

# Conference Programme

**Reception**

Sunday, 3rd of December, 3:00 - 5:00 pm  
(Engineering Neon Foyer 401-400L4)

<b>Monday</b>	<b>401-439</b>		
8:00 - 9:00 am	Registration (Engineering Neon Foyer)		
9:00 - 9:55 am	<b>Opening and Keynote 1: Prof. C. M. Wang</b>		
9:55 - 10:20 am	Morning tea/coffee (Engineering Neon Foyer)		
	<b>405-422</b>	<b>405-430</b>	
10:20 - 11:50 am	<b>Session 1-1:</b> Connections	<b>Session 1-4:</b> Rocking structures	
11:50 - 1:20 pm	Lunch (Engineering Neon Foyer)		
	<b>405-422</b>	<b>405-430</b>	<b>423-342</b>
1:20 - 2:35 pm	<b>Session 1-2:</b> Damping	<b>Session 1-5:</b> Steel, timber and fire eng.	<b>Session 1-7:</b> Concrete and composite structures
2:35 - 3:20 pm	Afternoon tea/coffee (Engineering Neon Foyer)		
3:20 - 4:50 pm	<b>Session 1-3:</b> Extreme loading	<b>Session 1-6:</b> Numerical methods	<b>Session 1-8:</b> Composite structures

<b>Tuesday</b>	<b>423-342</b>		
9:00 - 9:55 am	<b>Keynote 2: Prof. D. Bhattacharyya</b>		
9:55 - 10:20 am	Morning tea/coffee (Engineering Neon Foyer)		
	<b>405-422</b>	<b>405-430</b>	
10:20 - 11:50 am	<b>Session 2-1:</b> Extreme loading	<b>Session 2-4:</b> Soil-structure interaction	
11:50 - 1:20 pm	Lunch (Engineering Neon Foyer)		
	<b>405-422</b>	<b>405-430</b>	<b>423-342</b>
1:20 - 2:35 pm	<b>Session 2-2:</b> Mechanics of structures	<b>Session 2-5:</b> Numerical methods and health monitoring	<b>Session 2-7:</b> Composite structures and pavements
2:35 - 3:20 pm	Afternoon tea/coffee (Engineering Neon Foyer)		
	<b>405-422</b>	<b>405-430</b>	
3:20 - 4:50 pm	<b>Session 2-3:</b> Structural dynamics and blast loading	<b>Session 2-6:</b> Numerical methods	
6:30 - 9:30 pm	DINNER (Fale Pasifika)		

<b>Wednesday*</b>	<b>Conference Centre 423-342</b>		
9:00 - 9:45 am	<b>Keynote 3: Prof. I. Takewaki</b>		
9:50 - 10:20 am	Invited speakers (Geology and Pavements)		
10:20 - 10:50 am	Coffee break (Conference Centre Foyer)		
10:50 - 12:20 pm	<b>Keynotes 4 and 5: Dr D. Hopkins and Prof. J. Haddock</b>		
12:20 - 1:15 pm	Lunch (Conference Centre Foyer)		
1:15 - 3:00 pm	Invited speakers (Pavement materials and Transport)		
3:00 - 3:05 pm	Closing		
3:05 - 4:05 pm	Networking (Conference Centre Foyer)		

\*Note: The programme on Wednesday may change slightly.

UoA-Guest-WiFi: Username: [acmsm26@wifi.com](mailto:acmsm26@wifi.com)  
Password: 6X48VP1U

Connecting to EDUROAM is also possible.

<b>401-439 (9:00 - 9:55 am)</b>	
<b>Monday</b> (4 <sup>th</sup> December)	<b>Opening</b> <b>Chairperson: Nawawi Chouw</b> <b>Keynote 1</b> <b>Prof. Chein Ming Wang</b> (University of Queensland, Australia) <i>Floating solutions to help meet und sustainable development goals</i>
<b>405-422 (10:20 - 11:50 am)</b>	
	<b>Session 1-1: Connections</b> <b>Chairperson: Xing Ma</b>
10:20 - 10:35 am	A. Amirsardari, L. Pham, J. Lee, E. Gad: Evaluating the performance of category D timber connections
10:35 - 10:50 am	B. E. Thevarajah, A. M. Remennikov, T. D. Ngo, H. Guan, B. P. Gilbert: Analysis of hybrid timber-steel connections under quasi-static loading
10:50 - 11:05 am	H. Humphrey, R. E. Melchers: Effect of corrosion pit growth on the ultimate strength of weld joints
11:05 - 11:20 am	L. Terry, G. Gillogly, I. A. Chaves, M. Masia: Impact of corroded galvanised wall ties on the structural integrity of masonry veneer walls
11:20 - 11:35 am	T. G. Athmarajah, M. Mahendran: Behaviour of cold-formed steel batten screw connections under wind loading at sub-zero temperatures
11:35 - 11:50 am	Y. Su, X. Ma, Y. Zhuge, E. Abdelaal, A. Singh, H. Habib: Experimental study on screw connections of aluminium roof-purlin systems
<b>405-422 (1:20 - 2:35 pm)</b>	
	<b>Session 1-2: Damping</b> <b>Chairperson: Chin-Long Lee</b>
1:20 - 1:35 pm	S. T. Hu, R. K. Hu, M. G. Yang, D. L. Meng, N. Chouw: Shake table test on the vibration mitigation performance of the combined viscous-steel damping system (CVSDS)
1:35 - 1:50 pm	J. Guo, K. Ikago: Data-driven modelling of general damping systems by K-means clustering and two-stage regression
1:50 - 2:05 pm	R. Enokida, K. Kajiwara: Time-history identification of physical properties of a single-storey steel frame subjected to a seismic excitation
2:05 - 2:20 pm	Y. Zheng, C-L. Lee, R. Shen: Comparison of damping ratio identification methods for buildings using seismic responses
2:20 - 2:35 pm	C-L. Lee: How to implement bell-shaped damping model?
<b>405-422 (3:20 - 4:50 pm)</b>	
	<b>Session 1-3: Extreme loading</b> <b>Chairperson: Hong Guan</b>
3:20 - 3:35 pm	M. Abdullah, W. Ferdous, S. Banerjee, A. Manalo: Flexural behaviour of pultruded GFRP profiles filled with layered composite panels for railway sleepers
3:35 - 3:50 pm	S. Lee, T. Bennett, S. Smith: Stability assessment for masonry domes in the lunar environment using an extended thrust network analysis
3:50 - 4:05 pm	L. J. Gooch, M. J. Masia, M. G. Stewart: Spatial correlation of flexural tensile bond strength in unreinforced masonry walls
4:05 - 4:20 pm	K. Kojima, I. Takewaki: Earthquake response of SDOF bilinear hysteretic system under forward-directivity Input modeled by triple impulse
4:20 - 4:35 pm	R. Fujikawa, H. Iwamoto, K. Nakayama, M. Iwanami: Mechanical behaviour of concrete under high water pressure concerning water movement
4:35 - 4:50 pm	Z. Q. Zhao, H. Guan, Z. Jiao, H. Z. Xue, Y. Li, B. P. Gilbert: Failure mechanisms of multiple external column removals in RC flat plate structures

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**Monday****405-430 (10:20 - 11:50 am)****Session 1-4: Rocking structures****Chairperson: Anastasios Giouvanidis**

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- 10:20 - 10:35 am S. Li, H. Tsang, N. Lam: Experimental investigation into the seismic response of super elastic tendon restrained rocking structures
- 10:35 - 10:50 am W. Xiong: Uplift-restraint all-cover conical friction isolation system
- 10:50 - 11:05 am S. K. W. Chu, A. I. Giouvanidis, E. G. Dimitrakopoulos: Seismic rocking response classification through the lens of a machine learning methodology
- 11:05 - 11:20 am A.I. Giouvanidis, E.G. Dimitrakopoulos: Rocking amplification and vector-valued intensity measures
- 11:20 - 11:35 am Z. Yang, R. Xue, M. You, K. Zhang, N. Chou: Consequence of slenderness for the seismic response of rockable bridges
- 11:35 - 11:50 am R. Xue, Z. Yang, K. Zhang, M. You, N. Chou: The interrelation between the dynamic properties of rockable bridges and excitations
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**405-430 (1:20 - 2:35 pm)****Session 1-5: Steel, timber and fire engineering****Chairperson: Chunwei Zhang**

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- 1:20 - 1:35 pm K. Watson, A. Amirsardari, L. Pham: Cold-formed steel for mid-rise construction – conceptual design
- 1:35 - 1:50 pm M. Z. Patowary, S. Al-Deen, M. Ashraf: Significance of end connection rigidity on the economic design of long-span timber beams
- 1:50 - 2:05 pm S. Hendawitharana, L. Plumpton, A. Ariyanayagam, M. Mahendran: Effects of external architectural features on the performance of buildings under wildfire exposure
- 2:05 - 2:20 pm S. Hendawitharana, A. Ariyanayagam, M. Mahendran: Performance of external light steel walls lined with steel cladding under wildfire exposure conditions
- 2:20 - 2:35 pm L. Lama, H. Thai, T. Gernay: Fire behaviour of ultra-high strength concrete filled steel tubular columns under non-uniform heating
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**405-430 (3:20 - 4:35 pm)****Session 1-6: Numerical methods****Chairperson: Chunwei Zhang**

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- 3:20 - 3:35 pm Y. Hu, E. Lumantarna, N. Lam, H. Tsang: Machine-learning based prediction model for torsion-induced seismic response amplification in plan-asymmetric buildings
- 3:35 - 3:50 pm X. Weng, E. Lumantarna, R. D. Hoult, N. T. K. Lam: A simplified finite element model of grouted duct
- 3:50 - 4:05 pm M. Z. Patowary, M. Ivtekar, M. S. A. Zafar, M. I. T. Hossain: A study on different structural systems using response spectrum analysis
- 4:05 - 4:20 pm F. Li, X. Zhi, E. Zhu, D. Wang, R. Zhang,: Analytical study of seismic demand and fragility of piping systems in the reticulated shell structures
- 4:20 - 4:35 pm R. Devaraj, A. Olofinjana, C. Gerber: Development of a bond-based design methodology for hybrid GFRP-steel RC beams
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**Monday****423-342 (1:20 - 2:35 pm)****Session 1-7: Concrete and composite structures****Chairperson: Kotaro Kojima**

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- 1:20 - 1:35 pm A. Tambusay, B. Suryanto, P. Suprobo: Assessing the response of reinforced alkali-activated concrete beams: experimental investigations and finite element studies
- 1:35 - 1:50 pm H. Gou, M. Sofi, R. Zhang, M. Zhu, H. Zhu: Experimental study and numerical modeling for interface bonding of ordinary concrete reinforced with lightweight high-strength ECC
- 1:50 - 2:05 pm C. C. Neupane, J. Lee, T. Pokharel, H. Tsang, E. F. Gad: Behaviour of redundant fasteners under a tension load with crack cycling
- 2:05 - 2:20 pm M. Kojima, N. Chijiwa, R. Kurihara: Effect of cracks along rebars on the bond deterioration under tensile stress in reinforced concrete
- 2:20 - 2:35 pm A. Islam, W. Ferdous, P. Burey, K. Nahar and A. Manalo: Towards the development of a low-carbon emission sandwich panel – a state-of-the-art review
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**423-342 (3:20 - 4:50 pm)****Session 1-8: Composite structures****Chairperson: Xing Ma**

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- 3:20 - 3:35 pm N. P. N. Pradhan, N. Khodabakhshi, E. G. Dimitrakopoulos: Characterizing reduction of variability in bamboo axial members through use of multiple culms and grading
- 3:35 - 3:50 pm Y. Tao, S. A. Hadighe: Durability and electrical property of recycled fibre reinforced mortar
- 3:50 - 4:05 pm N. Khodabakhshi, T. Mouka, E. G. Dimitrakopoulos: The effect of single and bi-modulus material behaviour on longitudinal compression failure of bamboo culms under flexure
- 4:05 - 4:20 pm H. Chen, D. Li, X. Ma, Z. Zhong, E. Abd-Elaal: Mesoscale analysis of rubber particle effect on tensile strength of crumb rubber concrete
- 4:20 - 4:35 pm S. Al-Deen, T. Khaoted: Impact of concrete properties on the carbon footprint of a structure when using green concrete
- 4:35 – 4:50 pm M. Bevan: Influence of various lap-splice lengths applied to concrete columns subjected to seismic loads
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423-342 (9:00 - 9:55 am)

**Keynote 2**

**Chairperson: Nawawi Chouw**

**Tuesday**  
**(5<sup>th</sup> December)**

**Prof. D. Bhattacharyya** (The University of Auckland)

*Sustainable composites for commercial aviation and building infrastructure sectors*

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405-422 (10:20 - 11:50 am)

**Session 2-1: Extreme loading**

**Chairperson: Hong Guan**

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- 10:20 - 10:35 am A. Deivanayagam, A. Ponnalagu: Response of structures with a water-backed medium subjected to an underwater shock pulse
- 10:35 - 10:50 am I. Hussain, S. Aghdamy, S. Gunalan: Dynamic impact performance of solid aluminium cladding panels subjected to the impact of timber projectiles
- 10:50 - 11:05 am H. Lin, H. Luan, H. Karampour, L. Yang, C. Han, H. Zhu: A simulation method for offshore inclined cylinders under the coupling loads of wind, wave and earthquake
- 11:05 - 11:20 am S. Li, M. Li, Z. Wang, L. Shen: Numerical simulation of crack propagation in glass under impact loading based on peridynamics
- 11:20 - 11:35 am H. Zhang, Y. Huang: Investigation of the influence of structural measures on seismic resilience of multi-storey masonry structures
- 11:35 - 11:50 am Kaviarasu K, Alagappan P: Blast-wave mitigation using closed cellular rigid foam
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405-422 (1:20 - 2:35 pm)

**Session 2-2: Mechanics of Structures**

**Chairperson: Ziqi Yang**

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- 1:20 - 1:35 pm C. M. Wang, J. M. Zhang: Maximum spanning capacity of a catenary arch under self-weight against buckling
- 1:35 - 1:50 pm L. M. Yu, B. Yan, X. R. L. Lou, H. X. Fu, J. H. Tian: A review of advances in research on the seismic vulnerability of bridge structures
- 1:50 - 2:05 pm C. Flude, D. Lau, J. Erochko: Development of a new seismic testing program for suspended ceilings
- 2:05 - 2:20 pm P. Khatiwada, E. Lumantarna, N. Lam: Prediction of the nonlinear capacities of RC buildings including the effect of interactions between structural elements
- 2:20 - 2:35 pm S. E. A. Hosseini, S. Beskhyroun: Seismic vibration control of fluid storage tanks using MR dampers
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405-422 (3:20 - 4:50 pm)

**Session 2-3: Structural dynamics and blast loading**

**Chairperson: Dongliang Meng**

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- 3:20 - 3:35 pm Z. Yang, M. You, K. Zhang, N. Chouw: Influence of frequency ratio and support flexibility on the seismic response of two-segment rockable bridges
- 3:35 - 3:50 pm X. R. L. Lou, B. Yan, R. Gan, L. M. Yu: Structural systems of suspension bridge impact on the rails
- 3:50 - 4:05 pm D. Meng, R. Hu, M. Yang, S. Hu, X. He, N. Chouw: Research on the dynamic behaviour of high-speed railway bridge piers due to earthquake-induced horizontal impact at a pier
- 4:05 - 4:20 pm Z. Ye, Z. Yan, Y. Wei, X. Qin, N. Chouw: Experimental investigation of a rockable interlocking column with 18 rocking interfaces
- 4:20 - 4:35 pm J. Sun, N. Lam, X. Liu: Impact resistance of concrete parapet strengthened with ultra high-performance fibre reinforced concrete (UHPFRC)
- 4:35 - 4:50 pm M. Amin, Y. Kajita: Shake table experiments of girder-abutment pounding effects and its numerical simulation
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**Tuesday****405-430 (10:20 - 11:50 am)****Session 2-4: Soil-structure interaction****Chairperson: Xiaoyang Qin**

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- 10:20 - 10:35 am C. Kong, M. Xiao: Nonlinear numerical simulation method for combined supporting structures of steel sets and shotcrete in tunnels
- 10:35 - 10:50 am K. Zhang, R. Xue, M. You, Z. Yang, N. Chow: Influence of excitation angle and soil-structure interaction on the seismic response of bridges
- 10:50 - 11:05 am F. S. Honar, N. Yousefpour, N. T. K. Lam, J. S. Perera: An advanced soil constitutive model for simulation of flexible barrier piles under vehicle impact load
- 11:05 - 11:20 am F. Yu, X. Qin, C. Wicaksana: Seismic assessment and upgrade of a concrete wharf
- 11:20 - 11:35 am M. You, G. Barrios, R. Xue, K. Zhang, Z. Yang, N. Chow: The effect of soil properties on the dynamic response of closely adjacent structures
- 11:35 - 11:50 am M. Amin, Y. Kajita: Numerical simulation of impact effect for damage assessment of highway bridge abutments
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**405-430 (1:20 - 2:35 pm)****Session 2-5: Numerical methods and health monitoring Chairperson: Miao Li**

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- 1:20 - 1:35 pm Y. Yu, A. Hajimohammadi, A. Nezhad, D. Hocking, F. Moghaddam and S. Foster: Modelling compressive strength of concrete incorporating supplementary cementitious materials using machine learning technologies
- 1:35 - 1:50 pm B. Cunning, I. Chaves, L. Pilgrim, R. Petersen: The role of field observations in accurate finite element modelling of an off-river gravity dam
- 1:50 - 2:05 pm H. Li, X. L. Lu, X. Y. Zhang, W. Xin, B. Zhou: Study on damage prediction of wind turbine blade based on delamination defect morphology feature recognition
- 2:05 - 2:20 pm C. Y. Lam, M. J. Masia, I. A. Chaves: Development of non-destructive testing techniques for condition assessment of wall ties in masonry construction
- 2:20 - 2:35 pm B. Piscesa: Static and dynamic field testing of 40 m I-Girder bridge in the Teluk Lamong area
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**405-430 (3:20 - 4:35 pm)****Session 2-6: Numerical methods****Chairperson: Anastasios Giouvanidis**

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- 3:20 - 3:35 pm I. A. Chaves, M. J. Masia, R. E. Melchers, S. D. Prazer, W. Chen: A framework for estimating structural stability decay of multistorey cavity brick and brick veneer masonry
- 3:35 - 3:50 pm A. Yaghoubzadefard, M. Sofi, E. Lumantarna, N. Nilupa: Comparative analysis of random forest and support vector machine for a bridge damage detection
- 3:50 - 4:05 pm H. Al-Mashgari, X. Liu, T. Ngyuen, T. Ngo: Numerical modelling of interfacial performance of timber beam and CFRP rods bonded with different end conditions
- 4:05 - 4:20 pm L. Pham, E. Gad, J. Wilson: The mechanics of performance evaluation
- 4:20 - 4:35 pm P. G. Bolz: Simulative investigation of wave propagation in a thin plate using ABAQUS for the application of coda wave interferometry in order to detect progressive material damage
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**423-342 (1:20 - 2:35 pm)****Session 2-7: Composite structures and pavements****Chairperson: Xing Ma**

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- 1:20 - 1:35 pm S. Ebrahimzadeh, A. Manalo, O. Alajarmeh, X. Yang, C. Sorbello, S. Weerakoon: Dynamic response of a GFRP-Reinforced concrete pontoon deck due to impact loading
- 1:35 - 1:50 pm S. Zhang, E. Hamed, I. Gilbert, A. Amin: Effect of random distribution of aggregates and fibres on the creep response of steel fibre reinforced concrete – a meso-scale approach
- 1:50 - 2:05 pm P. Orosa, I. Pérez, A. R. Pasanda, J. E. Haddock: Correlation of mechanical characteristics of cold recycled mixtures (CRM) obtained using triaxial tests
- 2:05 - 2:20 pm Shaswat and R. Orense: Use of innovative materials as ground improvement techniques to mitigate soil liquefaction
- 2:20 - 2:35 pm S. Hou, Z. Lai, H. Zhang, J. Han: Toxic leaching and the engineering properties of copper contaminated soil cured by magnesium phosphate
- 2:35 – 2:50 pm C. Wang: Evaluating the durability of RC structures: a closed-form solution and applications
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**Conference Centre 423-342 (9:00 - 12:20 am)**

**Wednesday  
(6<sup>th</sup> December)**

**Keynote 3** (9:00 - 9:45 am)

**Chairperson: Nawawi Chouw**

**Prof. I. Takewaki** (Kyoto University, Japan)

*Toward resilience-based design (RBD): lessons learned from past earthquakes in Japan*

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**Invited speakers**

**Chairperson: Douglas Wilson, Tam Larkin**

9:50 - 10:05 am M. Brook: Infrastructure management in problematic rocks and soils: an engineering geological perspective

10:05 - 10:20 am A. Browne: Insitu road recycling for performance improvement and sustainable climate resilience

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**Keynotes**

**Chairperson: Douglas Wilson, Tam Larkin**

10:50 - 11:35 am **Keynote 4**

**Dr. D. Hopkins** (David Hopkins Consulting Limited, Auckland)

*Structural design for earthquake-resilient buildings in New Zealand – paradigm shift or more of the same?*

11:35 - 12:20 am **Keynote 5**

**Prof. J. Haddock** (Purdue University, USA)

*Roads and pavements for the 21st century*

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**Conference Centre 423-342 (1:15 - 3:00 pm)**

**Invited speakers**

**Chairperson: Tam Larkin, Douglas Wilson**

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1:15 - 1:30 pm N. Ardalan: Recycled concrete aggregate; an alternative for basecourse material

1:30 - 1:45 pm I. Holleran: Recycling porous asphalt into new porous asphalt: challenges and opportunities

1:45 - 2:00 pm T. Allen: Thermal and mechanical modelling / testing of inductive and wireless charging pads within roadways

2:00 - 2:15 pm D. Alabaster: Epoxy chip-sealing – a new option for the treatment of flushing

2:15 - 2:30 pm M. He: A green alternative to Bitumen

2:30 - 2:45 pm M. Than: Comparative analysis of NZ railway slab track systems: life cycle cost, structural behaviour, and performance considerations

2:45 - 3:00 pm T. Larkin and D. Wilson: Accelerated pavement testing for integrated wireless charging pads within roadways

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3:00 – 3:05 pm **Closing**

3:05 – 4:05 pm **Networking** (Conference Center Foyer)

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