

New Zealand RS&T Curriculum Vitae Template

PART 1

1a. Personal details				
Full name	<i>Title</i>	<i>First name</i>	<i>Second name(s)</i>	<i>Family name</i>
	Prof.	Timothy	John	Sullivan
Present position		Professor		
Organisation/Employer		University of Canterbury		
Contact Address		Department of Civil and Natural Resources Engineering		
		Private Bag 4800		
		Christchurch	Post code	8140
Work telephone	+64 3 364 2987ext. 92263	Mobile	0273440270	
Email	timothy.sullivan@canterbury.ac.nz			

1b. Academic qualifications

2005, PhD, Earthquake Engineering, ROSE School, IUSS Pavia & Uni. of Pavia,
 2003, MSc, Earthquake Engineering, ROSE School, IUSS Pavia,
 1998, BE(Hons), Civil Engineering, University of Canterbury

1c. Professional positions held

2020 – Present, Professor, University of Canterbury, Christchurch, NZ.
 2016 – 2019, Associate Professor, University of Canterbury, Christchurch, NZ.
 2009 – 2015, Head of Design Methods Section, European Centre for Training and Research in Earthquake Engineering, Pavia, Italy
 2008 – 2016, Assistant Professor, University of Pavia, Pavia, Italy.
 2006 – 2008 Consulting Structural Engineer, Buro Happold, London, UK.
 2002 Consulting Structural Engineer, Hochtief Consult, Essen, Germany
 1998 – 2001 Consulting Graduate/Civil Engineer, Beca, Wellington, New Zealand

1d. Present research/professional speciality

Timothy Sullivan's research and professional speciality is in seismic design, seismic assessment, seismic retrofit and mitigation of seismic risk. Particular expertise lies in the subjects of displacement-based seismic design and displacement-based seismic assessment applied to a wide range of structural typologies, capacity design, and seismic performance of non-structural elements. Specialist consulting experience gained in the seismic design of tall buildings and bridges.

1e. Total years research experience

15 years

Full time consulting engineer post-PhD from 2005 to 2008.

1f. Professional distinctions and memberships (including honours, prizes, scholarships, boards or governance roles, etc)

2024 Keynote speaker at Australian National Conference of Earthquake Engineering
 2022 Appointed member of New Zealand Seismic Risk Working Group
 2020 Appointed to Committee of Structural Engineering Society of New Zealand
 2018 Appointed to Council of Concrete NZ: Learned Society
 2018 Recipient of the New Zealand Society for Earthquake Engineering/EQC Ivan Skinner Award
 2016 Recipient of the "Most Influential Paper Award" from the international journal Earthquake Engineering and Engineering Vibration, published by Springer.
 2015 Appointed to Board of Directors for the SPONSE Association, www.sponse.eu.

2015 Invited Speaker at the Pacific Conference of Earthquake Engineering, Sydney, Australia.

2014 Invited to the Editorial board of the Bulletin of the NZSEE

2013 Invited Lecturer at Portuguese IX National Congress on Steel and Composite Construction, 25th October 2013, Porto, Portugal.

2012, Recipient of the 2012 Plinius Medal, awarded by the European Geosciences Union to recognize interdisciplinary research in natural hazards by young scientists.

2012, Recipient of the New Zealand Society for Earthquake Engineering 2012 Otto Glogau Award for best journal paper.

2011 Keynote Lecturer at Portuguese VIII National Congress on Steel and Composite Construction, 24th November 2011, Guimaraes, Portugal.

2010 Keynote Lecturer at SMART (Seismic design and best-estimate Methods Assessment for Reinforced concrete buildings subjected to Torsion and non-linear effects) 2010 Workshop, December 15-17, Saclay, France.

2009 Invited to the Editorial board of the International Journal "Earthquakes & Structures" published by Techno-Press

2008 Admitted to the Institution of Civil Engineers as a Chartered Civil Engineer

2006 Admitted to the New Zealand Society for Earthquake Engineering

2002 Awarded University of Pavia, ROSE School Earthquake Engineering Doctorate Scholarship.

2001 Awarded ROSE School Earthquake Engineering Masters Scholarship.

1995 Awarded University of Canterbury Undergraduate Scholarship.

1g. Total number of peer reviewed publications and patents	Journal articles	Books, book chapters, books edited	Conference proceedings	Patents
	105	12	120	1

PART 2

2a. Research publications and dissemination

Selection of peer-reviewed journal articles

Francis, T., Sullivan, T.J., Filiatrault, A. (2023) "Shake Table Testing and Modelling of New Zealand Light-Frame Wood Buildings" *ASCE Journal of Structural Engineering*, 149(12), <https://doi.org/10.1061/JSENDH.STENG-12413>.

Williamson, M.B., John, L., Sullivan, T.J. (2023) "Investigating the impact of design criteria on the expected seismic losses of multi-storey office buildings", *Bulletin of the New Zealand Society for Earthquake Engineering*, 56(1): 11-28.

Rashid, M., Dhakal, R.D., **Sullivan, T.J.**, Yeow, T. (2022) "Seismic performance characterization of sprinkler piping systems through shake table testing", *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 55 No. 3.

Arifin, F., **Sullivan, T.J.**, MacRae, G., Kurata, M., and Takeda, T. (2021) "Lessons for Loss Assessment from the Canterbury Earthquakes: A 22-Storey Building" *Bulletin of Earthquake Engineering*, Springer, <http://doi.org/10.1007/s10518-021-01055-7>.

Orumiyehi, A., **Sullivan, T.J.** (2021) "Displacement-Based Seismic Assessment of the Likelihood of Failure of Reinforced Concrete Wall Buildings", *Buildings* 2021, 11, 295. <https://doi.org/10.3390/buildings11070295>.

Orumiyehi, A., and **Sullivan, T.J.** (2021) "Quantifying the Likelihood of Exceeding a Limit State via the Displacement-based Assessment Approach", *Journal of Earthquake Engineering*, Taylor & Francis, DOI: 10.1080/13632469.2020.1828200.

Smith J.W., **Sullivan, T.J.**, Nascimbene, R. (2020) "Precast concrete spreader-walls to improve the reparability of RC frame buildings" *Earthquake Engineering & Structural Dynamics*, Volume 50, Issue 3, p. 831-844.

Arifin, F., **Sullivan, T.J.**, and Dhakal, R.P. (2020) "Experimental investigation into the seismic fragility of a commercial glazing system" *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 53, No.3, pp.144-149.

Haymes K., **Sullivan T.J.**, Chandramohan, R. (2020) "A practice-oriented method for estimating elastic floor response spectra" *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 53, No.3, pp.116-136.

Sullivan, T.J., Saborio-Romano, D., O'Reilly, G.J., Welch, D.P., Landi, L. (2018) "Simplified Pushover Analysis of Moment Resisting Frame Structures", *Journal of Earthquake Engineering*, DOI: 10.1080/13632469.2018.1528911

Yeow TZ., **Sullivan TJ.**, and Elwood KJ. (2018) "Evaluation of fragility functions with potential relevance for use in New Zealand" *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol.51, No. 3.

Yeow TZ., Orumiyehi A., **Sullivan TJ.**, MacRae GA., Clifton GC. and Elwood KJ. (2018) "Seismic performance of steel friction connections considering direct-repair costs" *Bull. of Earthquake Engineering* <http://dx.doi.org/10.1007/s10518-018-0421-x>.

O'Reilly G.J, **Sullivan T.J.**, (2018) "Probabilistic Seismic Assessment and Retrofit Considerations for Italian RC Frame Buildings", *Bulletin of Earthquake Engineering*, Springer, 16(3), DOI: <http://dx.doi.org/10.1007/s10518-017-0257-9>.

Nievas, C.I., **Sullivan T.J.** (2018) "A Multidirectional Conditional Spectrum" *EESD*, Vol. 47, No. 4, Pages 945-965, DOI: 10.1002/eqe.3000.

Cardone D., **Sullivan T.J.**, Gesualdi G., and Perrone G. (2017) "Simplified estimation of the expected annual loss of reinforced concrete buildings" *Earthquake Engineering and Structural Dynamics*, DOI: 10.1002/eqe.2893.

Agha Beigi H, Christopoulos C., **Sullivan T.J.**, Calvi G.M. (2016) "Cost Benefit Analysis of Buildings Retrofitted Using GIB Systems", *Earthquake Spectra*, Vol. 32, No. 2, pp. 861-879, DOI: <http://dx.doi.org/10.1193/110914EQS185M>.

Sullivan, T.J. (2016) "Use of limit state loss versus intensity models for simplified estimation of expected annual loss" *Journal of Earthquake Engineering*, 20(6), pp.954-974; DOI: 10.1080/13632469.2015.1112325.

Sassun, K., **Sullivan, T.J.**, Morandi, P., Cardone, D. (2016) "Characterising the in-plane seismic performance of infill masonry" *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 49, No.1, pp.98-115.

Agha Beigi H, **Sullivan T.J.**, Christopoulos C., Calvi G.M. (2015) "Factors Influencing the Repair Costs of Soft-Story RC Frame Buildings and Implications for their Seismic Retrofit", *Engineering Structures*, 101, 233-245, doi:10.1016/j.engstruct.2015.06.045.

Sullivan. T.J., Welch, D.P., and Calvi, G.M. (2014) "Simplified seismic performance assessment and implications for seismic design", *Earthquake Engineering and Engineering Vibration*, Vol.13, Suppl.1, pp.95-122.

Welch, D.P., **Sullivan, T.J.**, Filiatrault, A., (2014) "Potential of Building Information Modelling for Seismic Risk Mitigation in Buildings" *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 47, No. 4, 253-263.

Filiatrault, A., **Sullivan. T.J.** (2014) "Performance-based Seismic Design of Nonstructural Building Components: The Next Frontier of Earthquake Engineering", *Earthquake Engineering and Engineering Vibration*, Vol.13, Suppl.1, pp.17-46.

Sullivan, T.J., Calvi, P.M., Nascimbene, R. (2013) "Towards Improved Floor Spectra Estimates for Seismic Design" *Earthquakes and Structures*, Vol.4, No.1.

Peer reviewed books, book chapters, books edited

Calvi, G.M., **Sullivan, T.J.** (2015) "Developing guidelines for displacement-based seismic assessment" in *The state of Earthquake Engineering Research in Italy: the ReLUIS-DPC 2010-2013 Project*, Edited by G. Manfredi & M. Dolce, Doppiavoce, Napoli, Italy, pp 327-352.

Sullivan. T.J. and Calvi G.M. *Editors* (2013) "Developments in the field of displacement-based seismic assessment", IUSS Press, Research Report ROSE 2013/01, ISBN 978-88-6198-090-7, 531pages.

Sullivan. T.J. Priestley, M.J.N., and Calvi G.M. *Editors* (2012) "A model code for the Displacement-Based Seismic Design of Structures, DBD12", IUSS Press, ISBN 978-88-6198-072-3, 105pages.

Refereed conference proceedings

Dong, C., **Sullivan, T.J.** (2023) "Base isolated building performance and the impact of the national seismic hazard model" *Proceedings of NZSEE 2023 Annual Conference*, Auckland, Paper 98.

Dawson, M., Millen, M., **Sullivan, T.J.** (2023) "Modelling of residential house perimeter foundation beams subjected to ground deformations" *Proceedings of NZSEE 2023 Annual Conference*, Auckland, Paper 25.

Haymes, K., **Sullivan, T.J.**, Chandramohan, R., (2021) "Strength requirements for non-structural components responding nonlinearly under earthquake excitation", *New Zealand Society for Earthquake Engineering Conference*, Christchurch, New Zealand, paper 120.

Francis, T. C., **Sullivan, T. J.**, & Filiatrault, A. (2020). Value case for the use of seismically isolated light-frame wood buildings in New Zealand. *Proceedings of the 17th World Conference on Earthquake Engineering*. 17th World Conference on Earthquake Engineering, Sendai, Japan.

Sullivan, T.J., Dhakal, R., Stanway, J., (2020) "A framework for the seismic rating of non-structural elements in buildings" *17th World Conference of Earthquake Engineering*, Sendai, Japan, Paper C000297.

Roldan, R., Della Corte, G., **Sullivan, T.** (2017) "Loss Assessment of Steel MRF Buildings With Partial-Strength Connections", *Proceedings 16th World Conference on Earthquake Engineering*, Santiago, Chile, January 9th to 13th 2017, paper 4613.

Welch, D., **Sullivan, T.J.** (2017) "Illustrating a new possibility for the estimation of floor spectra in nonlinear multi-degree of freedom systems", Proc, 16th World Conf. on Earthquake Engineering, Santiago, Chile, Jan. 9th to 13th 2017, paper 2632.

Belliss, C.J, Fox, M.J., **Sullivan, T.J.**, (2016) "Exploring the probability of collapse of RC frames designed to current New Zealand Standards", Proceedings 2016 NZSEE Conference, Christchurch, New Zealand, paper O-11.

Calvi, P.M., **Sullivan, T.J.** (2014) "Improved estimation of floor spectra in RC wall buildings", Proceedings of the 10th US National Conference on Earthquake Engineering, Anchorage, Alaska, paper 1113.

Welch, D.P., **Sullivan, T.J.**, Calvi, G.M. (2012) "Towards a Direct Displacement-Based Loss Assessment Methodology for RC Frame Buildings", Proceedings 15th World Conference on Earthquake Engineering, Lisbon, Portugal, paper 4054.

2b. Previous research work

Research title: Leader of QuakeCoRE Flagship 4
Principal outcome: Lead research line developing next-generation infrastructure solutions for the built environment.
Principal end-user and contact: EQC; MBIE; Engineering NZ; Standards NZ; Practicing engineers – contact Jared Keen (Jared.Keen@beca.com)

Research title: Line 7 of 2014 & 2015 ReLUIIS project
Principal outcome: Testing and development of simplified procedures for the evaluation of seismic losses, considering both structural and non-structural elements, pre-and post-retrofit, via a displacement-based assessment methodology.
Principal end-user and contact: Italian Department of Civil Protection, Francesco Giordano, Francesco.Giordano@protezionecivile.it ; Practicing engineers

Research title: Line AT1-2 of 2010-2013 RELUIS project
Principal outcome: Coordination of an Italian national research project for the development of a displacement-based seismic assessment methodology for various structural typologies. Developments and guidelines published on-line as a research report (www.iusspress.it).
Principal end-user and contact: Practicing engineers

2c. Describe the commercial, social or environmental impact of your previous research work

My research into the fundamentals of seismic design (Direct displacement-based design and capacity design of a range of systems) has provided engineers with more rational and effective means of controlling the seismic performance of a structure and understanding of the factors that are likely to critically affect a building's seismic risk. One such contribution was a model code for Direct DBD (Sullivan et al. 2012) that is available on-line for practitioners interested in applying the Direct DBD approach in practice. My research and knowledge in the field of displacement-based seismic assessment has been disseminated around New Zealand via seminars and a guideline document published by SESOC. These contributions are having a significant impact on the community by reducing doubt around the correct seismic assessment of buildings in practice.

My contributions on the seismic performance of non-structural elements have also been instrumental in creating greater awareness (Filiatrault and Sullivan 2014) of the risks they pose and have provided practitioners with practical means of assessing and improving performance. I took a lead role in establishing the International Association for the Seismic Performance of Non-Structural Elements (www.sponse.eu), and I am currently a board member of the association.