>Alisa Resch, Haris Stamatopoulos</i>	
SEISMIC PERFORMANCE EVALUATION OF CLT BALLOON-TYPE SHEAR WALLS WITH HIGH-CAPACITY DOWELED AND SCREWED HOLD DOWNS.....	1456
<i>Amir Ghahremani Baghmisheh, T. Y. Yang, Marjan Popovski, Jasmine B. W. McFadden, Zhiyong Chen, Minghao Li</i>	

4C - TESP - ENGINEERING - CONNECTIONS

UNCERTAINTY QUANTIFICATION OF FOUR PHENOMENOLOGICAL HYSTERETIC TIMBER MODELS	1465
<i>Matías F. Chacón, Pablo Guindos</i>	
MOMENT RESISTANT CONNECTIONS WITH GLUED IN RODS IN GLUELAM	1475
<i>Wim De Groot, K. E. M. Raymakers, S. P. G. Moonen, Niels Castelein</i>	
SEISMIC PERFORMANCE EVALUATION OF TIMBER MOMENT FRAMES WITH REINFORCED DOWEL-TYPE CONNECTIONS	1485
<i>M. Ali Yazdi Moghaddam, Hossein Daneshvar</i>	
DIFFERENCE IN MECHANICAL PROPERTIES DUE TO INHIBITION TECHNIQUES OF FRICTION APPLIED TO LATERAL TESTS OF TIMBER JOINTS	1494
<i>Keita Ogawa, Kenji Kobayashi</i>	

ANALYTICAL SEISMIC PERFORMANCE ASSESSMENT OF BRACED TIMBER FRAMES WITH SHAPE MEMORY ALLOY FASTENERS	1500
<i>Javier Fierro, Daniel Lacroix, Eugene Kim</i>	

BRITTLE FAILURE MODES IN CONNECTIONS WITH SELF-TAPPING SCREW IN GLULAM AND CLT	1510
<i>Jan Niederwestberg, Chun Ni, Ying Hei Chui, Alexander Salenikovich</i>	

TIMBER-BASED RETROFIT STRATEGIES FOR EXISTING URM AND RC STRUCTURES: INSIGHT FROM RELUIS-DPC PROJECT	1519
<i>Ivan Giongo, Francesco Graziotti, Alessandra Marini, Mariarosa Valluzzi</i>	

IN-PLANE SHEAR: DESIGN OF A NEW PICTURE FRAME TEST CONFIGURATION.....	1527
<i>David Fochler, Nils Schumacher, Felix Fricke, Patrik Aondio, Stefan Winter</i>	

4D - TESP - ENGINEERING - COMPOSITES & HYBRIDS

AN EXPERIMENTAL STUDY ON THE CHARACTERISTICS OF A HORIZONTAL RESISTANT MECHANISM USING A CHECKERED PATTERN HYBRID BEARING WALL WITH A PLYWOOD AND STEEL FRAME	1535
<i>Rieko Nagao, Akihiro Mori, Takumi Ito, Natsuhiko Sakiyama</i>	

ESTIMATION OF TEMPERATURE PROFILE WITHIN STEEL BAR- TIMBER COMPOSITE BEAM USING DATA OF COMBUSTION TEST	1542
<i>Shinichi Shioya, Shizuka Matsushita</i>	

EDGE CONNECTION FOR CROSS LAMINATED TIMBER SLABS – A SOLUTION USING TIMBER CONCRETE COMPOSITE	1552
<i>Thomas Stieb, Roland Maderebner, Roland Tabelander, Philipp Dietsch</i>	

PREFABRICATED HOLLOW FLOOR SYSTEMS USING MASS PLY PANEL AND SCREW- GLUING.....	1562
<i>Tianci Huangfu, Maik Gehloff, Jianhui Zhou</i>	

LONG-TERM BEHAVIOR OF NOVEL SOLID WOOD-CONCRETE-COMPOSITE FLOORS WITH COMBINED SHEAR CONNECTORS	1571
<i>Alex Mullner, Alireza Fadaei</i>	

FLEXURAL BEHAVIOR OF PROPOSED STEEL-TIMBER-CONCRETE COMPOSITE FLOOR SYSTEMS FOR MID-TO-HIGH-RISE BUILDINGS	1581
<i>Chae-Yeon Kim, Min-Su Kang, Jong-Soo Choi, Jin-Won Shin, Kyong-Soo Yom, Sung-Mo Choi</i>	

EXPERIMENTAL ANALYSIS OF TIMBER-CONCRETE COMPOSITES WITH INNOVATIVE FRP CONNECTORS.....	1589
<i>Songnan Li, S. Ali Hadigheh</i>	

ASSESSING THE STRUCTURAL BEHAVIOUR OF TIMBER-STEEL COMPOSITE BEAMS USING DISTRIBUTED FIBRE OPTIC SENSORS.....	1595
<i>Brendan P. H. Deeves, Joshua Woods</i>	

4E - MPD - ENGINEERING - MATERIAL PROPERTIES

DURABILITY OF PLANTATION HINOKI	1605
<i>Elizabeth Israel, Jed Cappellazzi, Jeffrey J. Morrell, Arijit Sinha, Yuichi Sato</i>	

DENSIFICATION OF NEW ZEALAND-GROWN REDWOOD FOR IMPROVED MECHANICAL PROPERTIES	1611
<i>Rosie Sargent, Bruce Kenah, Armin Thumm</i>	
DYNAMIC MECHANICAL ANALYSIS OF FPU BONDED BEECH WOOD AT VARIOUS TEMPERATURES	1620
<i>Martin Capuder, Boris Azinovic, Andreja Pondelak, Pawel Rutkowski, Magdalena Szumera, Matthew Schwarzkopf, Arkadiusz Kwiecien, Klaudia Sliwa-Wieczorek, Jaka Gašper Pecnik</i>	
EFFECT OF ADHESIVE AND SPECIES ON INTERFACE PROPERTIES OF TIMBER LAMINATES	1626
<i>Mahbube Subhani, Matt Jennings, Johannes Reiner</i>	
QUANTITATIVE EVALUATION OF THE MECHANISM OF ADHESIVE-INDUCED LOAD INCREASE IN PLYWOOD AND LVL UNDER FULL AND PARTIAL COMPRESSIVE STRESS	1635
<i>Ryutaro Sudo, Kohta Miyamoto, Hirofumi Ido</i>	
COMPARISON OF CRACKING PROCESS IN TROPICAL WOOD FOR MOBILITY	1645
<i>Rostand Moutou Pitti, Riccardo Houngebegnon, Thomas Jailin, Valery Doko, Benoît Blaysat, Nicolas Sauvat, Joseph Gril, Naman Recho, José Xavier</i>	
A NEW APPROACH TO WOOD - WOOD CONNECTIONS THAT FULFIL STATIC, FIRE PROTECTION AND ACOUSTIC REQUIREMENTS	1650
<i>Anton Kraler, Andreas Pomaroli, Martin Saltuari</i>	
DECAY PERFORMANCE OF CROSS LAMINATED TIMBER CONNECTIONS.....	1658
<i>Arijit Sinha, Kenneth E. Udele, Jeffrey J. Morrell</i>	
<u>4F - MPD - ENGINEERING - FRACTURE MECHANICS & WOOD FIBRE</u>	
PROPAGATION IN WOOD OF A CRACK DEVIATED FROM THE DIRECTION OF THE FIBERS	1664
<i>Nouradine Hassan Ibrahim, Rostand Moutou Pitti, Nicolas Sauvat, Benoît Blaysat, Joseph Gril, Arthur Bontemps, Thomas Jailin</i>	
EFFECT OF WOOD RELAXATION ON NAIL WITHDRAWAL CAPACITY	1672
<i>Yuhao Zhang, Lisa M. Ottenhaus, Jeffrey J. Morrell, Tripti Singh, Luis Yermán</i>	
CYCLIC BEHAVIOR OF THE COMPONENTS OF A DOWEL-TYPE ASSEMBLY - VARIABILITY	1678
<i>Dalmer Gomez, Gwendal Cumunel, Michel Bornert, Nicolas Peyret, Thomas Catterou, Salma Ait El Habti</i>	
MEASURING COHESIVE LAW OF WOOD ADHESIVE BONDS FOR ENGINEERING OF TIMBER JOINTS AND PRODUCTS	1687
<i>Joran Van Blokland, Bent F. Sørensen, Erik Serrano, E. Kristofer Gamstedt, Ruben I. Erives</i>	
A STUDY ON THE BENDING BEHAVIOR OF MOMENT-RESISTING JOINTS WITH LSB AND GIR UNDER HIGH AXIAL FORCES	1697
<i>Hwisu Kim, Atsuo Takino, Makoto Nakatani, Takuro Mori, Hiroki Ishiyama, Seiji Mukaide</i>	
EVALUATION OF THE ADHESION BEHAVIOR OF KHAYA IVORENSIS WOOD TO MANUFACTURE GLUED PRODUCTS.....	1703
<i>Niliane P. Campos, Cláudio H. S. Del Menezzi</i>	

MACHINE LEARNING INFORMED SIMULATION OF UNCERTAINTIES FOR PROGRESSIVE DAMAGE EVALUATION IN WOOD VENEER LAMINATES	1710
<i>Johannes Reiner</i>	

EFFECT OF THREAD SHAPE ON WITHDRAWAL PERFORMANCE OF LAGSCREWBOLT INSERTED INTO PERPENDICULAR TO GRAIN	1717
<i>Keita Sogabe, Takuro Mori, Ryuki Odani, Makoto Nakatani</i>	

4G - SUSTAINABILITY AND TIMBER IN A CIRCULAR ECONOMY - ENGINEERING FOCUS

3DP BIOWALLS: FROM CONCEPT TO REALITY	1725
<i>Benjamin Kromoser, Bernhard Reinholz, Sara Reichenbach, Roman Myna, Alaudini Alaudin Nurali, Falk Liebner, Ana Prslja, Rupert Wimmer</i>	

INDUSTRIAL ROBOTS FOR GLT MACHINING: BASICS AND BEYOND	1732
<i>Marc Pantscharowitsch, Benjamin Kromoser</i>	

DESIGN OF TIMBER STRUCTURES IN VIEW OF SUSTAINABILITY BASED ON THE COMPONENT METHOD	1742
<i>Lea Buchholz, Ulrike Kuhlmann, Markus Knobloch</i>	

A 3D PRINTED JOINING SYSTEM FOR ASSEMBLING RECIPROCAL FRAME STRUCTURES WITH IRREGULAR NATURAL WOOD	1752
<i>Yusuke Hozumi, Yuki Takahashi, Yuji Miyazu</i>	

EXPERIMENTAL CHARACTERIZATION OF THE INNOVATIVE RADIAL CONNECTION SYSTEM	1759
<i>Paolo Grossi, Riccardo Fanti, Andrea Polastri, Ernesto Callegari, Hans J. Bläß</i>	

RING CONNECTOR: A NEW CONNECTION SYSTEM FOR PREFABRICATION AND DFD IN CLT STRUCTURES	1767
<i>Riccardo Fanti, Pietro Rigo, Andrea Polastri, Paolo Grossi, Ernesto Callegari, Hans Joachim Blass</i>	

STRUCTURAL FIRE DESIGN WITH AGED RECLAIMED TIMBER: SMALL-SCALE CHARRING PERFORMANCE ASSESSMENT	1776
<i>Johanna Liblik, Maria Pernits, Alar Just, Alar Konist</i>	

REUSE: GUIDELINE ON THE ASSESSMENT OF THE TECHNICAL INTEGRITY OF DISASSEMBLED TIMBER MEMBERS	1786
<i>Philipp Dietsch, Christoph Ehrenlechner, Matthias Frese, Stefan Winter</i>	

4H - ECCS - ENGINEERING

STRUCTURAL PERFORMANCE, ECONOMIC BENEFITS, AND ENVIRONMENTAL IMPACT BETWEEN STEEL STRUCTURE, STEEL TIMBER HYBRID STRUCTURE, AND TIMBER STRUCTURE IN HIGH SEISMIC ZONE	1796
<i>Cheng-Chieh Hsu, Shih-Wen Chen, Miao-Chen Yeh, Meng-Ting Tsai</i>	

LESSONS LEARNT FOR MASS TIMBER BUILDING DESIGN FOR FIRE IN AUSTRALIA	1802
<i>Lukas Rutkauskas, Linus Lim</i>	

COMPARISON OF REGULATORY AND OPERATIONAL ENVIRONMENTS AFFECTING MULTI-STOREY TIMBER APARTMENT BUILDINGS IN FINLAND AND NEW ZEALAND	1809
<i>Ninni Westerholm, Anthony Hoete, Sami Pajunen, Jesse Lietzén, Mika Alanen, Juha Franssila, Harri Sivu, Marc Woodbury</i>	
FRAGILITY CURVE FOR WOODEN BUILDINGS BASED ON RESPONSE ANALYSIS USING SEISMIC ASSESSMENT RESULTS IN KYOTO CITY	1819
<i>Haruna Unno, Yasuhiro Araki, Hiroshi Isoda, Takafumi Nakagawa, Kotaro Sumida</i>	
ASSESSMENT OF HYGROTHERMAL PERFORMANCE OF TRADITIONAL AND INSULATED CORDWOOD MASONRY	1827
<i>Mattis M. Sveinhaus, Karl-Christian Mahnert, Dimitrios Kraniotis, Stian Myhren, Kristine Nore, Gabrielle Bergh</i>	
THE HYGROTHERMAL PERFORMANCE AND DURABILITY OF A ONE-STOREY CROSS-LAMINATED TIMBER AND WOOD FIBER INSULATION SCHOOL BUILDING LOCATED IN BELFAST, MAINE	1837
<i>Liam O'Brien, Ling Li, Benjamin Herzog, Jacob Snow</i>	
MONITORING TIMBER MOISTURE CONTENT IN TIMBER-CONCRETE HYBRID CONSTRUCTION: ST LUKES HEALTH INSURANCE MID-RISE OFFICE BUILDING	1844
<i>Nathan Kotlarewski, Dayne Davis, Azin Ettelaie, Louise Wallis</i>	
 <u>4I - EIC - ENGINEERING APPLICATIONS & ARCHITECTURE</u>	
DISCRETE OPTIMIZATION OF TIMBER STRUCTURES WITH MINLP	1848
<i>Stojan Kravanja, Primož Jelušič, Tomaž Žula, Zdravko Kravanja</i>	
EXPERIMENTAL CHARACTERIZATION OF MOMENT ROTATION BEHAVIOR OF REINFORCED DISASSEMBLABLE MORTISE AND TENON JOINTS	1856
<i>Sanoop Siby, Aaron Münzer, Ric Zimmermann, Simon Aicher, Philippe Grönquist</i>	
ADDRESSING THE CHALLENGES IN THE HOLISTIC DESIGN OF TALLER TIMBER BUILDINGS – COST ACTION HELEN	1866
<i>Robert Jockwer, Gerhard Fink, José Manuel Cabrero Ballarín, Mislav Stepinac, Eleni Tournpanaki, Pedro Palma, Chiara Bedon, Daniele Casagrande, Steffen Franke</i>	
ALL-IN-ONE INDUSTRIALIZED ACTIVE FAÇADE FOR DEEP BUILDING RETROFIT: TIMBER ENGINEERING PROCESS AND PERFORMANCES ANALYSIS	1873
<i>Martino Gubert, Roberto Modena, Diego Tamburrini, Nicola Leonardelli, Elisa Fasce, Fabrizio Miorin, Stefano Avesani, Ingrid Demanega</i>	
RESTORATION METHODOLOGY FOR MEDIEVAL WOODEN STRUCTURES BASED ON EXCAVATED REMAINS IN SEOUL	1883
<i>Bonghee Jeon, Yoojin Huh, Hyuntae Joo, Donghee Kim</i>	
ASSESSING THE FACTORS BEHIND THE DEPLETION OF KOREAN TRADITIONAL WOODEN BUILDING 'HANOK' IN METROPOLIS SEOUL	1892
<i>Seongjun Koo, Bonghee Jeon, Youngsoo Jeong</i>	
BUILDING BRIDGES BETWEEN ARCHITECTURE AND ENGINEERING - TIMBER EDUCATION AT THE UNIVERSITY OF QUEENSLAND	1899
<i>Lisa-Mareike Ottenhaus, Catherine Keys, Kim Baber</i>	

ACQUIRING, THINKING & GENERATING KNOWLEDGE: A PROGRESSIVE EDUCATIONAL FRAMEWORK FOR TIMBER ARCHITECTURE.....	1906
<i>Harrison Huang</i>	

5A - TESP - ENGINEERING - STRUCTURAL COMPONENTS

INFLUENCE OF RECTANGULAR WEB OPENINGS ON LOAD-CARRYING CAPACITY OF TIMBER I-JOISTS.....	1914
<i>Sini Lu, Aamir Khokhar, Abel Munoz, Ross Brown</i>	
NUMERICAL APPLICATION OF LOAD-BEARING DOUBLE-SKIN FACADE ELEMENTS IN HIGH-RISE TIMBER BUILDINGS.....	1924
<i>Miroslav Premrov, Andrej Štrukelj, Erika Kozem Šilih</i>	
PERFORMANCE BASED DESIGN METHOD FOR TIMBER UNIT LOADBearing WALL COMPOSED OF CURVED MEMBERS CONSIDERING GEOMETRIC NONLINEARITY AND PERFORMANCE OF JOINTS	1934
<i>Shion Kubota, Ayumu Yasui, Shinta Yoshitomi</i>	
OUT-OF-PLANE BENDING STIFFNESS OF CLT UNDER CROSS-ANGLE LOADING	1943
<i>Xiaoyue Zhang, Jianxin Zhao, Bingjie Niu, Md Bayat, Alexandra Cheng, Thomas Tannert</i>	
SCREW REINFORCEMENT AND REPAIR OF POINT-SUPPORTED CLT.....	1948
<i>Houman Ganjali, Md Shahnewaz, Carla Dickof, Jianhui Zhou, Thomas Tannert</i>	
EXPERIMENTAL STUDY ON BRITTLE FAILURE OF Laterally LOADED STEEL-TO- CLT CONNECTIONS WITH INCLINED SELF-TAPPING SCREWS.....	1954
<i>Huiqi Wang, Lina Zhou, Ying-Hei Chui</i>	
EXPERIMENTAL STUDY ON GLULAM POST-BEAM JOINTS WITH INCLINED SELF- TAPPING SCREWS UNDER CYCLIC LOAD	1964
<i>Shengdong Zhang, Zhiyang Lin, Guangyu Gao</i>	

5B - TESP- ENGINEERING

STRUCTURAL MODELLING

DEVELOPMENT OF AN INNOVATIVE STRUCTURAL SYSTEM FOR MULTISTOREY TIMBER BUILDINGS WITH INCREASED SERVICE LIFE – THE CRESTIMB PROJECT	1972
<i>Francesco Mirko Massaro, Haris Stamatopoulos, Martina Sciomenta, Massimo Fragiaco, Patrick McGetrick, Kjell Arne Malo, Dawid Romek, Stefania Fortino</i>	
DYNAMIC RESPONSE OF DIAGONAL LAMINATED TIMBER – PARAMETER STUDIES AND MODELLING APPROACHES	1982
<i>Erik Serrano, Henrik Danielsson, Peter Persson</i>	
EVALUATION OF THE EFFECTIVE FLANGE WIDTH OF MASS TIMBER COMPOSITES BEAMS USING DIGITAL IMAGE CORRELATION AND FINITE ELEMENT MODELLING	1990
<i>Tyler Hull, Daniel Lacroix</i>	
EXPERIMENTAL STUDY OF STRUCTURAL PERFORMANCE OF TIMBER-CONCRETE COMPOSITES USING RECYCLED AGGREGATES	2000
<i>Daniel Kumah, Aamir Khokhar, Robert Hairstans</i>	

A RESILIENT CLT SHEAR WALL SYSTEM FOR TIMBER BUILDINGS.....	2009
<i>Fei Tong, Chenhui Qian, Thomas Tannert, Leo Panian, Mike Korolyk, Anurag Upadhyay</i>	
STRUCTURAL MODELLING OF A NOVEL HYBRID TIMBER FLOOR SYSTEM.....	2016
<i>Zhiyong Chen, Dorian Tung, Conroy Lum, Thomas Wu, Mark Gaglione, Vincent Davenport</i>	
NUMERICAL MODELLING ANALYSIS OF HIGH-CAPACITY SHEAR WALLS WITH MULTIPLE ROWS OF NAILS: FAILURE MODES AND PARAMETRIC STUDY	2026
<i>Ruite Qiang, Lina Zhou, Chun Ni</i>	

5C - TESP- ENGINEERING

VIBRATIONS AND ACOUSTICS

THE APPLICATION OF HYBRID TIMBER SYSTEMS TO CHALLENGE CONVENTIONAL BUILDING TYPOLOGIES IN AN EMERGING MARKET: 2 CASTLE STREET ‘WORKPLACE HUB’	2035
<i>Adrian Taylor, John Walsh</i>	
EVALUATION OF THE INFLUENCE OF SYSTEM EFFECTS ON THE LATERAL RESPONSE OF BUILDINGS WITH L- AND U-SHAPED WOOD FRAME SHEAR WALLS THROUGH SHAKE TABLE TESTS.....	2045
<i>Diego Valdivieso, Diego Quizanga, Jose Luis Almazan, Diego Lopez-Garcia, Pablo Guindos, Abbie B. Liel</i>	
ASSESSING VIBRATIONAL PERFORMANCE IN DIFFERENT TIMBER FLOOR CONFIGURATIONS: AN EXPERIMENTAL STUDY	2051
<i>Ihsan Engin Bal, Rozemerijn Veenstra, Kamer Ozdemir, Eleni Smyrou</i>	
LONG -TERM LOADING CREEP TEST ON A FULL -SCALE STEEL BAR TIMBER COMPOSITE BEAM.....	2059
<i>Takeshi Izaki, Shinichi Shioya</i>	
EXPERIMENTAL INVESTIGATION OF CLT PANELS REINFORCED WITH GFRP BARS.....	2068
<i>Nada Simovic, Ivan Glišovic, Marija Milojevic</i>	
VIBRATION BEHAVIOUR OF A STRESSED LAMINATED TIMBER DECK PEDESTRIAN BRIDGE	2076
<i>Ebenezer Ussher, Mohammadreza Salehi, Hassan Hussein Mazloun</i>	
EXPERIMENTAL INVESTIGATION OF VIBRATION PERFORMANCE OF A GLULAM DECK FLOOR SUPPORTED ON GLULAM BEAMS	2084
<i>Chenyue Guo, Jianhui Zhou, Ying Hei Chui</i>	
SIGNAL DENOISING FOR TIMBER BRIDGE STRUCTURAL HEALTH MONITORING USING OPTIMIZED VARIATIONAL MODE DECOMPOSITION	2094
<i>Farshid Abdoli, Sahar Hassani, Ulrike Dackermann, Vahid Nasir, Maria Rashidi</i>	

5D - STCE/TESP - ENGINEERING - MATERIAL PROPERTIES / CODES & REGULATORY FRAMEWORK

CONTRIBUTION TO CLIMATE CHANGE MITIGATION THROUGH SOIL LIQUEFACTION COUNTERMEASURES USING LOGS	2103
<i>Atsunori Numata, Takumi Murata</i>	

ADVANCEMENTS ON THE STRUCTURAL TIMBER OPTIMIZER (STO)	2110
<i>Johannes Belz, Benjamin Kromoser</i>	

ESTIMATION OF STIFFNESS OF STANDING TREES BY VIBRATION CHARACTERISTICS	2116
<i>Kazuma Kitamura, Hiroki Ishiyama, Shigefumi Okamoto, Kai Harada, Natsuki Yuki, Yuichiro Nishino, Tetsu Tokuono</i>	

ENHANCING THE ROLE OF TIMBER THROUGH GREEN PUBLIC PROCUREMENT (GPP): ESTABLISHING A FRAMEWORK AND LIST OF PRODUCTS AND SERVICES FOR THE IRISH CONSTRUCTION INDUSTRY	2124
<i>Mohammed Zajeer Ahmed, Muhammed Khizar Muhammed Khizar, Patrick J. McGetrick, Cathal O'Donoghue</i>	

A PERFORMANCE-BASED DESIGN AND STOCHASTIC ANALYSIS APPROACH FOR DETERMINING THE ALLOWABLE PERCENTAGE OF EXPOSED STRUCTURAL MASS TIMBER IN BUILDING.	2132
<i>François Consigny, El Mehdi Koutaiba, Manuel Manthey, Cyril Douthe, Robert Leroy</i>	

FEM BASED ENGINEERING APPROACH TO ASSESS THE BEARING STRENGTH OF GLT MEMBERS WITH HOLES AND NOTCHES.....	2138
<i>Markus Detter, Georg Hochreiner, Markus Lukacevic, Josef Füssl</i>	

EXPERIMENTAL TESTS ON CONNECTIONS WITH DOWELS AND SLOTTED-IN STEEL PLATES UNDER CYCLIC LOADING	2147
<i>Kiavash Gholamizoj, Alexander Salenikovitch, Ying Hei Chui, David Hanna</i>	

5E - MPD - ENGINEERING - CHARACTERISING MATERIAL PROPERTIES, INCL LOGGO PRESENTATION

EXPERIMENTAL AND NUMERICAL INVESTIGATION OF THE BENDING PROPERTIES OF OIL PALM BASED CROSS LAMINATED TIMBER	2153
<i>Martin Hackel, Katja Fruehwald-Koenig</i>	

FACTORS INFLUENCING THE FINGER JOINT STRENGTH IN DOUBLE LAMINATED BEECH GLULAM.....	2163
<i>Martin Lehmann, Matias Cavero</i>	

VOLUME 4

EXPERIMENTAL INVESTIGATION ON THE ROLLING SHEAR PROPERTIES OF TIMBER.....	2169
<i>Steven Collins, Gerhard Fink</i>	

MECHANICAL CHARACTERIZATION OF THE SHORT- AND LONG-TERM BEHAVIOR OF GLUED-IN RODS IN LAMINATED BAMBOO LUMBER	2175
<i>Pascal Franck, O. Bletz-Mühldorfer, L. Bathon, Ronja Scholz, Frank Walther</i>	

HARDWOOD STRENGTH GRADING – CONSIDERATIONS FOR DENSITY AND COMPRESSION STRENGTH	2184
<i>Marlene Cramer, Daniel Ridley-Ellis</i>	

GRADES AND STRENGTH CHARACTERISTICS OF LOW-DENSITY HARDWOOD, YELLOW POPLAR.....	2193
<i>Chul-Ki Kim, Da-Bin Song, Sang-Joon Lee, Keon-Ho Kim</i>	

5F - MPD - ENGINEERING

THE BENDING PERFORMANCE OF BIONICS-INSPIRED LIGHTWEIGHT WOOD-BASED SANDWICH PANELS.....	2199
<i>Elena Vladimirova, Meng Gong, Alireza Kaboorani, Mohammad Mohammad</i>	
FINITE ELEMENT-BASED EVALUATION OF WALKING-INDUCED VIBRATIONS IN TIMBER-CONCRETE COMPOSITE FLOORS.....	2209
<i>Fernanda Scussiato Lago, Ghasan Doudak</i>	
EVALUATING THE EFFECT OF COASTAL DETERIORATION ON STRUCTURAL INTEGRITY OF CROSS-LAMINATED TIMBER.....	2217
<i>Shaghayegh Kurzinski, Issa Ramaji, Molly York</i>	
NEW DIMENSIONS – TIMBER PROJECTS AND CONNECTIONS	2224
<i>Patric Walter, Kilian Reiter, Martin Vierlinger</i>	
EFFECT OF NAIL JOINT STIFFNESS ON THE IN-PLANE SHEAR AND OUT-OF-PLANE BENDING PROPERTIES OF NLT	2234
<i>Kazuki Ito, Shiro Nakajima</i>	
DURABILITY: MEMBRANES AND TAPES FOR WOOD PROTECTION.....	2242
<i>Alessandro Dauriz, Paola Brugnara, Alice Speranza, Luca Sestigiani</i>	
CHEMICAL MIGRATION AND REDISTRIBUTION OF CCA COMPONENTS IN EUCALYPTUS NITENS HEARTWOOD: IMPLICATIONS FOR DURABILITY UNDER ACCELERATED WEATHERING.....	2250
<i>Juan Vargas, Tripti Singh, Luis Yermán, Kyra Wood</i>	

5G - STCE - ENGINEERING

DIGITAL TWINNING FOR ENHANCING TRANSPARENCY IN SUSTAINABILITY, SAFETY, HEALTH AND SERVICEABILITY OF TALL TIMBER STRUCTURES	2260
<i>Noëmi Friedman, Blaž Kurent, Bence Popovics, Stevan Nesovic, Branimir Rakic, Gregor Karlovsek, Ema Lovsin, Nenad Milosevic, Igor Osmokrovic, Katja Malovrh Rebec, Rok Rudolf, Boštjan Brank</i>	
PRELIMINARY INVESTIGATION ON THE STRUCTURAL AND HYGROTHERMAL PERFORMANCES OF CLT WITH AIRGAPS	2270
<i>Yutaka Goto, Robert Jockwer</i>	
STRUCTURAL PROPERTIES OF LUMBER FROM SMALL LOGS GENERATED IN FOREST THINNING OPERATIONS	2280
<i>Michelle Jayawickrama, Lech Muszynski, Dessie Tibebe, Elijah Olawumi</i>	
ENVIRONMENTAL BENEFITS OF POST-USE MATERIALS RECOVERY: A CIRCULAR ECONOMY CASE STUDY OF A CROSS-LAMINATED TIMBER MULTI-STOREY BUILDING IN A LIFE CYCLE PERSPECTIVE	2288
<i>Ambrose Dodoo, Ahmad Al-Najjar, Jonn Are Myhren</i>	
CCLT – DEVELOPMENT OF A CLT BASED SANDWICH STRUCTURE WITH BAMBOO RINGS AS CORE MATERIALS	2296
<i>Andreas Loth, Ralf Förster, Ulrike Siemer, Igor Wiele</i>	

ENHANCING MULTI-STOREY BUILDINGS WITH CLT CORES USING LVL TECHNOLOGY: DESIGN AND TESTING.....	2303
<i>Ferdinand Oswald, John Chapman, Pierre Quenneville, Luka Rigter</i>	
STRENGTH AND STIFFNESS OF (RELAMINATED) CLT EDGETRIMMED OFF-CUTS.....	2313
<i>Johann E. Van Der Merwe, Christo Van Der Hoven</i>	
POST-FIRE STRUCTURAL REHABILITATION OF MASS TIMBER ELEMENTS	2321
<i>Samuel Cuerrier Auclair, Christian Dagenais</i>	

5H - ECCS/STCE - ENGINEERING

DESIGN OF INDOOR STRUCTURES USING SMALL-SECTION TIMBER ASSEMBLY FRAME AND PRACTICE OF MATERIAL RECYCLING.....	2330
<i>Tomoaki Soma, Kento Emori, Yoshikuni Kimura, Yasutada Sekiyama</i>	
TOWARDS SUSTAINABLE TIMBER CONSTRUCTION: A CASE STUDY OF WASTE GENERATION, MANAGEMENT, AND CIRCULAR STRATEGIES IN AUSTRALIAN SAWMILLING AND PREFABRICATION MANUFACTURING.	2338
<i>D M H Dissanayake, Sasindu Samarawickrama, Tharaka Gunewardena, Priyan Mendis</i>	
ADVANCED STRUCTURAL DESIGN OF TIMBER BUILDINGS IN JAPAN	2347
<i>Yoshiko Kanai, Katsuhira Honda, Masatoshi Hayashi, Takaaki Kanno</i>	
SUSTAINABLE REUSEABLE TIMBER-CONCRETE COMPOSITE STRUCTURAL FLOORING SYSTEM.....	2357
<i>Alireza Fadai, Johann Scheibenreiter, Andreas Ringhofer</i>	
ENHANCING DESIGN AND PRODUCTION IN MODULAR TIMBER ARCHITECTURE WITH COMPUTATIONAL DESIGN TOOLS	2364
<i>Joaquim Llorens, Edyta Augustynowicz, Christophe Sigrist</i>	
INTERACTIVE PARAMETRIC STRUCTURAL DESIGN AND OPTIMISATION TOOL FOR DESIGN OF FRP-REINFORCED MASS TIMBER BUILDINGS.....	2374
<i>Tomas Bravo, Harry Mills, Cristian Maluk, Joseph M. Gattas</i>	
DECARBONISATION STRATEGIES USING TIMBER IN NON-TRADITIONAL APPLICATIONS.....	2381
<i>Ralph Belperio</i>	

5I - STCE - ARCHITECTURAL

THE STUDY ON MECHANICAL PERFORMANCE AND CARBON FOOTPRINT OF ADHESIVE FREE ENGINEERED WOOD.....	2388
<i>Chi-Jen Chen</i>	
THE ACOUSTIC PERFORMANCE OF LONG-SPAN HOLLOW MASSIVE TIMBER FLOOR CASSETTES DESIGNED FOR CIRCULARITY.....	2395
<i>Dustin Albright, Kylee Russell, Thomas Leggett, Coly Tabberson, Brandon Ross, Michael Stoner</i>	
CIRCULAR DESIGN FOR URBAN DENSIFICATION THROUGH EXTENSION CONSTRUCTION	2403
<i>Jiayi Kayee Li, Lars Vabbersgaard Andersen, Markus Matthias Hudert</i>	

ASSESSING THE REUSE POTENTIAL OF MASS TIMBER CONSTRUCTION USING A TEN-STORY SHAKE TABLE CASE STUDY	2412
<i>Jason Stenson, Sofia Chavez, Mark Fretz, Judith Sheine</i>	

FOREST TO FAÇADE: USING MASS TIMBER PANELS TO RETROFIT LOW-RISE COMMERCIAL BUILDINGS TO IMPROVE RESILIENCE	2420
<i>Mark Fretz, Gustavo Fernando Orozco Orozco, Andrew Loia, Ethan Bloom, Jason Stenson, Dale Northcutt, William Silva, Jon Smith, Edward Running, Alen Mahic, Siobhan Rockcastle, Judith Sheine, Andre R. Barbosa</i>	

PARAMETRIC LIBRARY OF JAPANESE JOINERY	2430
<i>Lynda Itatahine, Yosuke Komiyama</i>	

OFF-SITE MANUFACTURING FOR A NEW MODULAR WOODEN ARCHITECTURE MADE IN ITALY	2436
<i>Albino Angeli, Jacopo Bono, Guido Callegari, Adriano Francescotti, Massimiliano Lo Turco, Stefano Menapace, Jean Carlos Lapo Procel, Andrea Rossi, Benedetta Rossi, Paolo Simeone, Andrea Tomalini</i>	

MECHANICAL PROPERTIES OF SECONDARY LUMBER OF NORWAY SPRUCE	2444
<i>Florian Böhm, Sajjad Jubair, Andriy Kovryga, Jan-Willem Van De Kuilen</i>	

6A - TESP - ENGINEERING - RESILIENT SOLUTIONS FOR MID-RISE MASS TIMBER BUILDING IN HIGH SEISMIC REGIONS

GLUED-IN ROD SPLICE CONNECTION FOR MASS TIMBER SHEAR WALLS IN A SIX-STORY SHAKE-TABLE TEST STRUCTURE.....	2454
<i>Steven Kontra, Andre R. Barbosa, Steve Pryor, Arijit Sinha, Barbara G. Simpson, John W. Van De Lindt, Tanner J. Field, Patricio A. Uarac P., Gustavo A. Araújo R., Morgan McBain, Ludovica Pieroni, Prashanna Mishra</i>	

RESPONSE OF MASS PLY PANEL, SELF-CENTERING ROCKING WALLS WITH BUCKLINGRESTRAINED BOUNDARY ELEMENTS AS ENERGY DISSIPATORS IN SHAKE TABLE TESTING.....	2463
<i>Morgan McBain, Ludovica Pieroni, Gustavo A. Araújo R., Barbara G. Simpson, Andre R. Barbosa, John W. Van De Lindt, Arijit Sinha, Steven Kontra, Prashanna Mishra, Steve Pryor, Patricio A. Uarac P., Tanner J. Field</i>	

FULL-SCALE SHAKE TABLE TEST OF RESILIENT SIX-STORY HYBRID MASS TIMBER AND STEEL STRUCTURE	2473
<i>Tanner J. Field, Andre R. Barbosa, Arijit Sinha, Steve Pryor, John W. Van De Lindt, Barbara Simpson, Patricio A. Uarac P., Prashanna Mishra, Steven Kontra, Morgan McBain</i>	

MODAL CHARACTERISTICS OF TWO MID-RISE MASS TIMBER-STEEL HYBRID BUILDINGS UTILIZING AMBIENT VIBRATION TESTS	2481
<i>Samira Mohammadyzadeh, Jianhui Zhou</i>	

MULTI-STOREY LIGHT-FRAME WOOD SHEAR WALL LATERAL DEFLECTION: INVESTIGATION OF THE CUMULATIVE ROTATION EFFECT IN SEISMIC DESIGN	2488
<i>Diego Flores, Ali Mikael, Sarah Stevenson, T. Y. Yang</i>	

6B - TESP - ENGINEERING - FLOOR SYSTEMS

RELIABILITY OF SMARTPHONE SENSORS FOR THE VIBRATION COMFORT ASSESSMENT OF EXISTING TIMBER FLOORS	2498
<i>Alessandro Mazelli, Martina Sciomenta, Chiara Bedon</i>	
COMPARISON OF THE CALCULATED AND MEASURED VIBRATION BEHAVIOUR OF LONG-SPAN TIMBER FLOORS.....	2505
<i>Johannes Ruf, Patricia Hamm, Martin Schneider</i>	
MOMENT JOINTS IN THE MINOR STRENGTH AXIS OF CLT PANELS	2513
<i>Armin Hosseini, Md Shahnewaz, Carla Dickof, Jianhui Zhou, Thomas Tannert</i>	
EXPERIMENTAL AND ANALYTICAL INVESTIGATION OF A NOVEL ADHESIVE-FREE TIMBER-STEEL COMPOSITE USING EUCALYPTUS GLOBULUS HARDWOOD.	2519
<i>Richard Nore, Philip Christopher, Tuan Ngo</i>	
ADVANCED TIMBER COMPOSITE FLOOR PANELS USING PLANTATION EUCALYPTUS HARDWOOD	2528
<i>Daniel Watson</i>	

6C - TESP - CASE STUDIES

RECORDED NATURAL FREQUENCIES OF TIMBER BUILDINGS – A REVIEW	2538
<i>Carl Larsson, Blaž Kurent, Osama Abdeljaber, Boštjan Brank, Michael Dorn</i>	
LATTICIZING AXIALLY COMPRESSED MEMBERS IN TIMBER STRUCTURES: A METHOD FOR USING SMALL DIMENSIONAL LUMBER AS ALTERNATIVE TO MASS TIMBER PRODUCTS	2545
<i>Harrison Huang, Kapulanbayi Ailaitjiang</i>	
PRACTICAL DESIGN CONSIDERATIONS FOR TCC-ELEMENTS WITH CLT-SLABS	2554
<i>Thomas Moosbrugger, Harald Krenn</i>	
VIBRATION SERVICEABILITY OF MASS TIMBER COMPOSITE CLT-GLULAM TIMBER FLOOR WITH MECHANICAL SHEAR PLATES	2560
<i>Sultani Mulk Khan, Herry Chen, Alana Lund, Daniel Lacroix</i>	
UTILIZING WOOD RESIDUES FOR HIGH ADDED-VALUE MODULAR BUILDINGS – A CASE STUDY	2569
<i>Vjekoslav Živkovic, Antonio Copak, Andrija Novosel</i>	
VIBRATION ASSESSMENT AND NUMERICAL MODELLING OF MASS TIMBER COMPOSITE FLOORS: INSIGHTS FROM AN EXPERIMENTAL-NUMERICAL CAMPAIGN.....	2575
<i>Sardar Malek, Najmeh Cheraghi-Shirazi, Fendy Setiawan, Ariel Creagh, Parham Khoshkbari</i>	

6D - MPD - ENGINEERING - PROTECTIVE DESIGN - MOISTURE SAFETY IN TIMBER BUILDINGS AND CONSTRUCTION PROCESSES.

MOISTURE INGRESS AND MOVEMENT PATTERN IN AUSTRALIAN CLT PANELS – A PILOT STUDY	2581
<i>Claudia Roder, Christophe Gerber, Maryam Shirmohammadi, Tripti Singh</i>	

MOISTURE MONITORING OF MASS TIMBER BUILDING - STUDY OF CONDITION VARIATION AND BUILDING ENVIRONMENT DESIGN.....	2589
<i>Maryam Shirmohammadi, Marcus Strang, Paola Leardini, Kim Baber, Adam Faircloth</i>	
MOISTURE INTRUSION PATTERNS IN SMALL-SCALE MASS PLY PANEL FLOORS	2599
<i>Jeffrey J. Morrell, Diego R. Ramirez, Ian Morrell, Tripti Singh, Arijit Sinha</i>	
ENVIRONMENTAL, ECONOMIC AND MOISTURE RELATED ASPECTS OF LARGE SPAN TIMBER STRUCTURES IN HIGHLY CORROSIVE SURROUDINGS	2609
<i>Tim Skotheimsvik, Karl-Christian Mahnert, Samee Ullah</i>	
RESEARCH ON THE DURABILITY OF ORTHOGONAL GLUED CROSS-LAMINATED TIMBER UNDER GROUND CONDITIONS.....	2617
<i>Yuko Mizobuchi, Tadashi Hara, Masaki Harada, Makoto Imai</i>	

6E - MPD - ARCHITECTURAL

HYGROTHERMAL PERFORMANCE AND WATER VAPOUR DIFFUSION RESISTIVITY OF AUSTRALIAN PLANTATION-GROWN TIMBER.....	2623
<i>Zahraa Al-Shammaa, Mark Dewsbury, Louise Wallis, Hartwig Künzel</i>	
LOW-CARBON INTENSITY TIMBER FAÇADE SYSTEMS FOR MID-RISE BUILDINGS.....	2633
<i>Mark Dewsbury, Arianna Brambilla, Paola Leardini</i>	
MOULD GROWTH RISKS FOR LOW-RISE TIMBER-FRAMED RESIDENTIAL BUILDINGS IN SOUTH-EASTERN AUSTRALIA	2642
<i>Mark Dewsbury, Hartwig Künzel</i>	
A DESIGN METHODOLOGY CONSIDERING ACOUSTIC PREDICTION MODEL AND LCA: A COMPARATIVE STUDY OF DIFFERENT CLT-BASED ASSEMBLIES.....	2652
<i>Mohamad Bader Eddin, Sylvain Ménard, Bertrand Laratte</i>	
PARAMETRIC IMPLEMENTATION OF STRUCTURAL ANALYSIS DATA IN THE CONSTRUCTION OF A COMPLEX CURVED TIMBER STAIRCASE.....	2655
<i>Bertie Hipkin, Stefan Rick, David Riggenbach, Benedikt Schneider, Ana Ascic</i>	

6F - STCE - ENGINEERING

CYCLIC BEHAVIOUR OF COMPOSITE STEEL-CROSS-LAMINATED-TIMBER STRUCTURAL SYSTEM	2660
<i>Baiyu Chen, Rachel M. Henry, Sujit Bhandari, Michael Kane, Mark Webster, Jerome F. Hajja</i>	
LIFE CYCLE ASSESSMENT OF END-OF-LIFE OPTIONS OF DEMOLITION WASTE WOOD IN NEW ZEALAND	2668
<i>Hao Liang, Gary M. Raftery</i>	
A WEB-BASED LIFE CYCLE ASSESSMENT PLATFORM FOR IMPORTED TIMBER PRODUCTS	2678
<i>Song Ge, Conan O'Ceallaigh, Patrick J. McGetrick</i>	
ENGINEERED WOOD PANELS FROM RECYCLED TIMBER: A SUSTAINABLE SOLUTION FOR AUSTRALIAN CONSTRUCTION	2688
<i>Isuri Tamura Amarasinghe, Tharaka Gunawardena, Priyan Mendis</i>	

REIMAGINING TIMBER: AN INTEGRATED APPROACH OF RESOURCE EFFICIENT FABRICATION PROCESS FOR TOPOLOGICALLY OPTIMISED CROSS-LAMINATED TIMBER SLABS	2695
<i>Lingju Wu, Dingwen Bao, Bowen Chen, Dan Luo, Joseph M. Gattas</i>	

UPCYCLING CLT CUT-OFFS INTO MODULAR BUILDING BLOCKS: LCSA CASE STUDY, ADOPTING A MULTIPLE-CYCLES APPROACH AT BUILDING ELEMENT LEVEL.....	2704
<i>Tienda Francisco</i>	

6G - ECCS/TESP - ENGINEERING

TIMBER AS BRIDGE BETWEEN PAST AND FUTURE: STRUCTURAL UPGRADING AND CONSERVATION OF THE ANCIENT TIMBER AND MASONRY VENETIAN SAWMILL OF VALLARO (BRESCIA, ITALY).....	2709
<i>Michele Mirra, Andrea Gerardini</i>	

IN-PLANE STIFFNESS OF LARGE-AREA FRAMED FLOOR DIAPHRAGMS CONSTRUCTED WITH ORIENTED STRAND BOARD PANEL SHEATHING USING A SWISS CASE STUDY	2716
<i>Miriam Kleinhenz, René Zemp, Athanasios Kontis, Arnaud Deillon</i>	

SPIRAL CLT-CONCRETE COMPOSITE STAIR CLEAR SPANS 21M	2726
<i>Lucas G. Epp, Lukas C. Gispert, Ben Moerman</i>	

TOWARDS MANUFACTURING OF FULL SCALE WOOD VENEER AUTOMOTIVE PANEL	2734
<i>Matt Jennings, Mahbube Subhani, Johannes Reiner, Giovanni Piazza, David Heyner</i>	

6H - EIC - PRACTITIONER

INNOVATIVE APPROACHES TO OPTIMISATION AND SUSTAINABILITY IN TIMBER CONSTRUCTION: INSIGHTS FROM THE AUSTRIAN RESEARCH PROJECT SYS.WOOD	2743
<i>Markus Wallner-Novak, Marc Pantscharowitsch, Alireza Fadaei, Benjamin Kromoser, Ernst Alexander Dengg, Phillip Siss, Katharina Schachner, Gottfried Mauerhofer, Johannes Würzler, Marius Valente, Alexander Gerger</i>	

ALIGNING NEEDS AND SUSTAINABILITY: A CASE STUDY OF BIOBASED TEMPORARY HOUSING.....	2752
<i>Mahmoud Abu-Saleem, Kim Baber, Joseph M. Gattas, Gabin Gilbert, Mathys Le Bihan, Andrew Rose, Fabiano Ximenes</i>	

FUNDAMENTAL STUDY ON USING OF MOTION CONFIRMATION AND GAZE MEASUREMENT FOR PRESERVING CARPENTRY TECHNIQUE	2762
<i>Akiko Ohtsuka, Masaki Ishii</i>	

EUROPEAN POLICIES INFLUENCING WOOD SUPPLY AND DEMAND IN SCENARIOS UNTIL 2040	2770
<i>Uwe Kies, Vanesa Baño, Mireia Pecurul-Botines</i>	

INCREASING CARBON LITERACY WITHIN THE DESIGN SECTOR	2778
<i>Ashley Cagle</i>	

7A - TESP- ENGINEERING -

BRIDGES / BEAMS

VIBRATION SERVICEABILITY OF A TIMBER ARCH PEDESTRIAN BRIDGE CONSIDERING DETERIORATION OVER TIME	2785
<i>Daisuke Oikawa, Toshiharu Shintani, Humihiko Gotou, Yukari Aoki, Ryu Noda</i>	
OPTIMISATION OF THE STRUCTURAL INSPECTION OF TIMBER BRIDGES USING DIGITAL MODELS.....	2792
<i>Antje Simon, Thorben Niemann, Ralf Arndt, Habeb Astour, Frank Bonitz, Martin Schickert, Wolfram Scheiding</i>	
MONITORING OF A TOLL BRIDGE MADE FROM TIMBER – CHANGES IN MOISTURE CONTENT, TIMBER STRAINS AND CONNECTION FORCES AFTER APPROXIMATELY 1.5 YEARS OF SERVICE.....	2802
<i>David Glasner, Andreas Ringhofer</i>	
AN EXPERIMENTAL INVESTIGATION ON THE LONG-TERM BEHAVIOR OF PRESTRESSED GLULAM BEAMS	2810
<i>Yuxuan Wang, Minjuan He</i>	
BENDING PERFORMANCE OF I-JOISTS COMPOSED BY DIFFERENT ENGINEERED WOOD PRODUCTS.....	2816
<i>Yina Moscoso, João Nogueira, Sayed Adeel, Elisa Poletti, Luís Baptista, Jorge M. Branco</i>	
NUMERICAL INVESTIGATION OF CLT COMPOSITE DOUBLE T-BEAMS.....	2824
<i>Reza Masoudnia, Saber Masoudnia, Ashkan Hashemi, Pierre Quenneville</i>	

7B - TESP - ENGINEERING - BEHAVIOUR OF DOWELS

HOW INTERACTION OF INTERNAL FORCES AND MOMENTS INFLUENCE THE LOAD- BEARING CAPACITY OF DOWELS	2834
<i>Elisabet Kuck, Carmen Sandhaas, Hans Joachim Bläß</i>	
A NOVEL BUCKLING-RESTRAINED CONNECTION FOR MASS TIMBER BRACED FRAMES AND CLT SHEAR WALL HOLD DOWNS	2841
<i>Dylan C. Neves, Joshua Woods</i>	
SEISMIC PERFORMANCE AND NONLINEAR MODEL OF MASS TIMBER BUCKLING RESTRAINED BRACED FRAME	2850
<i>Emily Williamson, Chris P. Pantelides, Hans-Erik Blomgren, Douglas Rammer</i>	
SEISMIC PERFORMANCE PARAMETERS EVALUATION FOR TIMBER BRACED FRAMES.....	2858
<i>Daiki Hinata, Andre R. Barbosa, Arijit Sinha, Reid B. Zimmerman, Jonathan Heppner</i>	
NUMERICAL SIMULATION OF WOODEN DOWELS UNDER COMPRESSION.....	2866
<i>Inayat Ullah Khan, Mahbube Subhani, Kazem Ghabraie, Mahmud Ashraf</i>	
PARAMETRIC STUDY ON THE BENDING PERFORMANCE OF WOODEN DOWELS	2874
<i>Inayat Ullah Khan, Mahbube Subhani, Kazem Ghabraie, Mahmud Ashraf</i>	

7C - TESP - ENGINEERING - PERFORMANCE OF HYBRID CONNECTIONS

BEHAVIOUR OF GLUED-IN ROD CONNECTIONS IN MASS TIMBER STRUCTURES - A STATE-OF-THE-ART REVIEW	2881
<i>Amir M. Verki, Sam Salem</i>	
ROOM-SCALE TESTS WITH EXPOSED TIMBER	2891
<i>David Barber, Laura Hasburgh, Keith Bourne</i>	

VOLUME 5

EVALUATIONS FROM MULTIPLE PERSPECTIVES ON TIMBER-CONCRETE COMPOSITE SLABS FOCUSING ON ADHESION WATERPROOF COATINGS	2900
<i>Yukiko Nakatsu, Shuhei Uesugi, Katsuhide Murakami, Yoshisato Esaka</i>	
FORM-FITTING MASS TIMBER CONNECTIONS: WOODWORKING FOR THE NEW AGE	2910
<i>Maxime Daviau, Daniel Lacroix</i>	
IN-PLANE SHEAR PROPERTIES OF DISINTEGRATED HYBRID CROSS-LAMINATED TIMBER.....	2919
<i>Nils Schumacher, David Fochler, Lucas Viereck, Patrik Aondio, Stefan Winter</i>	
FEASIBILITY OF CROSS-LAMINATING HIGH-DENSITY EUCALYPTUS.....	2926
<i>Milad Lezgi, Hyungsuk Lim, Clemens Altaner</i>	

7D - MPD - ENGINEERING - MONITORING TIMBER DECAY

TIMBER BALCONY MONITORING PLAN: REVIEW AND STEP-BY-STEP PROCEDURE	2936
<i>Daniele Salzani, Andrea Gaspari, Maurizio Piazza, Ivan Giongo</i>	
QUANTITATIVE EVALUATION OF DETERIORATION OF TIMBER BY INDIRECT METHOD NON-DESTRUCTIVE EVALUATION	2946
<i>Kugbo Shim, Hyeongjun Han, Kyoungyun Ryu</i>	
HUMIDITY IMPACT ON TIMBER CONNECTION STRENGTH	2952
<i>Dominika Malkowska, Eleni Toumpanaki</i>	
REVIEWING AND ENHANCING FLOOD DAMAGE ASSESSMENT METHODOLOGIES IN NEW ZEALAND	2960
<i>Parisa Sedighizadeh, Hyungsuk Lim</i>	
ANALYSIS AND PREDICTION OF SAPWOOD AND HEARTWOOD PROPORTIONS IN WOODEN FOUNDATION PILES IN RELATION TO BACTERIAL DECAY	2967
<i>Michele Mirra, Wolfgang Gard, Giorgio Pagella, Geert Ravenshorst, Jan-Willem Van De Kuilen</i>	
EFFECT OF FUNGAL DECAY ON WITHDRAWAL CAPACITY OF TIMBER NAIL CONNECTIONS IN RADIATA PINE.....	2974
<i>Camilo Montoya, Lisa Ottenhaus, Tripti Singh, Jeffrey J Morrell, Luis Yermán</i>	

7E - TABD - ARCHITECTURAL

PROTOTYPING A SMALL MASS TIMBER HOUSE.....	2980
<i>Judith Sheine, Mark Fretz, Mikhail Gershfeld, Jason Stenson</i>	
LOW-COST BIOMASS CONSTRUCTION TECHNOLOGY SYSTEMS WITH SMALL- DIAMETER ROUND TIMBER AS MAIN MATERIAL AND ITS CARBON REDUCTION EFFICIENCY	2989
<i>Ying Wu, Hongpeng Xu, Jianmei Wu, Yuncheng Ji</i>	
BIMWOOD – OPTIMIZED TIMBER CONSTRUCTION PLANNING PROCESS.....	2999
<i>Frank Latke, Sandra Schuster, Stephan Birk</i>	
ARE WOOD BUILDINGS MORE CIRCULAR? A COMPARATIVE STUDY ON BUILDING CIRCULARITY BETWEEN REINFORCED CONCRETE AND TIMBER STRUCTURES	3009
<i>Harrison Huang, Lu Li, Yan Gu</i>	
RESEARCH ON CONVERTING SFM 3D POINT CLOUD TO 3D COORDINATE SYSTEM USING STLP POINT CLOUD CONNECTION DEVICE IN THE"JODO-SHUSAINEN- JIHONDOU"	3017
<i>Zhixing Wang, Hito Sato, Hisamitsu Kajikawa</i>	

7F - TESP - ENGINEERING - ROBUSTNESS

DEVELOPMENT AND SEISMIC DESIGN OF NOVEL HYBRID TIMBER-STEEL ECCENTRICALLY BRACED FRAMES.....	3027
<i>Abebaw A. Mekonnen, Mairvat Abdulhamid, Matiyas A. Bezabeh, Colin A. Rogers, Alexander Salenikovich</i>	
EVALUATION OF MATERIAL PROPERTIES OF CHAMAECYPARIS OBUSA VAR(TAIWAN HINOKI) USED IN TRADITIONAL ARCHITECTURE TAISHO-PERIODO.....	3037
<i>Rina Kurahashi, Hina Takizawa, Yuya Takaiwa</i>	
EXPERIMENTAL DETERMINATION OF THE COMBINED LOADING BEHAVIOUR OF SCALED TIMBER FRAME WALLS SUBJECTED TO BENDING AND SHEAR	3047
<i>Dries Byloos, Tine Engelen, Bram Vandoren</i>	
MACQUARIE UNIVERSITY AINSWORTH BUILDING (SYDNEY).....	3055
<i>Kengo Takamatsu, Nicola Shear</i>	
COLUMN LOSS ANALYSES FOR POST AND BEAM STRUCTURES	3060
<i>Katharina Sroka, Pedro Palma</i>	
DEVELOPMENT OF GIR SYSTEM WITH HIGH TOUGHNESS COUPLER	3066
<i>Kota Nagai, Yuta Mori, Takato Kayukawa, Kei Tanaka, Ryo Inoue, Naoto Sato, Koji Harada</i>	

7G - ECCS - AUSTRALIAN HYBRID-TIMBER EXEMPLARS (ATLASSIAN & T3 COLLINGWOOD)

STRUCTURAL FIRE ENGINEERING FOR ATLASSIAN CENTRAL	3074
<i>Linus Lim, Praveen Kamath, Sean Takahashi, Lukas Rutkauskas, Samia Razzaque, Jared Mattern</i>	

STRUCTURAL INNOVATIONS IN ATCLASSIAN CENTRAL: PIONEERING HYBRID TIMBER HIGH-RISE CONSTRUCTION IN COMMERCIAL DEVELOPMENTS	3082
<i>Mitch Page, Adrian Taylor, Tim Crawshaw, Peter Titmuss</i>	

T3 COLLINGWOOD - OPTIMISING DESIGN OF TALL GLULAM STRUCTURES USING HARDWOOD	3090
<i>Jack Hill</i>	

MASSLAM SEATED BEARING CONNECTION	3099
<i>Nathan Benbow</i>	

7H - TESP - PRACTITIONER

IN-PLANE RACKING STRENGTH TESTS OF WOOD-FRAME WOOD STRUCTURAL PANEL SHEAR WALLS USING DIFFERENT END POST AND HOLD-DOWN DETAILS STRUCTURAL PANEL SHEAR WALLS.....	3108
<i>Philip Line, Omar Amini, Bradford Douglas</i>	

EXPERIMENTAL TESTING OF HIGH-CAPACITY WOOD-FRAME WOOD STRUCTURAL PANEL SHEAR WALLS	3118
<i>Omar Amini, Philip Line, Bradford Douglas</i>	

A DESIGN MODEL FOR CROSS-LAMINATED TIMBER SHEAR WALLS WITH SINGLE CUT-OUT DOOR OPENINGS	3125
<i>Giuseppe D'Arenzo, Riccardo Fanti, Daniele Casagrande, Werner Seim, Ghasan Doudak</i>	

THE CHALLENGES OF DESIGNING A HIGH-CAPACITY DUCTILE CLT SHEAR WALL SYSTEM FOR A 6-STOREY CLT BUILDING	3133
<i>Thomas Wright, Bjorn Stankowitz, Minghao Li</i>	

LIMITATIONS AND ERRORS IN THE TORSION SETUP AND FORMULATION OF SHEAR FIELD TEST SPECIFIED IN CURRENT EUROPEAN TEST STANDARD EN 408:2010 FOR TIMBER BEAMS	3143
<i>Hexin Zhang, Yu Deng, Minhe Shen, Yutong Li, Ling Liao, Yanfang Quan, Langni Deng, Baochen Liu, Liping Sun, Wenming Wang, Fei Xue, Biyao Zhou, Ming Ma</i>	

8A - TESP - ENGINEERING

AN EXPERIMENTAL INVESTIGATION INTO THE STRUCTURAL PERFORMANCE OF TIMBER I-JOISTS WITH CIRCULAR WEB OPENINGS.....	3150
<i>Sini Lu, Aamir Khokhar, Abel Munoz, Ross Brown</i>	

AN EXPERIMENTAL STUDY ON DIFFERENT SHEAR RESISTANCE MECHANISMS OF JAPANESE CLT CONCRETE COMPOSITE SLABS	3159
<i>Yuka Konishi, Ruka Hyodo, Masamichi Sasatani</i>	

DESIGN AND STRUCTURAL PERFORMANCE OF WOOD FRAMING WITH “FLEXIBLE WOOD”	3169
<i>Eito Atsuzawa, Tomoaki Souma, Satoshi Yasuda, Koji Adachi</i>	

EFFECT OF DESIGN CONFIGURATION ON GLOBAL STIFFNESS OF VOLUMETRIC TIMBER MODULES.....	3175
<i>Jiayi Kayee Li, Anne Kristine Bak, László Mangliár, Markus Matthias Hudert, Lars Vabbersgaard Andersen</i>	

DEVELOPMENT OF SIMPLE SEISMIC REINFORCEMENT METHOD OF TRADITIONAL WOODEN – APPLICATION OF LATTICE BEARING WALL –	3185
<i>Tatsuya Tani, Atsuo Takino, Hiroki Ishiyama, Kotaro Sumida</i>	
USE OF TREMBLING ASPEN LUMBER TO PRODUCE GLUED-LAMINATED TIMBER BEAMS: BENDING PERFORMANCE	3191
<i>Dawei Wang, Mengyuan Zhang, Hao Xie, Meng Gong, Ying Hei Chui</i>	
LARGE-SCALE IN-PLANE TESTING OF TIMBER-FRAME DIAPHRAGMS AND COMPARISON OF PERFORMANCE WITH DESIGN MODELS.....	3201
<i>Anita Amirsardari, Jessey Lee, Lam Pham, Emad Gad, Tilak Pokharel</i>	
EFFECT OF CONNECTION GEOMETRY ON THE JOINT CAPACITY OF AN LVL LOADED PERPENDICULAR TO THE GRAIN	3208
<i>Muhammad Abul Kalam Azad, Safat Al-Deen, Damith Mohotti</i>	

8B - TESP - ENGINEERING

CONNECTIONS

ROTATIONAL PERFORMANCE OF GLULAM PRE-ENGINEERED BEAM-COLUMN JOINTS.....	3217
<i>Zhichao Zheng, Xiaoyue Zhang, Weiguo Long, Yu Shi, Gang Xiong, Jiajia Ou, Zengxin Peng</i>	
STEEL PLATE CONNECTIONS FOR TWO-WAY SPANNING CLT - CONCRETE COMPOSITE FLOORS	3224
<i>Hamidreza Chaboki, Jianhui Zhou, Thomas Tannert</i>	
STRUCTURAL PERFORMANCE OF MENGKULANG LAMINATED VENEER LUMBER (LVL) TRUSS JOINTS USING PUNCHED-METAL-PLATE CONNECTIONS: EXPERIMENTAL AND NUMERICAL STUDY	3232
<i>Nor Azizah Muhammad, Sarina Ismail, Zakiah Ahmad, Norshariza Mohamad Bhkari, Ali Awaludin, Lum Wei Chen</i>	
ENHANCING THE SEISMIC PERFORMANCE OF HOLD-DOWN TIMBER TO CONCRETE CONNECTIONS VIA DUCTILE ANCHORS	3242
<i>Kashif Salman, Ramin Sarange, Asif Iqbal, Gloria Faraone</i>	
BRITTLE FAILURE OF CLT CONNECTIONS WITH INCLINED SELF-TAPPING SCREWS	3248
<i>Amir Einipour, Alexander Salenikovitch, Jianhui Zhou, Thomas Tannert</i>	
EXPERIMENTAL INVESTIGATION ON THE PERFORMANCE OF NOVEL BOLTED GLULAM BEAM-TO-COLUMN CONNECTIONS UNDER THE COUPLING EFFECTS OF TENSION AND BENDING.....	3254
<i>Xuebing Zhao, Xiaobin Song</i>	
PRESS-GLUED CONNECTIONS WITH STAPLES AND NAILS – AN EFFICIENT ALTERNATIVE TO CURRENT STANDARDISATION?.....	3259
<i>Dio Lins, Valentin Räber, Steffen Franke, Martin Lehmann</i>	

8C - TESP - ENGINEERING FLOORING , INCL GOTTSTEIN & TIMBER QUEENSLAND STUDY TOUR PRESENTATION

DYNAMIC PERFORMANCE ASSESSMENT OF FULL-SCALE CLT AND CLT-CONCRETE COMPOSITE FLOORS	3266
<i>Yitu Chen, Ulrike Dackermann, Hamid Valipour</i>	
VIBRATION PERFORMANCE OF A BEAMLESS CROSS LAMINATED TIMBER-CONCRETE COMPOSITE SLAB BAND FLOOR SYSTEM FOR 10-STOREY LIMBERLOST PLACE	3272
<i>Chenyue Guo, Robert Jackson, Md Shahnewaz, Jianhui Zhou</i>	
NUMERICAL MODELLING OF ROCKING CLT SHEARWALL CONSIDERING THE WALL-TO-FLOOR INTERACTIONS	3280
<i>Chaoyue Zhang, Yuxin Pan</i>	
AN INVESTIGATION INTO THE INFLUENCE OF TRANSVERSE BRIDGING SPINES ON THE VIBRATIONAL PERFORMANCE OF TIMBER FLOORS	3288
<i>Aamir Khokhar, Abel Munoz, Ross Brown</i>	
PUNCHING SHEAR PERFORMANCE OF POINT SUPPORTED CLT	3296
<i>Houman Ganjali, Md Shahnewaz, Carla Dickof, Marjan Popovski, Thomas Tannert</i>	

8D - TESP - ENGINEERING - DESIGN CHALLENGES FOR TIMBER BUILDINGS

A SURVEY ON THE DYNAMIC PROPERTIES OF MID- AND HIGH-RISE MASS TIMBER BUILDINGS	3302
<i>Samira Mohammadyzadeh, Jianhui Zhou</i>	
SEISMIC DESIGN OF TIMBER BUILDINGS IN NZ - THE NEW NZS AS 1720.1	3309
<i>Tobias Smith, Daniel Moroder</i>	
DEMONSTRATING LATERAL SYSTEM EQUIVALENCE OF A NOVEL MASS TIMBER MATERIAL THROUGH A FEMA P795 METHODOLOGY	3317
<i>Ian Morrell, Arijit Sinha, Daniel Cheney, Philip Line, Daniel Way, Frank Potter, M. Omar Amini</i>	
FINITE ELEMENT ANALYSIS OF REPLACEABLE STEEL PERFORATED PLATE FUSES IN TIMBER BRACED FRAMES	3325
<i>Yahia Ahmed, Hossein Daneshvar, Ying-Hei Chui</i>	
GLUED-IN HARDWOOD RODS AS REINFORCEMENT FOR GLULAM UNDER COMPRESSION PERPENDICULAR TO THE GRAIN	3334
<i>Yue Wang, Roberto Tomasi, Angelo Aloisio, Roberto Crocetti, Tianxiang Wang</i>	
ANALYZING COMPLEX TIMBER DIAPHRAGMS USING AN EQUIVALENT TRUSS METHOD	3344
<i>Esmaeel Rahmani, Luis Portea</i>	

8E - EIC / STCE - ENGINEERING -

DESIGN FOR WIND & SEISMIC LOAD EVENTS / STRUCTURAL BEHAVIOUR

REDUCTION OF FLOOR VIBRATIONS USING WOODEN AND OTHER DAMPERS	3353
<i>Johannes Ruf, Patricia Hamm, Valentin Knöpfle</i>	
ACTIVE VIBRATION CONTROL OF TIMBER FLOORS AND HUMANINDUCED EXCITATIONS	3361
<i>Thomas Hillberger, Roland Maderebner, Thomas Furtmüller, Philipp Dietsch</i>	
A BAYESIAN MODEL UPDATING FRAMEWORK FOR SEISMIC DAMAGE IDENTIFICATION IN MORTISE TENON JOINTED TIMBER FRAME	3368
<i>Jingliang Dong, Xiaobin Song</i>	
WOOD PRODUCTS FOR CLIMATE CHANGE MITIGATION IN THE ASIA-PACIFIC REGION	3374
<i>Rodney Keenan, Lyndall Bull, Ashley Steel, Sven Walter</i>	
EXPLORING CORRELATIONS BETWEEN NON-DESTRUCTIVE AND DESTRUCTIVE TESTS FOR THE MECHANICAL CHARACTERIZATION OF EXISTING TIMBER STRUCTURES	3384
<i>Giacomo Iovane, Beatrice Faggiano, Salvatore Verre, Michela Nocetti, Nicola Ruggeri, Marco Togni, Luciano Ombres</i>	
THE EFFECTS OF HEATING TIME ON MECHANICAL PROPERTIES OF WOODEN STRUCTURAL MEMBERS AFTER HEATING AND COOLING FOR CONTINUOUS USE AFTER FIRE	3390
<i>Souichirou Yamashita, Tomoyo Hokibara, Tatsuro Suzuki, Ryo Takase</i>	
MECHANICAL PROPERTIES OF RECYCLED VERSUS NEW HIGH-DENSITY AUSTRALIAN HARDWOODS	3396
<i>Duncan Hossy, Sadaf Manshadi, Joe Gattas, Lisa-Mareike Ottenhaus</i>	

8F - MPD - ENGINEERING - STRUCTURAL BEHAVIOUR

REAL-LIFE PERFORMANCE OF SHAPE-OPTIMIZED TIMBER BEAMS	3406
<i>Maximilian Pramreiter, Stefan Höchtl, Johannes Konnerth, Paul Mayencourt</i>	
IMPROVING STRUCTURAL ROUNDWOOD CLASSIFICATION BY DIGITAL 3D-MEASUREMENT	3414
<i>Maximilian L. Müller, Martin Huber, Franka Brüchert, Kay-Uwe Schober</i>	
FATIGUE OF TIMBER CONNECTIONS: A REVIEW OF FAILURE MECHANISMS AND DESIGN LIMITATIONS	3422
<i>Zhengyao Li, Robert Jockwer, Mohammad Al-Emrani</i>	
TORSION OF REINFORCED GLUED LAMINATED TIMBER BEAM	3429
<i>Rumia Tasmim, Hamid Vali Pour</i>	
DEVELOPMENT OF UHPC NODES FOR TIMBER STRUCTURES	3436
<i>Amr Abdallah, Md Shahnewaz, Carla Dickof, Lisa Tobber</i>	

EFFECT OF THICKNESS OF ADHESIVE ON SHEAR PROPERTIES OF WOOD-STEEL JOINT.....	3446
<i>Chul-Ki Chul-Ki, Da-Bin Song, Hyung Woo Lee</i>	

8G - STCE - ENGINEERING / ARCHITECTURE - ADVANCING THE CIRCULAR ECONOMY

REUSE OF WOOD IN STRUCTURAL PRODUCTS – A GAIN?	3452
<i>Guillermo Iñiguez-González, Daniel F. Llana, Dan Ridley-Ellis, Valentina Torres, Francisco Arriaga</i>	
RECOVERED TIMBER GRADING SYSTEM	3460
<i>Daniel F. Llana, Goran Turk, Carlos Osuna-Sequera, Guillermo Iñiguez-González</i>	
CAN THE SIRKTRÉ CONSORTIUM FACILITATE FOR 8% OF THE NORWEGIAN PARIS CLIMATE OBLIGATIONS WITH THEIR CIRCULAR SOLUTIONS?.....	3466
<i>Kristine Nore, Per F. Jørgensen, Francisco Tienda Reséndez, Wendy Wuyts</i>	
THE REUSE POTENTIAL OF RECLAIMED LOGS FOR OPTIMISED ENGINEERED WOOD PRODUCTS	3476
<i>Maarja Kauniste, Eero Tuhkanen, Alar Just, Kristine Nore, Sandra Kaljula</i>	
ASSESSMENT OF STRENGTH AND STIFFNESS PROPERTIES OF RECLAIMED STRUCTURAL TIMBER OF NORWAY SPRUCE	3484
<i>Maarja Kauniste, Tõnu Saarelaan, Alar Just, Eero Tuhkanen</i>	
A DIGITAL FRAMEWORK FOR ROBOTIC PROCESSING OF RECLAIMED TIMBER	3494
<i>You-Wei Yen, Tom Svilans</i>	
LIFE CYCLE CARBON FOOTPRINT ANALYSIS OF CROSS-LAMINATED TIMBER MULTI-STOREY BUILDING: IMPACT OF MATERIAL OPTIMISATION AND SUBSTITUTION STRATEGIES	3504
<i>Ambrose Dodoo, Fatuma Omer Ali, Neda Bozorgirad, Felix Quarcoo, Carl Larsson</i>	

8H - TESP - ENGINEERING - DYNAMIC TESTING & FIRE ENGINEERING

NUMERICAL MODELING OF THE SEISMIC PERFORMANCE OF A 10-STORY MASS TIMBER BUILDING.....	3512
<i>Sarah Wichman, Jeffrey W. Berman, Reid B. Zimmerman, Shiling Pei</i>	
EXPERIMENTAL FIRE TESTING OF STS-RETROFITTED GLULAM BEAM CONNECTIONS WITH MINIMAL FIRE PROTECTION	3519
<i>Mohamed Hegazi, Sam Salem</i>	
NUMERICAL STUDY ON FIRE PERFORMANCE OF TIMBER-CONCRETE COMPOSITE BEAMS	3527
<i>Taiga Iwase, Yukito Nakayama, Takeo Hirashima, Marina Totsuka</i>	
FLEXURAL BEHAVIOR OF STEEL-TIMBER-CONCRETE COMPOSITE SLAB EXPOSED TO TWO HOURS UNDER STANDARD FIRE.....	3534
<i>Seul-Gi Han, Jun-Young Gwak, Jeong-Ki Min, Sung-Bae Kim, Sung-Mo Choi</i>	
BURNABILITY OF WOODEN LOUVERS AND ITS FACTORS: FLAME-SPREAD EXPERIMENTS ALONG PARALLEL WOODEN BOARDS	3541
<i>Ryo Takase, Daisuke Kamikawa, Masatoshi Nakamura</i>	

MAJOR FINDINGS FROM SHAKE TABLE TESTS OF A FULL-SCALE TEN STORY MASS TIMBER BUILDING.....	3547
<i>Shiling Pei</i>	

8I - TESP - PRACTITIONER / ENGINEERING

CREEP BEHAVIOR OF CROSS-LAMINATED TIMBER-CONCRETE COMPOSITE FLOOR SYSTEM ON FIXED END CONDITION.....	3557
<i>Kentaro Hatachi, Wataru Nishimiya, Takuro Mori, Yasuhiro Araki, Masanobu Sakashita, Shoichi Nakashima, Hiroshi Isoda</i>	
DESIGN AND TESTING OF DUCTILE MOMENT-RESISTING TIMBER FRAME CONNECTIONS.....	3566
<i>Kilian Krauss, Jack Tomblason, Michael P. Newcombe</i>	
BONDING PERFORMANCE OF MUF AND PUR ADHESIVES FOR GLUED LAMINATED TIMBER.....	3576
<i>Milan Šernek, Bogdan Šega, Andrej Fašalek</i>	
DEVELOPMENT OF AN INTEGRATED SEISMIC SIMULATION SYSTEM FOR TIMBER STRUCTURES	3584
<i>Takafumi Nakagawa</i>	
NUMERICAL AND EXPERIMENTAL INVESTIGATIONS ON LATERAL PERFORMANCE OF A 3-STORY CLT STRUCTURE	3590
<i>Minchih Hou, Hiroshi Isoda, Takafumi Nakagawa, Yasuhiro Araki, Masatoshi Shinohara, Takumi Noda</i>	
EXPERIMENTAL STUDY ON THE DYNAMIC PROGRESSIVE COLLAPSE RESPONSE OF POST-AND-BEAM MASS TIMBER BUILDINGS	3597
<i>Nikshan Amatya, Benoit P. Gilbert, Hong Guan, Chuen Yiu Lo, Minghao Li, Frank Lam</i>	
THE ADVANCED MANUFACTURING FACILITY FIRST BUILDING.....	3604
<i>Matthew Burke, Nicholas Boey</i>	

9A - ECCS / EIC / TESP - PRACTITIONER / ENGINEERING

TIMBER BASEMENTS – FROM CHALLENGE TO TECHNOLOGY AND PROOFED SOLUTIONS.....	3613
<i>Bettina Franke, Stefan Zöllig, Christoph Renfer</i>	

VOLUME 6

CASE STUDIES FROM FINLAND: IMPROVING THE PRODUCTIVITY OF INDUSTRIAL WOOD APARTMENT BUILDING CONSTRUCTION	3619
<i>Markku Karjalainen, Hüseyin Emre Ilgin, Sami Pajunen</i>	
GLUED WIDE-SPAN TIMBER TRUSSES – A DESIGN AND EXPERIMENTAL APPROACH.....	3628
<i>Jan L. Wenker, Lutz Schlüter, Josef Schneermann, Lisa Stimpfle, Gerhard Dill-Langer, Frank Steffens</i>	
DEVELOPMENT OF AN ENGINEERED WOOD PRODUCT BASED ON A MARKET STUDY	3637
<i>Carlito Calil Neto, Melissa Lago De Jesus S. Silva, Alexander Takata, Vitor Afonso Neves Silva</i>	

QFES NORTH COAST REGIONAL HEADQUARTERS AND MARYBOROUGH FIRE AND RESCUE STATION	3646
<i>Kim Baber</i>	

9B - TESP- ENGINEERING

FIRE ENGINEERING

ROBUSTNESS ANALYSIS OF TALL TIMBER BUILDING SUBJECTED TO COMPARTMENT FIRE	3656
<i>Tongchen Han, Solomon Tesfamariam</i>	
FIRE SAFE DESIGN OF HYBRID STEEL-TIMBER CONSTRUCTION SYSTEMS	3665
<i>Patrick Dumler, Jakob Blankenhagen, Martin Mensinger, Stefan Winter</i>	
INVESTIGATING THE THERMAL PENETRATION IN STRUCTURAL TIMBER ELEMENTS EXPOSED TO NATURAL FIRES.....	3674
<i>Andrea Lucherini, Vladimír Mózer</i>	
QUANTIFYING FIRE BEHAVIOUR IN GAPS IN CLT PANEL-TO-PANEL CONNECTIONS	3684
<i>Wyatt Garrett, Erica Fischer, Laura Hasburgh</i>	
PREDICTIVE CAPABILITIES OF FIRE DYNAMICS SIMULATOR OF FLAME SPREAD ON TIMBER IN ENGINEERING APPLICATIONS: AN EVALUATION.....	3693
<i>Alain Coimbra, Brahim Ismail, Elmehdi Koutaiba</i>	

9C - TESP- ENGINEERING CONNECTIONS

ROBUSTNESS ANALYSIS OF INNOVATIVE CONNECTIONS FOR POSTAND-BEAM MASS TIMBER BUILDINGS	3701
<i>Marco Rucci, Alberto Di Paolo, Ernesto Callegari, Luca Sestigiani, Matilde Benatti, Luca Pozza</i>	
CONNECTIONS WITH SMALL DIAMETER FASTENERS IN EUROPEAN HARDWOODS.....	3711
<i>Carmen Sandhaas, Jan Kipper, Elisabet Kuck</i>	
STEEL BAR-TIMBER COMPOSITE BEAM-COLUMN CONNECTION ADOPTING STEEL DAMPER	3718
<i>Masanori Nakamura, Yuto Shimoirisa, Shinichi Shioya</i>	
STIFFNESS OF TIMBER CONNECTIONS WITH DOWEL-TYPE FASTENERS UNDER LATERAL LOAD	3728
<i>Tao Gui, Ying Hei Chui, Alexander Salenikov</i>	
DETERMINATION OF THE RACKING STRENGTH AND STIFFNESS OF CLT PANELS MANUFACTURED FROM C16-GRADE IRISH TIMBER	3736
<i>Rimjhim Kashyap, Conan O'Ceallaigh</i>	
HIGH CYCLE FATIGUE AND STIFFNESS DEGRADATION OF A CROSS-LAMINATED TIMBER SCREWED CONNECTION	3745
<i>Lancelot Reres, Weichiang Peng</i>	

9D - TESP - ENGINEERING - STRUCTURAL BEHAVIOUR

- PRESTRESSING AS A METHOD OF REDUCING THE EFFECT OF CONCRETE SHRINKAGE IN ADHESIVELY BONDED CLT-CONCRETE COMPOSITE PANELS..... 3754
Viktória Bajzecerová, Ján Kanócz
- ANALYSIS OF CROSS-LAMINATED TIMBER FLOORS WITH THE VIERENDEEL METHOD..... 3761
Nicholas Boey, Hassan Karampour, Hong Guan, Ali Habibi
- EXPERIMENTAL IN-PLANE TESTING OF CLT USED AS BEAMS AND LINTELS..... 3770
Tom Watts, Dorota Szpadkiewicz
- STRUCTURAL BEHAVIOUR OF TIMBER-CONCRETE COMPOSITES INCORPORATING RIBBED CONCRETE LAYER 3780
Aamir Khokhar, Daniel Kumah, Daniel Barreto

9E - STCE - ENGINEERING - ADVANCING THE CIRCULAR ECONOMY IN EUROPE

- PILOT PROJECT: MODULAR CONSTRUCTION WITH SECONDARY MATERIALS IN A CIRCULAR ECONOMY..... 3789
Colin M. Rose, Jonas Breidenbach, Patrick Quinn, Julia A. Stegemann
- PURE-TIMBER CONNECTIONS WITH BEECH, BIRCH, AND LAMINATED DENSIFIED WOODEN DOWELS: EXPERIMENTAL AND ANALYTICAL INVESTIGATIONS 3799
Yue Wang, Roberto Crocetti, Yuri De Santis, Angelo Aloisio, Roberto Tomasi, Anders Qvale Nyrud
- PRODUCTION FEASIBILITY STUDY ON STUDS OF RECLAIMED TIMBER..... 3809
Ola Huse, Anders Q. Nyrud, Karl-Christian Mahnert
- RECENT DEVELOPMENTS ON TAILORED LAMINATED TIMBER..... 3817
Erik Serrano, Kay Ackermann, Philipp Dietsch, John Haddal Mork
- AN INNOVATIVE FOUNDATION SYSTEM FOR TIMBER BUILDINGS: STEEL WELDED MESH GABION BOXES INFILLED WITH AGGREGATES..... 3827
Riccardo Fanti, Andrea Polastri, Matilde Benatti, Jacopo Tiboni, Fabio Tiboni
- TOWARDS A CIRCULAR VALUE CHAIN OF WOOD FROM EXISTING BUILDINGS IN THE UK..... 3835
Martha Godina

9F - TESP ENGINEERING - CONNECTIONS

- BEHAVIOUR OF PERFOBOND CONNECTIONS IN TIMBER-CONCRETE COMPOSITES 3844
Elif Appavuravther, Bram Vandoren, Jose Henriques
- EXPERIMENTAL STUDY ON THE PERFORMANCE OF WOOD CONNECTIONS UNDER SIMULATED WIND/EARTHQUAKE RATE OF LOADING..... 3850
Jianan Chen, Chao Zhang, Frank Lam, Minghao Li, Benoit P. Gilbert, Hong Guan
- THE EFFECT OF SPECIMEN SIZE ON WETTING-INDUCED STRESS IN SELF-TAPPING SCREWS IN STEEL-TO-WOOD CONNECTIONS..... 3857
Jintao Zhang, Lina Zhou, Chun Ni

ENHANCING MECHANICAL PERFORMANCE OF DOWEL LAMINATED TIMBER THROUGH DOWEL CONFIGURATION AND BOLTED SYSTEM INTEGRATION	3865
<i>Yu-Liang Hsu, Tung-Ying Lee, Chun-Ju Chen, Wei-Li Liao, Wei-Chen Sheu</i>	
ADHESIVELY BONDED AND HYBRID CLT PANEL-TO-PANEL JOINTS	3872
<i>Alicja Pace, Houman Ganjali, Lei Zhang, Hercend Mpidi Bitu, Thomas Tannert</i>	
IMPACT OF TIMBER ORIGIN ON SCREW WITHDRAWAL CAPACITY	3879
<i>Dylan Bagley, Lisa Ottenhaus</i>	

9G - TESP - ENGINEERING

DEVELOPMENT OF RIGID STRUCTURES USING CROSS-SECTIONAL COLUMNS WITH STANDARD MATERIALS FOR WOODEN FRAME CONSTRUCTION.....	3888
<i>Ryota Kawashima, Satoshi Onishi, Hideyuki Nasu</i>	
MACHINE LEARNING-AIDED PERFORMANCE-BASED PLASTIC DESIGN OF MULTI- STORY CROSS-LAMINATED TIMBER BUILDINGS	3896
<i>Eknara Junda, Watchara Chan-Anan, Ketsarin Chawgien, Sutat Leelataviwat</i>	
NEW INNOVATIVE RESOURCE-EFFICIENT TIMBER-CONCRETE-COMPOSITE CEILING SYSTEM – EXPERIMENTAL AND ANALYTICAL INVESTIGATIONS.....	3904
<i>Philipp Holzhaider, Florian Brosch, Konstantin Rudolf, Benjamin Kromoser</i>	
RELIABILITY EVALUATION OF TIMBER-CONCRETE COMPOSITE FLOOR SYSTEMS WITH RESPECT TO TIMBER SHEAR FAILURE	3914
<i>Yue Li, Yong Li, Ying Hei Chui</i>	
DEVELOPMENT OF HYBRID MULTI-ANGLED LAMINATED TIMBER PLATE FOR MITIGATING ORTHOTROPY	3923
<i>Yukari Aoki, Riku Tamura, Humihiko Gotou, Mahbube Subhani</i>	

9H - TESP - ENGINEERING - SEISMIC / VIBRATIONS

EFFECT OF SPRAY-APPLIED RIGID POLYURETHANE FOAM ON SEISMIC PERFORMANCE OF TIMBER HOUSE	3930
<i>Tomoki Furuta, Masato Nakao</i>	
INFLUENCE OF FLOOR EFFECTS ON THE SEISMIC PERFORMANCE OF CROSS- LAMINATED TIMBER STRUCTURES	3936
<i>Xiaowei Qu, Minjuan He, Xijun Wang, Yongliang Sun</i>	
FREQUENCY CONTRIBUTIONS TO DYNAMIC RESPONSES OF JOISTED TIMBER FLOORS: A WAVELET TRANSFORM APPROACH.....	3942
<i>Mohammadreza Salehi, Ebenezer Ussher, Roberto Tomasi, Angelo Aloisio</i>	
ANALYSIS OF THE PREDICTED COLLAPSE DIRECTION TENDENCIES OF HOUSES CAUSED BY THE 2024 NOTO PENINSULA EARTHQUAKE	3948
<i>Yuki Hashimoto, Takafumi Nakagawa, Hiroshi Isoda</i>	
IMPACTS OF BEAM HANGER ROTATIONAL STIFFNESS ON COLUMN RESISTANCE OF POST-AND-BEAM FRAMES.....	3954
<i>Laura Walters, Hamid Reza Nasiri, Fei Tong, Lydell Wiebe, Thomas Tannert</i>	

EVALUATION OF SEISMIC PERFORMANCE OF MID-RISE TIMBER BUILDINGS WITH SLIDING BASE SYSTEM	3960
<i>Ai Tomita, Yuji Miyazu</i>	

9I - ECCS - ARCHITECTURAL

DIGITAL ARTISAN: AUGMENTED REALITY AIDED UPCYCLING FOR RECLAIMED TIMBER BOARDS	3968
<i>Qiming Sun, Mathias Berhard, Benjamin Dillenburger</i>	

INVENTORY-CONSTRAINED DESIGN METHOD FOR WHOLE TREE USE IN BRANCHING CANOPY STRUCTURES	3976
<i>Yue Feng, Hengyi Ren, Kim Baber, Canhui Chen, Xingfei Yuan, Joseph M. Gattas</i>	

BLOQUE M-EXPERIMENTAL: TIMBER AS AN ALTERNATIVE TO BUILD HOUSING PROJECTS IN COLOMBIA.....	3984
<i>Diego Alejandro Velandia Rayo</i>	

GRAFTING OF TRADITIONAL CHINESE ROOFING STRUCTURES AMONG MODERN CHINA'S CATHOLIC CHURCH BUILDINGS IN THE LATE 19TH CENTURY FROM THE LENS OF NINGBO JIANGBEI CHURCH	3991
<i>Rongzhu Gu, Boyu Pan, Jie Liu</i>	

LIVING HOUSE – CLT AFFORDABLE, FAST TO BUILD AND CARBON ZERO HOUSE	4000
<i>Richard Naish</i>	

GREEN COMMONS - APU NEW UNIVERSITY BUILDING , BEPPU, OITA , JAPAN	4009
<i>Yasuhito Kinoshita</i>	

10A - TESP- ENGINEERING - SEISMIC PERFORMANCE

EXPERIMENTAL STUDY ON SEISMIC RETROFIT USING SEISMIC RESPONSE CONTROL DEVICES IN A TEMPLE	4019
<i>Suzuki Hokuto, Okada Yuka, Kajikawa Hisamitsu</i>	

DETERMINATION OF CANADIAN SEISMIC FORCE MODIFICATION FACTORS FOR POST-TENSIONED ROCKING CLT WALLS.....	4026
<i>Huanru Zhu, Matiyas A. Bezabeh, Asif Iqbal, Marjan Popovski, Zhiyong Chen</i>	

SEISMIC EVALUATION OF WOOD-FRAME SHEAR WALL ON PODIUM.....	4036
<i>Francisco X. Flores, Philip Line, Bradford K. Douglas, M. Omar Amini</i>	

TRADITIONAL SEISMIC FUSES IN TIMBER STRUCTURES – PROS AND CONS	4042
<i>Pierre Quenneville, Pouyan Zarnani, Ashkan Hashemi</i>	

SEISMIC PERFORMANCE EVALUATION OF PLATFORM-TYPE COUPLED-PANEL CLT SHEAR WALL SYSTEMS	4047
<i>Jianan Chen, Frank Lam, Minghao Li</i>	

LIFESHELL: CLT FURNITURE AS LIFE-SAVING TECHNOLOGIES.....	4053
<i>Edoardo Giacobbo, Jarno Bontadi, Andrea Polastri</i>	

10B - TESP - ENGINEERING - SHEAR PERFORMANCE

SHEAR PERFORMANCE OF WOODEN RESISTING WALLS WITH DECAY DAMAGE.....	4062
<i>Ryo Inoue, Takuro Mori, Kei Tanaka, Takafumi Nakagawa</i>	
CALCULATION METHOD FOR IN-PLANE SHEAR PROPERTIES OF NLT.....	4069
<i>Tianjun Xie, Shiro Nakajima</i>	
DIFFERENCES IN SHEAR PERFORMANCE OF TIMBER MOMENT RESISTING JOINT DUE TO DIFFERENT JOINT TYPES	4075
<i>Kaito Yamagata, Takuro Mori</i>	
THE LENGTH OF PLYWOOD SHEAR WALLS MATTERS	4081
<i>Craig J. L. Cowled, Tom P. Slattery, Hafizah Binti Ramli, Keith Crews, Harrison Brooke, Boris Iskra</i>	
TESTING THE INFLUENCE OF SYSTEM EFFECTS ON THE LATERAL RESPONSE IN T- SHAPED WOOD FRAME SHEAR WALLS	4089
<i>Diego Valdivieso, Jose Luis Almazan, Diego Lopez-Garcia, Jairo Montaño, Abbie B. Liel, Pablo Guindos</i>	

10C - MPD - ARCHITECTURAL / ENGINEERING / PRACTITIONER

DURABILITY PERFORMANCE OF EUCALYPTUS NITENS IMPREGNATED USING SUPERCRITICAL CARBON DIOXIDE	4095
<i>Kyra Wood, Tripti Singh</i>	
EFFECT OF ACCELERATED AGING ON THE FIRE REACTION PERFORMANCE OF TWO TYPES OF MODIFIED WOOD	4099
<i>Alina Avellaneda, María Pilar Giraldo, Guissella Camacho, Ana M. Lacasta, Eduard Correal, Laia Haurie</i>	
BASIC STUDY OF GLUED LAMINATED BAMBOO (GLB)	4106
<i>Haruto Mitsuzono, Atushi Takano</i>	
THE SURFACE TEMPERATURE OF OUTDOOR UNDERCOVER GLUED LAMINATED TIMBER	4115
<i>Geoff Stringer</i>	
AGEING RESISTANCE OF PRESERVATIVE-TREATED CROSS-LAMINATED TIMBER UNDER HIGH HUMIDITY ENVIRONMENTAL CONDITION	4125
<i>Weixi Wang, Gary M. Raftery</i>	
TIMBER-MASONRY INTERACTION MECHANICS: OLD BUILDINGS, NEW APPROACHES	4135
<i>Douglas La Prairie</i>	

10D - TESP - ENGINEERING

PERFORMANCE OF NAIL-LAMINATED TIMBER ASSEMBLED WITH WOOD-BASED FASTENERS	4145
<i>Paul Crovella, Olayinka Olaosebikan</i>	

OPTIMIZED DESIGN AND STRUCTURAL PERFORMANCE OF STEEL-ENCASED TIMBER COMPOSITE (SETC) BEAMS	4153
<i>Mohamed Eldeib, Xing Ma, Yan Zhuge, Raufdeen Rameezdeen, Reza Hassanli, Mark Ellis, El-Sayed Abd-Elaal</i>	
STUDY ON THE EFFECT OF SHEAR STIFFNESS AND STRENGTH BY SCREW ANGLE AND TIMBER GRAIN DIRECTION	4163
<i>Kosuke Futaba, Yasuteru Karube, Hayato Katou</i>	
MEASUREMENT AND NUMERICAL REPRODUCTION OF HEAT AND WATER TRANSFER IN FULL-SCALE WOODEN BEAMS EXPOSED TO FIRE HEATING	4170
<i>Tatsuro Suzuki, Yuji Hasemi, Tomoyo Hokibara, Junichi Suzuki, Mei Yamamoto</i>	
SHORT-TERM PERFORMANCE OF REINFORCED GLULAM BEAMS	4180
<i>Shuyi Yang, Hamid Valipour</i>	

10E - EIC - ARCHITECTURAL

TRENDS IN THE DEVELOPMENT OF INNOVATIVE TIMBER PRODUCTS ON THE CONSTRUCTION MARKET IN EUROPE	4186
<i>Vanesa Baño, Peter Romih, Jan Willem Van De Kuilen, Uwe Kies</i>	
STRATEGIC TRAINING DESIGN AND IMPLEMENTATION FOR TIMBER CONSTRUCTION IN URUGUAY	4196
<i>Sol Villanustre, Felipe Victorero, Florencia Rodríguez, Marcia Croci, Lilian Portillo</i>	
MASS TIMBER FURNITURE DESIGNS FOR OPTIMIZING PANEL YIELD; AN UPCYCLING STRATEGY TO INTERCEPT MASS TIMBER DROP CONCURRENT IN PANEL MANUFACTURING PRODUCTION.....	4206
<i>Cory Olsen, Dylan Wood</i>	
ADVANCING INTEGRATED DESIGN EDUCATION AND CIRCULAR ECONOMY IN WOOD CONSTRUCTION: KIT-OF-PARTS FOR FAST DEPLOYABLE AND RELOCATABLE STRUCTURES	4212
<i>Mariapaola Riggio, Nancy Yen-Wen Cheng</i>	
WASTE UTILIZATION PANELS – DESIGN OPTIMIZATION FOR GEOMETRY, STRUCTURE AND MATERIAL IN MASS PLYWOOD PANELS ADDITIVELY CONSTRUCTED FROM OFFCUTS	4222
<i>Braden Lawrie, Dylan Wood, Paul Mayencourt, Erica Fischer</i>	

10F - MPD / TESP - ENGINEERING - FIRE OR MOISTURE HAZARDS

MODELLING THE SELF-SUSTAINED SMOULDERING OF COPPER BASED PRESERVATIVE TREATED TIMBER	4229
<i>Wenxuan Wu, Juan Hidalgo, Jeffrey Morrell, Felix Wiesner, Luis Yermán</i>	
FIRE AND CLT: LINEAR JOINTS	4235
<i>Paola Brugnara, Speranza Alice, Luca Sestigiani</i>	
IGNITION OF A TIMBER CEILING: ANALYSING CONVECTIVE AND RADIATIVE HEATING EFFECTS	4242
<i>Joshua Madden, Felix Wiesner, David Morisset, Wenxuan Wu, Ryan Hilditch, Adam Ervine, David Lange</i>	

WOODWISE: LARGE-SCALE COMPARTMENT FIRE TESTS EXAMINING SUSTAINABILITY, SMOLDERING, AND EMISSIONS.....	4252
<i>Erica Fischer, Ines Pitari, Laura Hasburgh, David Barber, Kara Yedinak, Nicolas Coello</i>	

STRENGTH GRADING OF SATURATED ROUND TIMBER FOR STRUCTURAL APPLICATIONS.....	4260
<i>Giorgio Pagella, Michele Mirra, Geert Ravenshorst, Jan-Willem Van De Kuilen</i>	

10G - TESP - ENGINEERING - PERFORMANCE OF HYBRID STRUCTURES

AN EXPERIMENTAL STUDY OF TIMBER-STEEL HYBRID SEISMIC WALL WITH TAPERED JOINTS.....	4267
<i>Ryo Sasaki, Joichi Nakakuki, Yuya Shiota, Masamichi Sasatani</i>	

IMPROVING BENDING PERFORMANCE OF HYBRID STRUCTURE WITH GLUED LAMINATED TIMBER AND STEEL TENSION BAR.....	4275
<i>Kugbo Shim, So-Min Lee, Ga-Won Lee, Jae-Yun Park, Minsoon Park, Min-Ji Kim</i>	

NONLINEAR MODELLING OF CLT DIAPHRAGM CONFIGURATIONS WITH DIFFERENT SPLINE CONNECTIONS.....	4282
<i>Sebastian T. Akanji, Della Thomas, Adam R. Phillips, Erica Fischer</i>	

EXPERIMENTAL STUDY ON THE SYNERGISTIC LATERAL RESISTANCE OF CLT WALLS AND TENSION-ONLY BRACED FRAMES.....	4291
<i>Yuan Gao, Xiao-Bin Song</i>	

ALTERNATIVE SEISMIC DESIGN OF MULTI STOREY TIMBER STRUCTURES.....	4297
<i>Eleni Smyrou, Ihsan Engin Bal, Ihsan Engin Bal, Costanza Maria Russo, Stylianos Kallioras, Kamer Ozdemir</i>	

10H - TABD - ARCHITECTURAL

TIMBER INDUSTRIAL HERITAGE.....	4303
<i>Daniel F. Llana, Guillermo Iñiguez-González, Miguel Esteban, Ignacio Bobadilla, Francisco Arriaga</i>	

PREPARED SYNTHETIC WOOD BEAMS: THEIR FEASIBILITY AND POSSIBLE DEVELOPMENTS IN ARCHITECTURAL DESIGN.....	4309
<i>Yoshito Tomioka, Chikako Tabata</i>	

TOWARDS RECIPROCAL FEEDBACK BETWEEN TIMBER ARCHITECTURE, ENGINEERING AND ADDITIVE MANUFACTURING BY STRATOCONCEPTION®.....	4318
<i>Anwar Nehlawi, Victor Fréchar, Ahmed W. Ismail, Gilles Duchanois, Julien Meyer, Laurent Bléron, Philippe Marin</i>	

ADDRESSING CHALLENGES IN MANUFACTURING IRREGULAR WOODEN POLES: A PRACTICAL EXPLORATION ON ACCURACY, EFFICIENCY, AND COST.....	4328
<i>Harrison Huang, Shan Su, Hui Zhan</i>	

VOLUME 7

HOLISTIC HYGROTHERMAL PERFORMANCE ASSESSMENT OF EMERGING TIMBER ENVELOPES: FIELD TESTING AND TRANSIENT BUILDING SIMULATIONS.	4338
<i>Natalia Saavedra, Eugenia Gasparri, Alberto Sangiorgio, Aysu Kuru, Carlos Clement, Tianyi Chen, Arianna Brambilla</i>	

11A TESP - ENGINEERING - CONNECTIONS

LOOPED STRAP CONNECTIONS	4347
<i>Craig J. L. Cowled, Boris Iskra</i>	
EXPERIMENTAL INVESTIGATION OF SLOTTED-IN PLATE MOMENT CONNECTIONS IN TIMBER FRAME BUILDINGS.....	4354
<i>Elif Appavuravther, Jose Henriques, Bram Vandoren</i>	
INVESTIGATING NOVEL STEEL-TIMBER CONNECTIONS AND THE EFFECTS OF KNURLING THROUGH EXPERIMENTAL DIRECT SHEAR TESTING	4362
<i>Detlef Laughery, Erica Fischer, Adam Phillips</i>	
PERFORMANCE OF TWO-STOREY PLATFORM-TYPE CLT SHEAR WALLS.....	4370
<i>Mohammad Masroor, Mahtab Gheisari, Thomas Tannert</i>	
BLOCK TEAR-OUT RESISTANCE OF HIGH-PERFORMANCE HYBRID GROUT-STEEL-CLT CONNECTIONS FOR BALLOON-TYPE SHEAR WALLS: EXPERIMENTAL STUDY	4376
<i>Mohammad Shekarchi, Blériot Feujofack, Cristiano Loss, Tony Yang</i>	
EVALUATION OF WOOD-TO-WOOD CONNECTIONS OF THE SPECIES CAMPNOSPERMA PANAMENSE STANDL. USING BOLTS AND NAILS SUBJECTED TO LATERAL LOADING.....	4385
<i>Diana Ibáñez, Cesar Polanco-Tapia, Gustavo Fuentes</i>	
NUMERICAL SIMULATION OF THE EFFECTIVE NUMBER OF FASTENERS IN STOCKY DOWEL TYPE TIMBER CONNECTIONS.....	4394
<i>Caroline D. Aquino, Michael Schweigler, Leonardo Rodrigues, Luís C. M. Da Silva, Thomas K. Bader, Jorge M. Branco</i>	

11B - TESP - ENGINEERING - ROBUSTNESS & NATURAL DISASTER RESILIENT STRUCTURES

RELIABILITY ANALYSIS OF WIND EXCITED TALL MASS-TIMBER BUILDINGS WITH ROCKING POST TENSIONED CROSS LAMINATED TIMBER SHEAR WALLS	4403
<i>Nahom K. Berile, Matiyas A. Bezabeh, Carla Dickof, Md Shahnewaz</i>	
BUCKLING PERFORMANCE OF NAIL LAMINATED TIMBER FOR BEARING SHEAR WALL, BUCKLING TESTS AGAINST VERTICAL LOAD FOR LOAD-BEARING WALLS.....	4413
<i>Runa Kato, Aoi Yamahata, Satoshi Onishi, Hideyuki Nasu</i>	
STUDY ON ESTIMATION OF SHEAR STRENGTH OF PLYWOOD SHEATHED SHEAR WALLS WITH SMALL OPENINGS	4419
<i>Yuta Sakai, Kenji Aoki</i>	
FULL-SCALE EXPERIMENTAL TESTING OF A RESILIENT, TWO-STOREY CROSS LAMINATED TIMBER WALL STRUCTURE.....	4425
<i>Soheil Assadi, Ashkan Hashemi, Pierre Quenneville</i>	

A STUDY ON DISPLACEMENT ESTIMATION OF LATH-MORTAR UNDER EARTHQUAKE	4430
<i>Masato Nakao</i>	

SEISMIC COLLAPSE ASSESSMENT OF TIMBER BRACED FRAMES WITH FRICTION JOINTS USING FEMA P695 METHODOLOGY	4436
<i>Mohammadmahdi Gholami, Christian Viau, Ghasan Doudak</i>	

INNOVATIVE ADHESIVE BONDING IN TIMBER-CONCRETE COMPOSITE SYSTEMS: TOWARDS A COMPETITIVE CEILING SYSTEM	4444
<i>Florian Brosch, Matthias Braun, Benjamin Kromoser</i>	

11C - TESP - ENGINEERING - MATERIAL PROPERTIES

INVESTIGATIONS ON STEEL-TIMBER-CONCRETE COMPOSITE SHALLOW FLOOR BEAMS: COMPARISON BETWEEN STRAIN-BASED DERIVED BENDING RESISTANCES AND RESULTS OF NUMERICAL MODELS.....	4452
<i>Adil Ahmad, Christoph Odenbreit, Jean-François Demonceau, Jie Yang</i>	

INFLUENCE OF MATERIAL PROPERTIES OF COMPONENTS ON ROOF CURVE IN TEMPLE ARCHITECTURE	4460
<i>Natsuki Horie, Hina Takizawa, Yuya Takaiwa</i>	

COMPARATIVE STUDY OF CREEP MODELS FOR WOOD AND TIMBER EXTRAPOLATED OVER 100 YEARS IN CONSTANT CLIMATE	4466
<i>Mohsen Naghdinasab, Janusch Toepler, Philippe Grönquist</i>	

EXPERIMENTAL ANALYSIS OF THE INFLUENCE OF THE FASTENER MATERIAL AND LOADED END AND EDGE DISTANCES ON THE EMBEDMENT STRENGTH PARALLEL TO THE GRAIN IN GLUED LAMINATED TIMBER.....	4475
<i>Hong-Fang Guo, Bo-Han Xu, Xiang Liu</i>	

STUDY ON FLEXURAL BEHAVIOR OF COLD-FORMED STEEL-ORIENTED STRAND BOARD COMPOSITE JOISTS	4481
<i>Shi-Yuan Jiao, Bo-Han Xu, Ping Zhang</i>	

STATISTICAL LENGTH EFFECT ON THE LONGITUDINAL COMPRESSION STRENGTH OF AUSTRALIAN RADIATA PINE SOLID SAWN TIMBER.....	4489
<i>Abbas Abdulalim Abbara, Raufdeen Rameezdeen, Xing Ma, Yan Zhuge, J. F. O'Hehir, Jon Shanks, Yachong Xu</i>	

EVALUATION OF EQUIVALENT SHEAR STIFFNESS AT EACH RENOVATION STAGE IN THE TRADITIONAL WOODEN BUILDING.....	4495
<i>Hina Takizawa, Yuya Takaiwa</i>	

PROCESS COMBINATION PEELING AND SAWING OF LARGE-DIAMETER TIMBER: THICK PEELED PRODUCTS FOR YIELD-OPTIMIZED STRUCTURAL LAMINATED TIMBER PRODUCTS	4503
<i>Markus Tripolt, Gregor Silly, Reinhard Brandner</i>	

11D - TESP - ENGINEERING - CONCENTRATED LOADINGS & REINFORCING METHODS

QUANTIFICATION OF POSITIONAL IMPERFECTIONS OF SELF-DRILLING SCREWS AND EXAMINATION OF THE TECHNICAL CAUSES	4513
<i>Eva Baldauf, Matthias Frese</i>	

A NEW NODE-FOCUSED EXPERIMENTAL APPROACH TO INVESTIGATE LOADBEARING BEHAVIOR IN TIMBER TRUSSES	4522
<i>Lisa Stimpfle, Jan L. Wenker, Simon Aicher, Gerhard Dill-Langer</i>	
EXPERIMENTAL STUDY ON PULL-OUT STRENGTH OF TIMBER JOINTS INCORPORATING HIGH - DAMPING RUBBER~EFFECTS OF EMBEDMENT LENGTH AND THICKNESS OF HIGH-DAMPING RUBBER~.....	4531
<i>Komei Morimune, Hisamitsu Kajikawa, Chongbing Yan</i>	
INFLUENCE ON THE LOAD-BEARING BEHAVIOR OF SCREWS USING TOOTHED METAL INSERTS IN SHEAR PLANES.....	4538
<i>Roland Maderebner, Roland Tabelander, Thomas Hillberger, Thomas Stieb</i>	
REINFORCEMENT FOR COMPRESSION PERPENDICULAR TO THE GRAIN BY MEANS OF ADHESIVELY BONDED BIRCH TIMBER PRODUCTS	4547
<i>Tianxiang Wang, Yue Wang, Roberto Crocetti, Dániel Honfi, Magnus Wålinder, Anton Olsson, Erik Horney</i>	
LARGE SCALE EXPERIMENT OF A NEW HOLLOW CORE TIMBERS LAB SYSTEM	4556
<i>Cristóbal Tapia, Kai Simon, Aaron Münzer, Lisa Stimpfle, Simon Aicher</i>	
MEASUREMENT OF RESIDUAL STRESSES USING THE HOLE-DRILLING METHOD AND STRAIN GAUGES ON TIMBER MATERIALS	4566
<i>Christian Heikel, Marcel Motzkus, Oliver Waßmann, Ulrike Siemer</i>	

11E - ECCS/STCE - ARCHITECTURAL/ ENGINEERING

EXPERIMENTAL AND ANALYTICAL STUDY OF CONNECTIONS FOR LIGHT AND PURE TIMBER CONSTRUCTIONS WITH BENT WOOD	4574
<i>Siavash Namari, Martin Eichenauer, Robert Jockwer, Daniel Lordick, Peer Haller</i>	
TIMBER-BASED PREFABRICATED SYSTEMS FOR DEEP RENOVATION: A CIRCULAR ECONOMY PERSPECTIVE ON CASE STUDIES AND INSIGHTS FOR THE AUSTRALIAN CONTEXT	4581
<i>Yingnan Chen, Arianna Brambilla, Emma Heffernan, Eugenia Gasparri</i>	
COMPARATIVE STUDY OF UNITISED CURTAIN WALL AND UNITISED TIMBER ENVELOPE SYSTEMS: PATHWAYS TO REDUCING EMBODIED CARBON AND ENHANCING CIRCULARITY IN FACADE DESIGN	4591
<i>Hamad Alabdulrazzaq, Arianna Brambilla, Tianyi Chen, Eugenia Gasparri</i>	
CHALLENGES IN THE TRANSITION TO CIRCULARITY IN MULTI-STOREY WOOD BUILDING CONSTRUCTION – SCANDINAVIAN INDUSTRY PERSPECTIVE.....	4601
<i>Jonn Are Myhren, Ambrose Dodoo, Felix Quarcoo</i>	
PERFORMANCE OF PARTICLEBOARD INCORPORATING RECYCLED RUBBER FROM WASTE TYRES	4608
<i>Chandan Kumar, Benoit P. Gilbert, William Leggate, Adam Faircloth, Chan Keng-Yew Paul</i>	
MULTI-PARAMETRIC EVALUATION OF INNOVATIVE CLT CONNECTIONS DEVELOPED FOR DFMA AND DFD.....	4612
<i>Pietro Rigo, Valentino Nicolussi, Andrea Polastri, Daniele Casagrande, Luca Pozza, Lisa- Mareike Ottenhaus, Luca Sestigiani, Ernesto Callegari</i>	

THE GRADING OF THE MODULUS OF ELASTICITY OF WOOD FOR THE MANUFACTURING OF GLULAM BEAMS TO MEET ARCHITECTURAL CONFIGURATIONS	4622
<i>Carlito Calil Neto, Melissa Lago De Jesus S. Silva, Alexander Takata, Vitor Afonso Neves Silva</i>	

CONTRIBUTING TO CANADA'S EFFORTS TO DECARBONIZE THE CONSTRUCTION SECTOR USING WOOD	4629
<i>Mohammad Mohammad, Julie Tourrilhes, Miranda Williamson, Y. H. Chui</i>	

11F - MPD - ENGINEERING - FIRE

X-RAY COMPUTED TOMOGRAPHY BASED ESTIMATION OF CHARRING AROUND KNOTS IN SAWN TIMBER	4639
<i>Mehdi Morau, Alexander Scharf, Boris Poupet, Chia-Feng Lin, Olov Karlsson, Rostand Moutou Pitti, Johannes Huber</i>	

INFLUENCE OF ELEVATED TEMPERATURE ON THE STRENGTH AND STIFFNESS OF TIMBER.....	4647
<i>Christoph Kurzer, Kilian Zeier, Norman Werther, Cvetanka Chifliganec, Katrin Nele Mäger, Alar Just, Andrea Frangi, Stefan Winter</i>	

THERMAL ANALYSIS OF GLULAM FOR THE DEVELOPMENT OF NEW REDUCTION FACTORS FOR STRENGTH AND STIFFNESS IN FIRE.....	4656
<i>Katrin Nele Mäger, Cvetanka Chifliganec, Christoph Kurzer, Norman Werther, Alar Just, Andrea Frangi</i>	

EXPERIMENTAL DETERMINATION OF TIMBER CHAR RATES UNDER SIMULATED FULLY DEVELOPED FIRE EXPOSURE CONDITIONS	4666
<i>Paul England, Boris Iskra</i>	

COMPARISON OF PERFORMANCES OF BOND LINES IN DIFFERENT SMALL-SCALE TESTS	4676
<i>Jane Liise Vihmann, Alar Just, Simon Aicher</i>	

THE INFLUENCE OF ADHESIVES, WOOD SPECIES AND MANUFACTURING TECHNIQUES ON THE FIRE PERFORMANCE OF ENGINEERED WOOD	4686
<i>Jane Liise Vihmann, Alar Just</i>	

EXPERIMENTAL STUDY ON THE BENDING RESISTANCE OF CROSS-LAMINATED TIMBER EXPOSED TO ISO 834-1 STANDARD FIRE	4692
<i>Mika Alanen, Mikko Malaska, Aku Aspila</i>	

CHARRING CHARACTERISTICS OF TIMBER ELEMENTS EXPOSED TO NATURAL FIRE	4700
<i>Robert Pecenko, Urška Blumauer, Goran Turk, Achal Humchadakatte Panduranga</i>	

11G - TESP/STCE/EIC - SUSTAINABILITY

ADAPTIVE TIMBER EXOSKELETONS: SUSTAINABLE SEISMIC RETROFITTING WITH CLT PANELS	4706
<i>Jacopo Zanni, Simone Labò, Alessandra Marini</i>	

AUSTRALIAN PLANTATION EUCALYPTUS NITENS AS AN ALTERNATIVE BUILDING MATERIAL.....	4716
<i>Azin Ettelaie, Mohammad Derikvand, Nathan Kotlarewski, Louise Wallis</i>	

TIMBER CIRCULARITY: SOLUTIONS MATRIX FOR A TIMBER CIRCULAR BIOECONOMY	4723
<i>Penelope Mitchell, Martin Strandgard, Melanie Harris, Tripti Singh</i>	
SHEAR PROPERTIES OF ADHESIVE JOINTS FOR I-SHAPED SECTION TIMBER-GLASS COMPOSITE BEAMS.....	4732
<i>Congcong Zhang, Huifeng Yang, Benkai Shi, Haotian Tao</i>	
ROTATIONAL BUTT FRICTION WELDING OF BAMBOO AND WOOD	4739
<i>Ralf Förster, Andreas Loth, Ulrike Siemer, Annette Jühr</i>	
DEVELOPMENT OF A PREFABRICATED ADHESIVELY BONDED JOINT FOR BAMBOO STRUCTURES	4747
<i>Christian Pinger, Maximilian L. Müller, Johannes Garlin, Andrés F. Guzmán, Kay-Uwe Schober</i>	

11H - TABD/STCE - CASE STUDIES, INCL SYDNEY FISH MARKET PRESENTATION BY RUBNER / THECA

URBAN DENSIFICATION - CASE STUDY OF A SCHOOL EXTENSION USING TS3 TECHNOLOGY	4757
<i>Sven Bill, Bettina Franke, Stefan Rüegg, Julian Schori, Stefan Zöllig</i>	
ADVANCED LCA METHODS FOR SUSTAINABLE TIMBER SOLUTIONS: A REVIEW.....	4763
<i>Matthew Leeder, Eleni Toumpanaki, James Norman, Jo House, Neha Chandarana</i>	
TIMBERTRACKER: AN OPEN-SOURCE WEB FRAMEWORK FOR VISUALISING SUPPLY AND DEMAND IN FUTURE CONSTRUCTION TIMBER VALUE CHAINS	4771
<i>Joseph M. Gattas, Claire Daniel</i>	
CARBON FOOTPRINT OF ENGINEERED WOOD PRODUCTS: A REVIEW OF PRODUCTION EMISSIONS AND INFLUENCING FACTORS.....	4781
<i>Yi Qian, Tharaka Gunawardena, Priyan Mendis, Lu Aye</i>	
FISHER & PAYKEL GLOBAL HQ CAMPUS – MASS TIMBER DIAGRID INNOVATION - DELIVERING SO MUCH MORE THAN ENVIRONMENTAL SUSTAINABILITY	4789
<i>Richard Naish, Adam Dwen</i>	
ENGINEERING ALCHEMY - TURNING CONCRETE INTO TIMBER: THE GALKANGU BENDIGO GOVHUB STORY	4797
<i>Mark Ayers</i>	

11I - EIC/MPD - ENGINEERING / ARCHITECTURAL

ENHANCING MATERIAL DURABILITY AND SUSTAINABILITY: INVESTIGATING TIMBER MOISTURE MANAGEMENT IN TIMBER STORAGE FACILITIES.....	4806
<i>Oluyimide Akinawon, Rameez Rameezdeen</i>	
IMPACT OF OPAQUE AND TRANSPARENT THIN INTUMESCENT COATINGS ON THE HEAT RELEASE RATE OF MASS TIMBER.....	4815
<i>Stavros Spyridakis, Anwar Orabi, Wenxuan Wu, Cristian Maluk, David Barber, Felix Wiesner</i>	
ASSET OWNER RESEARCH: ROADBLOCKS TO TIMBER USE	4825
<i>Diego Elustondo, Lisa Oliver, Henri Bailleres, Robert Finch</i>	

MODE I FRACTURE ENERGY OF HARDWOOD GLUELINES VIA TESTS	4834
<i>Martina Sciomenta, Antonios G. Stampopoulos</i>	
MODIFICATION OF MELAMINE FORMALDEHYDE-BASED ADHESIVES FOR THE MANUFACTURING OF CROSS-LAMINATED TIMBER (CLT) FROM JABON WOOD	4841
<i>Yusup Amin, Muhammad A. R. Lubis, Naresworo Nugroho, Lina Karlinasari</i>	
LONG-TERM BEHAVIOR OF RODS GLUED IN HARDWOODS UNDER STATIC LOADING, ELEVATED TEMPERATURE AND HUMIDITY ENVIRONMENT	4848
<i>Pascal Franck, O. Bletz-Mühldorfer, J. Schmidt, A. Hawella, L. Bathon, C. Grunwald, T. Vallée, Ronja Scholz, Frank Walther</i>	
COMPREHENSIVE ANALYSIS OF POINT SUPPORTED TIMBER CONSTRUCTION: STRUCTURAL AND FIRE SAFETY INSIGHTS	4858
<i>Parisa Nassiri</i>	

12A - TESP- ENGINEERING - EXPERIMENTAL INVESTIGATIONS

EXPERIMENTAL STUDY INTO MECHANICAL PROPERTIES OF A NOVEL MASS TIMBER T-BEAM SYSTEM	4868
<i>Ayomide D Ayodele, Peggi Clouston, Evgenii Slivets, Munkaila Musah</i>	
INVESTIGATING THE EFFECTS OF STRAIGHT AND BENT GFRP BARS ON THE FLEXURAL BEHAVIOUR OF GLULAM BEAMS.....	4874
<i>Catherine Shrimpton, Herry Chen, Daniel Lacroix</i>	
EXPERIMENTAL STUDY ON THE BENDING PROPERTIES OF GLULAM MADE BY FAST- GROWING CHINESE FIR.....	4881
<i>Long Weiguo, Zhang Yi, Chen Di, Chen Zhao, Ou Jiajia</i>	
ANALYTICAL INVESTIGATION ON ROTATIONAL BEHAVIOR OF BEAM-COLUMN DOVETAIL JOINTS IN TRADITIONAL CHINESE TIMBER ARCHITECTURE.....	4887
<i>Zherui Li, Jianyang Xue, Akihisa Kitamori</i>	
EXPERIMENTAL STUDY ON ROTATIONAL BEHAVIOR OF CLT SHEAR WALL-I STEEL LINK BEAM CONNECTIONS.....	4896
<i>Mingqian Wang, Yubing Leng, Xi Chen, Qingfeng Xu</i>	
EXPERIMENTAL STUDY ON SHEAR STRENGTH OF ULTRA-HIGH STRENGTH MULTILAYERED WOODEN ADHESIVE PANEL WALL ELEMENTS AND ASSEMBLY COLUMNS	4902
<i>Ren Ikezumi, Haruhiko Ogawa, Hisamitsu Kajikawa</i>	
EXPERIMENTAL INVESTIGATION ON TRUSSES MADE OF GLULAM AND BIRCH PLYWOOD GUSSET PLATES	4911
<i>Mattia Debertolis, Yue Wang, Tianxiang Wang, Roberto Crocetti, Magnus Wälinder, Lars Blomqvist, Pietro Rigo, Andrea Polastri</i>	

12B - MPD / TESP - ENGINEERING - MATERIAL BEHAVIOUR

EMPIRICAL FORMULA PREDICTING EMBEDMENT STRENGTH OF COCONUT WOOD.....	4919
<i>Lili Jia, Vimesh Paudel, Hyungsuk Lim, Suthon Srivaro</i>	

MECHANICAL PERFORMANCE ANALYSIS OF CLT AND STRUCTURAL TIMBER RAILS UNDER COMPRESSION TESTS.....	4926
<i>Marcus Vinicius Tavares Da Costa, Loïc Vieilledent, Mikael Perstorper, Johan Vessby</i>	
EVALUATION FOR ULTIMATE STRENGTH FOR STEEL-PLATE-INSERTED JOINT WITH DRIFT-PINS AT THE END OF GLULAM BEAMS.....	4936
<i>Wataru Kambe, Atsuo Takino, Kento Suzuki, Yo Ochiai, Shoichi Nakashima, Shigefumi Okamoto, Kenji Kobayashi, Kei Sawata, Keita Ogawa, Kei Tanaka</i>	
AN ENTIRELY WOOD FLOOR SYSTEM DESIGNED FOR BIOGENIC CARBON STORAGE, ADAPTABILITY, AND END-OF-LIFE DE/RE/CONSTRUCTION – ASSEMBLY DESIGN.....	4944
<i>Sovanrath Ou, Amin Nabati, Muzan Williams Ijeoma, Weichiang Pang, Michael Stoner, Brandon Ross, Dustin Albright, Patricia Layton, Mik Carbajales-Dale</i>	
MOISTURE DIFFUSION ANALYSIS FOR TIMBER STRUCTURES BASED ON PHYSICS- INFORMED NEURAL NETWORK	4951
<i>Yijing Wang, Yuxuan Chen, Minjuan He, Zheng Li</i>	
EFFECT OF DIMENSION ON THE MECHANICAL BEHAVIOR OF WOOD SCRIMBER	4957
<i>Guofang Wu, Yong Zhong, Yahui Zhang, Haiqing Ren, Yinlan Shen</i>	
INFLUENCE OF CRACKS ON THE EMBEDMENT STRENGTH OF DOWEL-TYPE FASTENERS IN GLULAM TIMBER STRUCTURES	4964
<i>Cong Zhang, Wen-Shao Chang, Xiongyan Li, Yanli He, Guojun Sun</i>	
<u>12C - TESP/MPD/TABD - ENGINEERING / ARCHITECTURAL</u>	
GROUND IMPROVEMENT EFFECT OF TIMBER PILES BURIED IN DIF-FERENT SOILS	4971
<i>Tadashi Hara, Rachana Poudel, Hidao Kato, Yoshitaka Kubojima</i>	
COST-PERFORMANCE EVALUATION OF A PRES-LAM CASE-STUDY BUILDING IN ITALY.....	4980
<i>Giada Formichetti, Adriano Francescotti, Stefano Pampanin</i>	
ONE-STOREY TIMBER-FRAMED SHEAR WALLS WITH WINDOW OPENINGS AS PART OF THE LATERAL FORCE-RESISTING SYSTEM.....	4990
<i>Nadja Manser, René Steiger, Martin Geiser, Andrea Frangi</i>	
AUSTRALIAN NATIONAL 2023 IN-GRADE SAWN TIMBER STUDY	4999
<i>Jon Shanks, Simon Xu, Geoff Boughton, Rameez Rameezdeen, Jim O’Hehir</i>	
DPG MEDIA HEADQUARTERS IN AMSTERDAM: A SHOWCASE OF TIMBER-CONCRETE COMPOSITE FLOOR TECHNOLOGY	5009
<i>Luc Sohier, Laurane Néron, Benoît Hargot</i>	
EXPLORING REACTIONS TO WOOD DEFECTS: AN INITIAL STUDY INVESTIGATING PSYCHOLOGICAL/ PHYSIOLOGICAL RESPONSES AND CULTURAL DIFFERENCES TO KNOTS IN WOOD	5016
<i>Aayusha Chapagain, Paul Crovella</i>	
BIOHEAL: TREE UPCYCLING FOR ARCHITECTURAL HEALING.....	5025
<i>Shinya Okuda, A. Amirul Hafit</i>	
USE OF AMAZONIAN HARDWOOD IN TIMBER STRUCTURES.....	5035
<i>Roberto Lecomte, Sheila Beatriz</i>	

12D - EIC - INNOVATION & TESTING

MULTI-LAYER STRAND-BASED WOOD MATERIALS IN CONSTRUCTION: MECHANICAL PROPERTIES AND TEST METHODS	5041
<i>Ahmadreza Ghazanfari, Benjamin Kromoser</i>	
TUBULAR VENEER TIMBER: STRUCTURAL TESTING AND FLAT PACK SELF-SHAPING FOR ULTRA-LIGHT, CYLINDRICAL WOOD COMPONENTS	5050
<i>Helene Brehl, Julianne Burdis, Dylan Wood, Erica Fischer</i>	
ANALYTICAL APPROACH ON MOMENT PERFORMANCE OF GLUED-IN ROD TIMBER CONNECTION	5057
<i>Min-Jeong Kim, Jaewon Oh, Gwang Ryul Lee, Hae Seon Hwang, Chul-Ki Kim, Jung-Kwon Oh</i>	

VOLUME 8

INNOVATIVE TESTING MACHINE FOR CREEP TESTS ON A STRUCTURAL SCALE UNDER HIGH CONSTANT LOAD	5066
<i>Christian Bertram, Hans Joachim Bläß, Philipp Dietsch</i>	
CCLT – FURTHER DEVELOPMENT OF A CLT BASED SANDWICH STRUCTURE WITH A BAMBOO HONEYCOMB (COMBOO).....	5074
<i>Andreas Loth, Ralf Förster, Christian Schrembs, Laurent Giampellegrini</i>	
GREY ZONES: UNVEILING CHALLENGES AND SOLUTIONS IN DESIGNING, PLANNING, AND CONSTRUCTING WOODEN BUILDINGS FOR DEVELOPING COUNTRIES.....	5082
<i>Gerardo Armanet, Juan José Ugarte G., Andrés Sierra, Juan José Ugarte Á., María Jesús González, Fernando Marcone</i>	
DEVELOPMENT OF SAFE DESIGN PROCEDURES FOR PRODUCTS, ASSEMBLIES, AND SYSTEMS IN WOOD CONSTRUCTION.....	5089
<i>Alexander Salenikovitch, M. A. Bezabeh, C. A. Rogers, C. Dagenais</i>	

12E - EIC/TESP/MPD- ENGINEERING - FIRE

A MULTI-FIDELITY APPROACH BASED THERMO-MECHANICAL CAPACITY ASSESSMENT OF GLULAM TIMBER CONNECTIONS SUBJECTED TO FIRE HAZARD	5099
<i>Jing Luo, Guangxin Tian, Chen Xu, Zhen Liu, Xiuzhi Zheng, Shijie Zhang, Jiajia Ou</i>	
TOWARDS AN IMPROVED METHOD FOR PREDICTING THE CONTRIBUTION TO FIRE GROWTH AND STABILITY OF STRUCTURAL MASS TIMBER IN NATURAL FIRES	5103
<i>François Consigny, El Mehdi Koutaiba, Luc Girompaire, Christian Dagenais, Cyril Douthe, Robert Le Roy, Manuel Manthey</i>	
STRUCTURAL INTEGRITY OF HOLLOW GLUE-LAMINATED TIMBER BEAMS IN FIRE	5112
<i>Nikola Perkovic, Vlatka Rajcic, Jure Barbalic</i>	
THE EFFECT OF NATURAL AGEING ON THE PROPERTIES OF OAK WOOD FROM NOTRE-DAME-DE-PARIS CATHEDRAL	5122
<i>Nicolas Sauvat, Matteo Bourchanin, Epiphanie Nouemsi Soubgui, Miyuki Matsuo-Ueda, Daniel Guibal, Rostand Moutou Pitti, Joseph Gril</i>	

IDENTIFICATION OF SMOULDERING INHIBITORS FOR COPPER-BASED TREATED TIMBERS.....	5129
<i>Zeinab Darabi, Jeffrey Morrell, Felix Wiesner, Tripti Singh, Luis Yermán</i>	
FULL-SCALE EXPERIMENTAL STUDY OF COMPARTMENT FIRES IN MASS TIMBER STRUCTURES	5135
<i>Marc Alam, Joseph Su, Vusal Ibrahimli, Noah Fetterly</i>	
INFLUENCE OF FUEL TYPE AND LOAD ON FIRE INTENSITY: RESULTS FROM FULL-SCALE FIRE TESTS FROM THE WOODWISE PROJECT	5145
<i>Laura Hasburgh, Erica Fischer, David Barber, Kara Yedinak, Amara Holder, Nicolas Coello, Ines Pitari</i>	
THE HIGH-DUCTILITY CLASS (DC3) DESIGN PROCEDURE IN THE NEW EUROCODE 8 FOR CLT BUILDINGS: A CASE STUDY	5154
<i>Giuseppe Cenci, Maurizio Follesa, Vincenzo Rinaldi, Daniele Casagrande, Martina Sciomenta, Massimo Fragiaco</i>	
<u>12F - EIC/STCE/ECCS - ARCHITECTURAL / ENGINEERING / PRACTITIONER</u>	
FOREST PRODUCT DEMAND AND SUPPLY IN A BIOECONOMY TRANSITION: THE POSSIBLE ROLE OF TIMBER FOR CLIMATE CHANGE MITIGATION	5161
<i>Adrian Foong, Alexandr Karpov, Arushi Gupta, Craig M. T. Johnston, Nathalia Formenton-Cardoso, E. Ashley Steel, Lyndall Bull, Sven Walter, Anne Holsten, Philipp Misselwitz, Barbara K. Reck</i>	
WOODEN CITIES FOR CHILE: RESEARCH AND PROJECT WORKSHOP TO OPT FOR THE TITLE OF ARCHITECT AND MASTER DEGREE.....	5171
<i>Andrés Sierra, Juan José Ugarte G., Gerardo Armanet, Juan José Ugarte Á., Juan Acevedo</i>	
COMPARATIVE PERSPECTIVES ON THE FEASIBILITY OF PROMOTING TIMBER CONSTRUCTION IN SOUTH AFRICA	5178
<i>Ferdinand Senam Hassan, Schalk Grobbelaar</i>	
FOSTERING INTERDISCIPLINARY INNOVATIONS BY DESIGN-BUILD PROJECT WITH DIGITAL FABRICATION TECHNOLOGIES	5188
<i>Yutaka Goto, Samuel Norberg, Bruno Gonçalves, Robert Jockwer, Hseng Tai Lintner, Jonas Lundberg</i>	
MEASURING AND MODELLING OF PROCESS INDUCED DISCOLORATION IN TASMANIAN BLACKWOOD (ACACIA MELANOXYLON)	5198
<i>David Tanton, Mark Dewsbury, Hartwig Kunzel</i>	
PHASES OF ARCHITECTURAL DESIGN IN THE DEVELOPMENT OF A MODULAR AND PANELIZED WOODEN BUILDING WITH EARLY INTEGRATION PROCESS	5206
<i>Jose Luis Caamaño, Fabiana Lorca, Daniela Méndez</i>	
GREEN PUBLIC PROCUREMENT AND TIMBER IN CONSTRUCTION FOR A CIRCULAR ECONOMY	5213
<i>Muhammed Khizar Barakzai, Mohammed Zajeer Ahmed, Cathal O'Donoghue, Patrick J. McGetrick</i>	
TIMBER CONCRETE NODE: A NEW PARADIGM FOR POST AND BEAM TIMBER CONNECTIONS.....	5223
<i>Brandon Sullivan, Paul Fast, Tobias Fast, Robert Jackson, Md Shahnewaz</i>	

12G - STCE - ENGINEERING

- THE INTERRELATIONS OF INTERMEDIATE FLOOR BEAM STRUCTURES,
STRUCTURAL SPANS, MATERIAL EFFICIENCY AND GLOBAL WARMING POTENTIAL
IN FINNISH MID-RISE TIMBER APARTMENT BUILDINGS..... 5230
Antti Tuure, Ninni Westerholm, Aku Aspila
- KEY ASPECTS FOR ECONOMIC FEASIBILITY OF IMPLEMENTING DESIGN FOR
STRUCTURAL ADAPTATION IN THE AUSTRALIAN TIMBER INDUSTRY..... 5240
Vera Öberg, Robert Jockwer, Yutaka Goto, Mohammad Al-Emrani
- URBAN TRANSITION WITH WOOD FOR ENHANCED RESILIENCE OF CITIES AND
FOREST – GLOBAL VISION AND PATHWAY 5250
*Masaki Maeda, Yutaka Goto, Naoyuki Matsumoto, Lisa Ottenhaus, Robert Jockwer, Hamood
Alwashali, Clarissa Brandt, Michael Stephens*
- EXPERIMENTAL STUDY ON APPLICABILITY OF LOW-QUALITY LOGS AS
REINFORCED GROUND..... 5260
Takumi Murata, Atsunori Numata
- ANALYSIS OF MECHANICAL PROPERTIES AND FAILURE BEHAVIOUR OF RECLAIMED
AND FRESH WOOD USING THREE POINT FLEXURE TEST 5267
Nametso Linda Moumakwa, Mark Hughes
- SCRIMBER - A CONTRIBUTION TO CLIMATE PROTECTION 5273
Bettina Franke, Stefan Zöllig, Tobias Depnering, Steffen Franke

12H - TABD - ENGINEERING

- DESIGN OF A TIMBER DIAGRID SEISMIC STRUCTURAL SYSTEM..... 5279
Jaimie Whitehead, Hamish Strange, Nicki Vance
- EXPERIMENTAL STUDY OF TIMBER COMPOSITE 1D ELEMENTS USING DENSIFIED
WOOD AND HARDWOOD WELDED DOWELS 5289
Jure Barbalic, Nikola Perkovic, Bruno Zadavec, Vlatka Rajcic
- PARAMETER IDENTIFICATION FOR FULL-SCALE SHAKING TABLE TEST OF 5-STORY
WOODEN STRUCTURE..... 5297
*Tokikatsu Namba, Takafumi Nakagawa, Hiroshi Isoda, Yuji Kado, Masahiro Inayama, Yujiro
Miyata, Akira Tamura*
- MERGING STANDARDIZATION AND ADAPTABILITY FOR EFFICIENT MODULAR
CONSTRUCTION SOLUTIONS..... 5303
*Jorge M. Branco, Marina Tenório, Rita Alves, Filipe Sousa, Rui Ferreira, Cláudio Meireis,
Dinis Leitão, André Fontes, Sandra M. Silva, Carlos Maia, Aires Camões*
- SURVEY RESULTS OF POTENTIAL USERS' PREFERENCES AND PERCEPTIONS ON THE
RECONSTRUCTION OF COLONEL BY HALL (CBY) USING MASS TIMBER ELEMENTS..... 5312
Fernanda Scussiato Lago, Ghasan Doudak, Mohammad Mohammad
- THE INTERLOCKING DOWEL SYSTEM - ECOBALANCE AND SCOPE OF APPLICATION..... 5320
Felix Schmidt-Kleespies, Christopher Robeller, Alexander Stahr

WOOD AS THE PRINCIPLE: RESEARCH ON THE FLEXIBLE STANDARDIZATION OF TRADITIONAL LARGE-SCALE WOODEN RESIDENTIAL STRUCTURES IN CHINESE TUBAO	5328
<i>Yuyu Zhang, Xintong Zhu, Liang Zhang</i>	

HOW OFFICE WORKERS EVALUATE COMPUTER-GENERATED (CG) IMAGES OF WOODEN OFFICE SPACES: EXAMINING GENDER AND AGE DIFFERENCES.....	5338
<i>Takashi Shima, Katsuhiko Sakata, Mayu Shirakawa, Yuko Tsunetsugu</i>	

POSTER SESSION 1A - EIC & ECCS (ENGINEERING)

RISK IDENTIFICATION IN INDUSTRIALIZED TIMBER CONSTRUCTION.....	5346
<i>Manuela López, Harrison Mesa, Omar Zegarra, Beda Barkokebas, Luis F. Alarcón</i>	
USE OF CLT (CROSS LAMINATED TIMBER) IN CIVIL ENGINEERING	5356
<i>Yutaka Ikeda, Tadashi Hara</i>	

POSTER SESSION 1B - MPD & TABD (ARCHITECTURAL/ ENGINEERING)

A STUDY ON THE PHYSICAL PROPERTIES AND FLAME RETARDANT PERFORMANCE OF HIGH-CONCENTRATION BORON-BASED FLAME RETARDANT PB WITH AMINO RESIN ADDITIVES	5363
<i>Halim Park, Taekyong Jeoung, Hyunhwa Kim, Seoggoo Kang</i>	
SYSTEMATIC REVIEW ON THE ENVIRONMENTAL IMPACT AND COST COMPETITIVENESS OF MASS TIMBER CONSTRUCTION	5369
<i>Ramtin Mirmohammad Sadeghi, Shideh Shadravan</i>	
WOOD IN HOSPITAL INTERIORS: A SCOPING REVIEW	5379
<i>Hanne S. Stokkenes, Anders Q. Nyrud, Gabrielle Bergh, Göran Lindahl</i>	
USE OF EUCALYPTUS POLES IN TIMBER STRUCTURES - BRAZIL.....	5386
<i>Roberto Lecomte, Sheila Beatriz</i>	
FIBER STRUCTURES AND TENSILE OUT-OF-INTERFACE PROPERTIES OF NATURAL FICUS INOSCULATED CONNECTIONS	5392
<i>Xiuli Wang, Robert Koller, Jan-Willem Van De Kuilen</i>	

POSTER SESSION 1C - TESP (ENGINEERING)

NUMERICAL STUDY ON TIMBER-TIMBER COMPOSITE (TTC) FLOORS.....	5401
<i>Hadiseh Mohammadi, Alireza Chiniforush, Sardar Malek, Tuan Ngo</i>	
STRAIN RATE EFFECTS ON FRACTURE ENERGY AND STRENGTH PROPERTIES OF RADIATA PINE AND SPOTTED GUM	5408
<i>Ylli Leka, Alireza A. Chiniforush, Benoit P. Gilbert, Hong Guan, Tuan D. Ngo, Alex M. Remennikov</i>	
PREDICTION OF NONLINEAR BEHAVIORS OF LIGHT-FRAME WOOD SHEAR WALLS BY NAIL CONNECTION.....	5417
<i>Hyung Woo Lee, Chul-Ki Kim, Sang-Joon Lee</i>	

VERTICAL AND SHEARING PERFORMANCE OF KUMIMONO USED IN TRADITIONAL WOODEN STRUCTURES.....	5424
<i>Iuko Tsuwa, Mikio Koshihara</i>	

SHEAR STRENGTH AND STIFFNESS OF CLT SPECIMENS WITH DIFFERENT SPECIES-ADHESIVES COMBINATIONS.....	5431
<i>Julio Cesar Molina, João Vitor Felipe Silva, Carlito Calil Junior</i>	

POSTER SESSION 2A - MPD (ENGINEERING)

FRACTIONAL ORDER DERIVATIVE APPROACH OF VISCOELASTIC BEHAVIOR OF TROPICAL WOOD	5437
<i>Loic Chrislin Nguedjio, Rostand Moutou Pitti, Benoit Blaysat, Pierre Kisito Talla, Nicolas Sauvat, Joseph Gril</i>	

INNOVATIVE CONNECTION SOLUTIONS FOR TCC FLOOR SYSTEMS: MECHANICAL AND ENVIRONMENTAL ASSESSMENT	5444
<i>Cristina Dachin, Yishu Niu</i>	

INTRODUCTION OF NON-DESTRUCTIVE TESTING FOR NOVEL COMPOSITES AND JOINTS OF TIMBER AND BAMBOO.....	5452
<i>Ulrike Siemer, Ralf Förster, Marcel Springmann, Christian Heikel</i>	

BAMBOO BENDING WITH STEAM.....	5462
<i>Ralf Förster, Andreas Loth, Ulrike Siemer, Kubatbek Uulu Muktarbek</i>	

COMPRESSIVE BEHAVIOR OF TIMBER AT DIFFERENT ORIENTATIONS TO THE GRAIN	5470
<i>Marina Totsuka, Rina Okada, Kenji Aoki</i>	

POSTER SESSION 2B - STCE (ENGINEERING)

SHAKING TABLE TESTS ON THE TRADITIONAL TIMBER STRUCTURE OF THE STAGE ON THE CLIFF USING THE MODEL OF A 3D PRINTER	5478
<i>Atsushi Tabuchi, Akane Ohno, Taro Maruo, Shinta Yoshitomi</i>	

CHRONOLOGICAL AND GEOGRAPHICAL DISTRIBUTION OF CONVENTIONAL TIMBER FRAME CONSTRUCTION TECHNIQUES OBSERVED IN EXISTING HOUSES IN MIE PREFECTURE, JAPAN	5483
<i>Wakana Matsumoto, Chikako Tabata, Yoshito Tomioka</i>	

MELALEUCA RHAPHIOPHYLLA BARK HARVEST CONDITIONS FOR SUSTAINABLE ENGINEERED BARK BOARD PRODUCTION	5491
<i>William Richards, Monte Masarei, Andrew Guzzomi</i>	

A STUDY ON CHARRING PROPERTIES OF GLUED LAMINATED TIMBER BEAMS USING DOMESTIC LARCH.....	5498
<i>Kwon Hyuk Baik, Su Ho Kim, Jae Hong An, Je Ryoung Ryu</i>	

STATUS OF STANDARDIZATION OF FIRE-RESISTANT STRUCTURES ACCORDING TO THE KOREAN BUILDING ACT FOR GLUED LAMINATED TIMBER USING KOREAN LARCH	5505
<i>Jae Hong An, Kwon Hyuk Baik, Seong In-Hong, Yun-Jeong Choi</i>	

POSTER SESSION 2C - TESP (ENGINEERING)

TIMBER FAILURE AT SCREW TIPS ON GLULAM REINFORCED BY SELF-TAPPING SCREWS.....	5511
<i>Junki Tateyama, Daisuke Kanagaki, Marina Totsuka, Takeo Hirashima</i>	
ANALYSIS OF STRESS DISTRIBUTION IN CONTACT AREA OF CROSS LAMINATED TIMBER SHEAR WALL TO FLOOR CONNECTION	5519
<i>Lukáš Velebil, Šimon Matejka, Petr Kuklík, Jan Pošta, Martin Hataj, Jan Jochman</i>	
PUSH-OUT TESTS ON TIMBER-TO-TIMBER COMPOSITE (TTC) SYSTEMS MADE OF HARDWOOD	5528
<i>Martina Sciomenta, Gloria Rosone, Pasqualino Gualtieri, Alfredo Peditto, Massimo Fragiaco</i>	
GLUED-IN PLATES: NEW POSSIBLE SOLUTION FOR SLAB-COLUMN CONNECTION IN POINT SUPPORTED TIMBERBASED SLABS	5536
<i>Michal Kázmér, Jaroslav Sandanus</i>	
NON-DESTRUCTIVE AND SEMI-DESTRUCTIVE METHODS FOR WOOD GRADING VIA ASSESMENT OF STANDING TREES AND LOGS	5545
<i>Michal Kloiber, Jan Tippner, Jan Zlámál, Jirí Kunecký, Jan Baar</i>	

POSTER SESSION 3A - EIC, STCE (ENGINEERING/ PRACTITIONER)

STATIC CALCULATION AND CONSTRUCTION OF GLUED LAMINATED ANTENNA TOWER.....	5552
<i>Dean Cizmar, Ivan Volaric, Marija Babic Toncic, Šime Serdarevic</i>	
CONSIDERATION OF FLUID FORCES ACTING ON PARTS OF WOOD HOUSE UNDER FLOOD.....	5559
<i>Takahiro Tsuchimoto, Shigeru Hirano, Yuki Takadake</i>	
HOW TO BUILD INDUSTRIALLY SCALABLE VALUE CREATION FROM TIMBER CONSTRUCTION BY-PRODUCTS IN NEW ZEALAND	5567
<i>Tuula Jyske, Jussi Lintunen, Chunlin Xu, Karen Bayne, Anne Toppinen, Ninni Westerholm, Anthony Hoete</i>	
ASSESSING THE REGIONAL END-OF-LIFE IMPACTS OF WOOD WASTE IN THE UNITED STATES	5573
<i>Christina Bjarvin, Francesca Pierobon, Indroneil Ganguly</i>	

POSTER SESSION 3B - TESP & TABD (ARCHITECTURAL)

A SIMPLIFIED APPROACH FOR ESTIMATING IN-PLANE LATERAL RESPONSE OF TIMBER-FRAMED PARTITION WALLS	5581
<i>Jitendra Bhatta, Joshua Mulligan, Rajesh P. Dhakal, Timothy J Sullivan</i>	
EXPERIMENTAL EVALUATION OF HYGROTHERMAL PROPERTIES OF CHILEAN RADIATA PINE CROSS-LAMINATED TIMBER PANELS FOR CONSTRUCTION APPLICATIONS.	5591
<i>Paula Salgado, Cecilia Bustos, Gerardo Saelzer</i>	

EXPERIMENT ON AXIAL CAPACITY-BENDING CAPACITY RELATIONSHIP OF PLASTIC HINGE OF STEEL BAR-TIMBER COMPOSITE COLUMN.....	5601
<i>Rin Kamimakise, Keisuke Hayata, Shinichi Shioya</i>	

OCCUPANT OUTCOMES IN TIMBER-RICH ENVIRONMENTS: A REVIEW	5611
<i>Loren Dyer, Georgia Lindsay, Stacey L. Parker, Niklas K. Steffens</i>	

LCA COMPARISON OF A MASS TIMBER BUILDING WITH AN EQUIVALENT STEEL ALTERNATIVE	5621
<i>Mahboobeh Hemmati, Tahar Messadi, Hongmei Gu, Jacob Seddelmeyer, Moein Hemmati</i>	

POSTER SESSION 3C - MPD (ENGINEERING)

EVALUATION OF GROWTH STRESSES IN LIVING TREES OF CORYMBIA CITRIODORA HILL & JOHNSON (EUCALYPTUS CITRIODORA HOOK) USED FOR STRUCTURES BY DETERMINING THE LONGITUDINAL RESIDUAL STRAIN	5627
<i>Alexandre Monteiro De Carvalho, Carolina Nogueira Xavier, Carlos Eduardo Silveira Da Silva, Marcondes Geraldo Coelho Junior</i>	

INTERLAMINAR SHEAR FAILURE DAMAGE EVOLUTION PROCESS OF CLT BASED ON ACOUSTIC EMISSION TECHNOLOGY ANALYSIS	5635
<i>Haiqing Ren, Jialei Qu, Yinchun Gong</i>	

ENHANCEMENT OF FIRE PROPERTIES IN WOOD FIBER-BASED THERMAL INSULATION FOR ECOLOGICAL NEW CONSTRUCTION AND RENOVATION PROJECTS	5641
<i>Jami Järvinen, Hüseyin Emre Ilgin, Markku Karjalainen, Henrik Heräjärvi</i>	

TECHNICAL PERFORMANCE OF INNOVATIVE DOVETAIL MASSIVE TIMBER BOARD SLABS	5647
<i>Hüseyin Emre Ilgin, Markku Karjalainen</i>	

NATURAL WEATHERING OF LINSEED OIL PAINTS	5657
<i>Jan Baar, Petra Mácová, Dominik Hess, Lucie Zárbynická, Ludek Dvůrák</i>	

POSTER SESSION 4A - TESP (ENGINEERING)

COMPRESSIVE STABILITY STUDY OF FOUR-SIDED SIMPLY SUPPORTED CONSTRAINED CLT WALL	5665
<i>Di Chen, Zhao Chen, Jiajia Ou, Yi Zhang, Weiguo Long</i>	

ENHANCING END-GRAIN BONDING OF TIMBER COMPONENTS UNDER LOW-TEMPERATURE CURING CONDITIONS	5671
<i>Dio Lins, Steffen Franke</i>	

EFFECT OF AXIAL FORCE ON NATURAL FREQUENCIES OF COLUMNS ATTACHED TO TIMBER BUILDINGS	5676
<i>Hiroki Yoshinuma, Riku Muramatsu, Yuya Takaiwa</i>	

PERFORMANCE-BASED SEISMIC DESIGN OF HIGH-RISE TIMBER OFFICE BUILDING	5685
<i>Huijin Kim, Yurim Chu, Taejin Kim</i>	

FEASIBILITY OF CROSS-LAMINATED TIMBER PANEL FOR BRIDGES APPLICATION: PRELIMINARY EXPERIMENTAL, NUMERICAL AND ANALYTICAL STUDY	5695
<i>Reza Masoudnia</i>	

POSTER SESSION 4B - MPD & TESP (ENGINEERING)

RETROFITTING OF CRACKS IN CONNECTIONS WITH GLUED-IN RODS IN BEECH GLULAM.....	5704
<i>Martin Lehmann, Thomas Strahm, Pirmin Jung, Philippe Gronquist, Andrea Frangi</i>	
A STUDY ON CHARRING DEPTH OF CROSS-LAMINATED TIMBER(CLT) WALLS UNDER NON-LOAD BEARING FIRE TEST	5708
<i>Suho Kim, Kwon Hyuk Baik, Je-Ryong Ryu, Yun-Jeong Choi</i>	
EVALUATION OF PARAMETRIC FIRE MODELS FOR UNDER-VENTILATED MASS TIMBER COMPARTMENTS.....	5714
<i>Amanda Quan</i>	
BENDING STRENGTH ANALYSIS OF NAIL-CROSS-LAMINATED TIMBER PANELS ASSEMBLED WITH WOODEN NAILS.....	5724
<i>Marcel Vilches-Casals, Eduard Correal-Mòdol</i>	

POSTER SESSION 4C - TESP (ENGINEERING)

EVALUATION ON THE BEHAVIOR OF SCREWED CONNECTIONS BETWEEN CROSS- LAMINATED TIMBER PANELS AND STEEL PLATES.....	5730
<i>Xijun Wang, Minjuan He, Zheng Li, Hanlin Dong</i>	
COMPARATIVE ANALYSIS OF EXISTING MODELS ON PULL-OUT STIFFNESS OF GLUED-IN ROD IN GLULAM	5736
<i>Gwang-Ryul Lee, Jaewon Oh, Kyung-Sun Ahn, Min-Jeong Kim, Sang-Hyun You, Sung-Jun Pang, Chul-Ki Kim, Keon-Ho Kim, Jung-Kwon Oh</i>	
IMPACT OF INTER-PANEL CONNECTIONS ON VIBRATIONS OF CLT FLOORS	5746
<i>Vitomir Racic, Marija Nefovska-Danilovic, Marija Milojevic, Nada Simovic, Ivan Glišovic</i>	
60-MINUTE COMBUSTION TEST UNDER LOADING OF STEEL BAR-TIMBER COMPOSITE BEAMS.....	5752
<i>Shinichi Shioya, Shizuka Matsushita</i>	

POSTER ONLY - NO PRESENTATION

DIFFUSION ANALYSIS OF PROTECTIVE PIGMENT OIL COATINGS	5761
<i>Jakub Dömény, Richard Slávik, Jan Baar</i>	
CONSTRUCTION TESTS OF A FOLDING TIMBER BRIDGE	5768
<i>Jun Tonuma, Hideyuki Hirasawa, Atsushi Toyoda</i>	
INTERNAL STRESS WITHIN TIMBER-STEEL BAR COMPOSITE BEAM DUE TO CHANGING OF TEMPERATURE AND MOISTURE CONTENT	5774
<i>Takeshi Izaki, Nao Matsuoka, Shinichi Shioya</i>	

LATE PAPER: 8H - TESP - ENGINEERING - DYNAMIC TESTING & FIRE ENGINEERING

RESILIENT SEISMIC DESIGN OF TALL MASS TIMBER BUILDINGS: COMPARISON OF
TWO FULL-SCALE TRI-AXIAL SHAKE TABLE TESTS 5784

*Prashanna Mishra, John W. van de Lindt, Shiling Pei, Andre R. Barbosa, Steve Pryor, Jeffrey
Berman, Barbara G. Simpson, Keri L. Ryan, Arijit Sinha, Patricio A. Uarac P., Morgan
McBain, Tanner Field, Steven Kontra, Ludovica Pieroni*

LATE PAPER: 9D - TESP - ENGINEERING - STRUCTURAL BEHAVIOUR

CHARACTERIZATION OF THE FIRE PERFORMANCE OF TROPICAL TIMBERS FOR
STRUCTURAL USE IN COLOMBIA 5793

César Andrés Rengifo Aguas, María Rocío Rengifo Aguas

Author Index