

## Curriculum Vitae



### **PERSONAL DETAILS:**

Name: Mudalige Thishan Renuke **JAYASINGHE** B.Sc(Eng), Ph.D (Cambridge), C.Eng., MIE(SL),  
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Date of Birth 1<sup>st</sup> August, 1963

Marital Status Married (Wife - Mrs Chinth Jayasinghe B.Sc.(Eng), M.Eng, Ph.D., C.Eng., MIE (SL))

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### **TERTIARY QUALIFICATIONS:**

Ph.D., University of Cambridge, United Kingdom, 1992.

B.Sc.Eng. Honours (1<sup>st</sup> Class), University of Moratuwa, Sri Lanka, 1987.

### **CAREER OBJECTIVE:**

Employ my skills & experience in Structural Engineering, Computer Analysis of Structures, Artificial Intelligence, Building Energy and Green Technology for further research, developments and dissemination of knowledge.

### **CAREER SUMMARY:**

Feb 2011 to date – **Senior Professor**, Department of Civil Engineering, University of Moratuwa

Feb 2003 –Feb 2011 – **Professor** - Department of Civil Engineering, University of Moratuwa, Sri Lanka.

April 2003 – Jan 2004 – **Senior Research Associate** – School of Civil Engineering, Queensland University of Technology, Brisbane, Australia – on sabbatical leave from University of Moratuwa.

Aug 2001 – Feb 2003 – **Associate Professor** - Department of Civil Engineering, University of Moratuwa, Moratuwa, Sri Lanka.

Oct 1998 – Aug 2001 - **Senior Lecturer (Grade i)** - Department of Civil Engineering, University of Moratuwa, Moratuwa, Sri Lanka.

Oct 1992 – Oct 1998 - **Senior Lecturer (Grade ii)** - Department of Civil Engineering, University of Moratuwa, Moratuwa, Sri Lanka.

Apr 1992 - Oct 1992 - **Lecturer** - Department of Civil Engineering, University of Moratuwa, Sri Lanka.

Oct 1988 - Mar 1992 - **Research Scholar** - Engineering Department, University of Cambridge, England.

Feb 1987 - Sep 1988 - **Assistant Lecturer** - Department of Civil Engineering, University of Moratuwa, Moratuwa, Sri Lanka.

### **Foreign collaborations:**

- August 2019                      Visiting Academic, Department of Architecture and Civil Engineering, University of Bath, Bath, United Kingdom.
- March 2019                        Visiting Academic, Department of Civil Engineering, University of Liverpool, United Kingdom. Subjects lectured: Sustainable Design and Construction, Green Building
- September 2018                Visiting Academic, Department of Architecture and Civil Engineering, University of Bath, Bath, United Kingdom.
- March 2018 –May 2018        Visiting Academic, Department of Civil Engineering, Queensland University of Technology, Australia.
- June 2017 – Aug 2017        Visiting Academic, Department of Architecture and Civil Engineering, University of Bath, United Kingdom.

### **SUMMARY OF SKILLS:**

- Member of the National Committee on Green Material Rating System (CIDA), 2018 to-date.
- Member (Structural and Civil Engineering) of the design team of First Platinum rated Green factory in the world (MAS “Thurлие”).
- Main Consultant, of the rapid and cost effective, construction of hospital building in Negambo Base hospital 2015. Received a special award from the His Excellency the President of Sri Lanka.
- Conducted structural appraisal of existing buildings including load testing.
- Experience to act as the review engineer for multi-storey building projects with more than 40 storeys and multi-lane pre-stressed concrete beams with box sections and I-sections.
- Developed an expert system for pre-stressed continuous spine beam design by combining Prolog based blackboard shell with numerical and graphical routines written in FORTRAN and C. The rules were developed by rationalising the design process as a logically evolving series of design decisions.
- Conducted lectures at undergraduate and post graduate levels. The subject areas developed to conduct lectures at post graduate level are computer analysis of structures (2D, 3D and finite element modelling), structural design of high-rise buildings, design of prestressed concrete structures, design of masonry structures, earthquake resistant design and construction. At the undergraduate level, structural analysis, reinforced concrete design, masonry design, building services engineering, HVAC and Building Automation and Design of Large Structures.
- A member of staff team responsible for conducting Comprehensive Design Projects for fourth year students of B.Sc. Engineering undergraduate programme.
- Experience in research, development and publishing in the areas of prestressed concrete structures, masonry structures, high-rise buildings, energy efficient passive buildings, expert systems and neural networks.

- Published books entitled “**Loadbearing Brickwork Construction for Sri Lanka**” and “**Energy Efficient Houses for Tropical Climates**”. The co-author of the book entitled “**Sustainable Design of Built Environments**”.
- Experience in organising seven research symposia as the Secretary of the Engineering Research Unit (ERU annual symposia entitled “Industry Related Research”)
- Organised and conducted short courses for the industry
- Successfully secured Rs 1.8 million to set up the University Industry Interaction Cell at University of Moratuwa under the ADB funded Science and Technology Personnel Development Project in 2002
- General Manager, Uni-Consultancy Services, the company set up for promoting collaborative research and consultancy with the Industry up to March, 2003.
- Expertise on green buildings developed through participation in successfully completed projects including LEED Platinum.
- Administrative experience as Head, English Language Teaching Center (2 years from April, 2001) and Head, Department of Civil Engineering (since June, 2010 to December, 2012)
- Co-chairman of International Conference on Sustainable Built Environments and International (2010, 2012 and 2014) Conference on Structural Engineering, Construction and Management (2011, 2013) held at Kandy, Sri Lanka

## **EDUCATIONAL QUALIFICATIONS**

- 2000            **Lund University, Sweden.**  
Followed one-and-a-half-month advanced course on “Building, Energy and Environment”.
- 1988 - 1992    **University of Cambridge, Cambridge, England**  
Research leading to Ph.D.; Title: Rationalisation of prestressed concrete spine beam design philosophy for an expert system
- 1982 - 1987    **University of Moratuwa, Moratuwa, Sri Lanka**  
B.Sc. (Hons) First Class in Civil Engineering. The main subjects were Design of Structures, Structural Analysis, Hydraulic Engineering, Irrigation Engineering, Construction Management, Industrial Economics and Management, Surveying, Highway Engineering, Geotechnical Engineering.  
**Final year undergraduate project:** A study of local brick laying practices.

## **SPECIAL AWARDS**

- Presidential Award for Scientific Research for 2017 publications (given to the top 100 scientific publications based on their SCImago Journal Ranking) awarded by National Research Council, Sri Lanka in August 2019.
- Award for the Research Excellence for the publications in 2018, 2019, 2020 by University of Moratuwa.
- IESL Award – 2011, Best article by a corporate member in the journal “Engineer” during a session by Institution of Engineers Sri Lanka.
- “Chartered Engineer Award” - Engineering Excellence Awards 2011 by Institution of Engineers Sri Lanka.
- The third place in “Water related infrastructures” competition held by the Institution of Engineers, Sri Lanka, 2007
- Prof E O E Pereira award for the Best Research Paper presented at Annual Sessions - 2002 by Institution of Engineers, Sri Lanka.

- The second place in “Water related infrastructures” competition held by the Institution of Engineers, Sri Lanka, 2001.
- The award for Excellence in Research – 3 year category – 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2016, University of Moratuwa, Sri Lanka.
- The award for the Best Research Paper – 2001 in *Engineer*, The Journal of Institution of Engineers, Sri Lanka.
- The award for the Best Research Paper – 2001 in *Engineer*, The Journal of Institution of Engineers, Sri Lanka.
- Prof E O E Pereira award for the Best Research Paper presented at Annual Sessions - 1998 by Institution of Engineers, Sri Lanka.
- **Cambridge Commonwealth Trust Scholarship to read for Ph.D. in 1988.**
- **UNESCO Team goal medal for Best Engineering Graduand, 1985/86, University of Moratuwa.**
- Dr A N S Kulasinghe award for the Best Civil Engineering Graduand, 1985/86, University of Moratuwa.
- The awards for the Best Student at Final Part II examination, 1984/85, University of Moratuwa.
- The award for the Best student in Structural Engineering subjects, 1985/86 University of Moratuwa.
- The award for the Best student in Civil Engineering Construction, 1985/86, University of Moratuwa.
- The award for the Best Research Paper based on undergraduate research, 1985/86, Uni. of Moratuwa.
- Manamperi award for the best undergraduate research project in Sri Lanka, 1987.

## PROFESSIONAL EXPERIENCE

Feb 2011- to date	<b>Senior Professor, Department of Civil Engineering, University of Moratuwa:</b> The duties are as for Professor given below.
Feb 2003- Feb 2011	<b>Professor, Department of Civil Engineering, University of Moratuwa:</b> I have been quite active as a researcher. I now conduct comprehensive design projects for the final year undergraduates with the support of other staff members. The projects include complete township developments, tall buildings with 40-70 storey range, long span bridges, flyovers, etc. Flagship projects in Sri Lanka have been selected with actual data pertaining to them. This work is in addition to the duties listed under the Senior Lecturer. I have introduced three new subjects to the undergraduate programme, namely Building Engineering, HVAC and Building Automation, and Design of Large Structures. I am a lecturer for the M.Sc. in Building Services Engineering for the subjects – Sustainable Built Environments, Building Services and Facilities Management
April 2003- Jan 2004	<b>Senior Research Associate, School of Civil Engineering, Queensland University of Technology (QUT), Brisbane, Australia:</b> Conducted research on sustainable development and sustainable build environments with energy efficiency of the housing sector and applications of cold formed structures for industrial and commercial buildings. I also supervised some undergraduate and post graduate research projects with Prof Mahen Mahendran of QUT. I was in-charge of one professional studies module to produce complete designs for a grade separated crossing for a motor-way.
Sep 2001- Feb 2003	<b>Associate Professor, Department of Civil Engineering, University of Moratuwa:</b> I was active as a researcher and also a research supervisor of a number of post graduate research projects. This is in addition to the duties listed under the Senior Lecturer.
Oct 1992- Aug 2001	<b>Senior Lecturer, Department of Civil Engineering, University of Moratuwa:</b> I have conducted lectures in Computer Analysis of Structures, Structural Design

of High-rise Buildings, Design Methodology, Design of Continuous Prestressed Concrete Bridges and other structures, New Materials for Prestressing and Design of Masonry Structures in post graduate courses leading to M.Sc. in Structural Engineering Design. This taught M.Sc. is offered once in two years. I have also conducted undergraduate lectures covering the areas of Structural Analysis, Reinforced Concrete Design, Masonry Design and Buildings Engineering. I have carried out research on brick wall structures, prestressed concrete, high strength concrete, high-rise buildings, energy efficiency in buildings, passive solar techniques and artificial intelligence applications for civil engineering. I was involved in a number structural appraisals of existing buildings including load tests, design studies, material testing and testing of finished products. I was the secretary of the Engineering Research Unit of Faculty of Engineering from 1995 to 2001 through which I actively participated to organise seven symposia to promote industry related research at University of Moratuwa. I also functioned as the President of the Civil Engineering Society of Department of Civil Engineering from 1992 to 1998.

April 1992- Oct 1992 **Lecturer, Department of Civil Engineering, University of Moratuwa:** I have conducted undergraduate lectures on Design of Structures and Structural Analysis.

Feb 1987 - April 1992 **Assistant Lecturer, Department of Civil Engineering, University of Moratuwa:** I have assisted to conduct assessments and practicals for undergraduates. I also assisted in consultancy works undertaken by Department of Civil Engineering. I worked as a junior design engineer in a research project on ground water reservoirs and elevated water tanks carried out for National Water Supply and Drainage Board of Sri Lanka.

**Short courses conducted for industry:** Structural Design of High-rise Buildings (conducted three times in 1997-98 for training 75 practising engineers), Applications of High Performance Concrete for Tall Buildings (in collaboration with Dr Priyan Mendis of Melbourne University in 1997), Computer Analysis of Structures (August, 2000 for 30 Engineers), Computer Analysis and Structural Design of Tall Buildings (August, 2001 for 40 Engineers and August 2004 for 40 Engineers in collaboration with Prof Priyan Mendis of Melbourne University) and Computer Analysis and Structural Design of Highway Bridges (April, 2002 for 40 Engineers), Computer Analysis of Structures (August, 2002 for 25 Engineers), Structural Analysis and Design of Large Structures (December, 2005 for 50 Engineers in collaboration with Prof Mahan Mahendran of Queensland University of Technology, Brisbane, Australia), Structural Design of Highway Bridges (in 2009 for 70 engineers).

## **BOOKS PUBLISHED**

“Loadbearing Brickwork Construction for Sri Lanka”, STRAD Consultants, Sri Lanka, 141 p, 1997 (ISBN 955-8118-00-1).

“Energy Efficient Houses for Tropical Climates”, MacBolon Polymer, Sri Lanka, 180 p, 2003 (ISBN 955-8872-00-8)

“Sustainable Design of Built Environments”, Eco-Ceylon Pvt Ltd, Sri Lanka, 116 p, 2009 (ISBN 978-955-51805-1-1)

## RESEARCH PUBLICATIONS IN REFEREED JOURNALS

1. Meddage, D. P. P., Chadee, A., Jayasinghe, M. T. R., & Rathnayake, U. (2022). Exploring the applicability of expanded polystyrene (EPS) based concrete panels as roof slab insulation in the tropics. *Case Studies in Construction Materials*, 17(4), e01361. <https://doi.org/10.1016/j.cscm.2022.e01361>
2. Gunathilaka, A.M.L.N., Lewangamage, C.S., Jayasinghe, M.T.R., “Development of Design guidelines for the base plate thickness of lattice towers”, *Innovative Infrastructure Solutions*, Springer, (2021), 6:220.
3. Platt, S. L., Ranasinghe, G., Jayathilaka, H. A. D. G. S., Jayasinghe, C., Jayasinghe, M. T. R., Walker, P., & Maskell, D., "Retrofitting and Rehabilitation of Vernacular housing in Flood Prone Areas in Sri Lanka", *Journal of Building Engineering*, (<https://doi.org/10.1016/j.jobe.2021.102420>), 2021 .
4. Shawn L. Platt, Indunil Erandi, Chintha Jayasinghe, Thishan Jayasinghe, Daniel Maskell, Gihan Ranasinghe, Peter Walker, “Improving the lateral load resistance of vernacular masonry walls subject to flooding”, *Proceedings of the Institution of Civil Engineers - Construction Materials*, Ahead of Print, pp 1-12, published online: July 24, 2020.
5. K.P.I.E. Ariyaratne, C. Jayasinghe, M.T.R. Jayasinghe and P. Walker, “Assessment of Seismic Performance of Earth Masonry with Shaking Table Tests and Finite Element Modelling”, *Masonry International, Journal of the International Masonry Society*, Volume 32, 2020.
6. C. Jayasinghe, M.T.R. Jayasinghe, B. Dissanayake, D. Jayathilake, “Use of Recycled Building Demolition Waste in Stabilized Rammed Earth”, *Journal of the International Masonry Society*, Vol 31, No 1. 1–32, pp17-26, 2018.
7. M.T.R. Jayasinghe, C. Jayasinghe, K.K.G.K.D. Kariyawasam, L.I.N. De Silva, “Semi tiered housing for laterite earth sloping lands – A sustainable solution with alternative materials and methods”, *Journal of Green Building*, Volume 13, Issue 1, Winter 2018, pages 56-72.
8. Fernando, P.L.N., Jayasinghe, M.T.R., Jayasinghe, C., Structural feasibility of Expanded Polystyrene (EPS) based lightweight concrete sandwich panels, *Construction and Building Materials*, Vol 139, May, 2017, pp 45-51.
9. Dissanayake, D.M.K.W., Jayasinghe, C., Jayasinghe, M.T.R., “A comparative embodied energy analysis of a house with recycled expanded polystyrene (EPS) based foam concrete wall panels, *Energy and Buildings*, Vol. 135, 2017, pp 85-94.
10. Mauran, K., Wanigaratne, N.S.A., Jayasinghe, M.T.R., “Strategies for prevention of Delayed Ettringite Formation in Large Concrete Sections”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol XLVIII, No: 2, April, 2015, pp 1-13.
11. Sendanayake S., Miguntanna N.P., Jayasinghe, M.T.R., "Predicting solar radiation for tropical islands from rainfall data", *Journal urban and environmental engineering*, Vol: 9, No: 2, pp 109-118, 2015
12. Weerasuriya, A.U., Jayasinghe, M.T.R., “Wind loads on high-rise buildings by using five major international wind codes and standards”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol XLVII, No: 3, July, 2014, pp 13-26.
13. Sendanayake S., Miguntanna N.P., Jayasinghe M.T.R, “Validation of Design Methodology for rainwater harvesting for tropical climates” *Asian Journal of Water, Environment and Pollution*, Vol 11, No. 1 (2014), pp. 87-93.
14. Gunathilaka, A.M.L.N., Lewangamage, C.S., Jayasinghe, M.T.R., “Earthquake performance of free standing four legged Greenfield towers”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol XLVII, No: 2, April, 2014, pp 85-95.

15. Weerasuriya, A.U., Jayasinghe, M.T.R., “Wind loads on low to medium-rise buildings by using five major international wind codes and standards”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol XLVII, No: 1, January, 2014, pp 25-36.
16. Jayasinghe, M.T.R., Hettiarachchi, D.S., Gunawardena, “Performance of tall buildings with and without transfer plates under earthquake loading”, *Engineer - Journal of Institution of Engineers, Sri Lanka*, Vol xxxv, No: 2, April, 2012, pp 7-18.
17. Lewangamage C.S., M.T.R Jayasinghe, B.C.R Jayanath, Rehabilitation of blast damaged pre-stressed concrete beams using Carbon Fiber Reinforced Polymers (CFRP), *ICTAD Journal*, Vol. IX, December, 2011, pp. 19-28.
18. Shanaka, K.B.K., Lewangamage, C.S. and Jayasinghe, M.T.R., 2011. A Study on Structural Stability and Suitability of Corrugated Long Span Soil-Steel Bridges. *Electronic Journal of Structural Engineering*, 11(1) pp. 81-89.
19. Bandara, K.M.S., Bandara, S.S., Jayasinghe, M.T.R., “Effective use of Transfer Plates in Mixed Development, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxxiii, No: 2, April, 2010, pp 7-18.
20. Jayatilake, I.N., DIAS, W.P.S., Jayasinghe, M.T.R. and Thambiratnam, D.P. Response of tall buildings with symmetric setbacks under blast loading, *Journal of the National Science Council*, Sri Lanka, Vol. 38, No. 2, 2010, pp. 115-123.
21. Bandara, K.M.S., Bandara, S.S., Jayasinghe, M.T.R., “Importance of accurate modelling input and assumptions in 3D finite element analysis of tall buildings, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxxii, No: 2, April, 2009 pp 5-10.
22. Halwatura, R.U., Jayasinghe, M.T.R., “Influence of insulated roof slabs in air conditioned spaces in tropical climatic conditions – A life cycle approach”, *Energy and Buildings*, 41, 2009, pp678-686.
23. Wijewardane, S., Jayasinghe, M.T.R., “Thermal comfort temperature range for factory workers in warm humid tropical climates”, *Renewable Energy*, Vol. 33, Issue 9, Sep 2008, pp 2057-2063.
24. Halwatura, R.U., Jayasinghe, M.T.R., “Thermal performance of insulated roof slabs in tropical climates”, *Energy and Buildings*, 40 (2008), 1153-1160.
25. Luxmore, D., Jayasinghe, M.T.R., Mahendran, M., “Self Sufficiency of Water in Mainstream Housing - an Australian Experience”, *Asian Journal of Water, Environment and Pollution*, Vol. 5, No. 1, pp 67-74, January, 2008.
26. Halwatura, R.U., Jayasinghe, M.T.R., “Strategies for improved micro-climates in high-density residential developments in tropical climates”, *Energy for Sustainable Development- The Journal of the International Energy Initiative*, Vol. XI, No. 4, December 2007, pp 44 - 55.
27. Susantha, K.A.S., Aoki, T., Jayasinghe, M.T.R., “Finite element analysis of steel columns subjected to bi-directional cyclic loads, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: XXXX, No: 4, October 2007, pp 35-41.
28. Balasuriya, S.S., Bandara, K.M.K., Ekanayake, S.D., Jayasinghe, M.T.R., “The influence of transfer plates on the lateral behaviour of apartment buildings, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: XXXX, No: 4, October 2007, pp 22-30.
29. Luxmore, D., Jayasinghe, M.T.R., Mahendran, M., “Mitigating temperature increases in high lot density sub-tropical residential developments”, *Energy and Buildings*, 37 (2005), 1212-1224
30. Jayasinghe, M.T.R., Jayasena, W.M.V.P.K, “Effect of relative humidity on absolute and differential shortening of columns in multistory reinforced concrete buildings”, *ASCE, Practice Periodical on Structural Design and Construction*, Vol. 10, Issue 2, May, 2005.
31. Jayasinghe, M.T.R., Jayasena, W.M.V.P.K, “Effects of Axial shortening of columns on design and construction of tall reinforced concrete buildings”, *ASCE - Practice Periodical on Structural Design and Construction*, Vol. 9, Issue 2, 2004, pp 70-78.
32. Jayasinghe, M.T.R., Subaaharan, S., Mahendran, M., “Improvements to portal frame design using stressed skin action of sandwich panels”, *Australian Journal of Structural Engineering*, Vol: 5, No: 3, August, 2004.

33. Sugathadasa, P.T.R.S., Jayasinghe, M.T.R., “The use of Silica fumes in Sri Lanka for improved strength and durability of concrete” *Engineer, Journal of Institution of Engineers, Sri Lanka*, 2004.
34. Sugathadasa, P.T.R.S., Jayasinghe, M.T.R., “Cost-effective volume batched mixes for Grades C25 and C30”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: xxxvi, No: 3, July 2003, pp 13-21.
35. Jayasinghe, M.T.R., Jayawardane, A.I., Priyanvada, A.K.M., “Roof orientation, roofing materials and roof surface colour: their influence on indoor thermal comfort”, *Energy for Sustainable Development- The Journal of the International Energy Initiative*, Vol: VII, No. 1, March, 2003, pp 16-27.
36. Jayasinghe, M.T.R., Priyanvada, A.K.M., “Thermally comfortable passive houses for tropical uplands”, *Energy for Sustainable Development- The Journal of the International Energy Initiative*, Vol. VI, No. 4, December 2002, pp 20 - 29.
37. Jayasinghe, M.T.R., “Suitability of hand moulded chip concrete blocks for single storey houses”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: xxxv, No: 3, September 2002, pp 24-30.
38. Jayasinghe, M.T.R., “Cost effective structural forms for swimming pools”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: xxxv, No: 2, May 2002, pp 31-37.
39. Chandrasiri, B.N., Jayasinghe, M.T.R., “Rehabilitation of bridges using prestressing”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: xxxv, No: 2, May 2002, pp 75-86.
40. Jayasinghe, M. T.R., Attalage, R.A., Jayawardane, A.I., “Thermal comfort in three storey passive houses”, *Energy for Sustainable Development- The Journal of the International Energy Initiative*, Vol. VI, No. 1, March 2002, pp 63-73.
41. Jayawardane, A. I., Jayasinghe M.T.R, Attalage, R. A., “Concepts for sustainable residential developments for urban and sub-urban areas in Sri Lanka”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol: xxxiv, No: 2, 2001, pp 63-77.
42. Jayasinghe, M.T.R., Jayawardane, A.I., “Minimisation of total ownership costs of residential buildings”, *Engineer, Journal of Institution of Engineers Sri Lanka*, Vol: xxxiv, No: 1, 2001, pp 16-26.
43. Jayasinghe, M.T.R., Attalage, R.A., “Passive techniques for residential buildings in low altitudes of Sri Lanka”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxx, No 2, May, 1999, pp 18-27.
44. Jayasinghe, M.T.R., Attalage, R.A., “Comfort conditions for built environments in Sri Lanka”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxix, No 1, January, 1999, pp 12-23.
45. Jayasinghe, M. T. R., “Cost effective buildings with local bricks, *Sabaragamuwa University Journal*, Volume 2, Number 1, December, 1999, pp 121-133.
46. Jayasinghe, M. T. R., “Foundation improvement techniques for brick wall structures”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxx, No 3, September, 1999, pp 41-50.
47. Jayasinghe, M. T. R., “Loadbearing construction with local bricks”, *Engineer, Journal of Institution of Engineers, Sri Lanka*, Vol xxvii, No 1, 1998, pp 49-57.
48. Jayasinghe, M.T.R., Burgoyne, C.J., “The need for deep knowledge in expert systems for preliminary structural design”, *Journal of Structural Engineering*, Vol 18, No 4, pp 161-168, 1992.

## **RESEARCH PUBLICATIONS IN REFEREED CONFERENCES/SYMPOSIA**

1. R. Vipushnan, M. T. R. Jayasinghe, S. L. Platt, and H. D. Hidallana-Gamage, Investigation of Mechanical Properties of Borax-Treated *Bambusa vulgaris* (Sri Lankan Bamboo), Springer Nature Singapore Pte Ltd. 2022, R. Dissanayake et al. (eds.), 12th International Conference on Structural Engineering and Construction Management, Lecture Notes in Civil Engineering 266, [https://doi.org/10.1007/978-981-19-2886-4\\_40](https://doi.org/10.1007/978-981-19-2886-4_40), pp 561-575
2. R. Kathiravelu, N. Athukorala, and M. T. R. Jayasinghe, Thermal Assessment of Terrace Houses Constructed with Light Weight Eps-Based Panels, Springer Nature Singapore Pte Ltd. 2022, R. Dissanayake et al. (eds.), 12th International Conference on Structural Engineering and Construction Management, Lecture Notes in Civil Engineering 266, [https://doi.org/10.1007/978-981-19-2886-4\\_40](https://doi.org/10.1007/978-981-19-2886-4_40), pp 719-735



3. R. Shiveswarran, N. Athukorala, and M. T. R. Jayasinghe, Embodied Energy and Lifecycle Assessment of EPS based Light-weight Panel Apartments in Tropical Uplands, Springer Nature Singapore Pte Ltd. 2022, R. Dissanayake et al. (eds.), 12th International Conference on Structural Engineering and Construction Management, Lecture Notes in Civil Engineering 266, [https://doi.org/10.1007/978-981-19-2886-4\\_40](https://doi.org/10.1007/978-981-19-2886-4_40), pp 783 -798
4. Meddage, D. P. P., & Jayasinghe, M. T. R., Use of EPS Based Light-Weight Concrete Panels as a Roof Insulation Material for NERD Slab System. In (Eds.), *ICSBE 2020* (pp. 375–384). Springer. [https://doi.org/10.1007/978-981-16-4412-2\\_28](https://doi.org/10.1007/978-981-16-4412-2_28), 2022
5. P. Vishnu, S. Radershan, C. S. Lewangamage and M. T. R. Jayasinghe, "Synchronized Sensing and Network Scalability of Low-Cost Wireless Sensor Networks for Monitoring Civil Infrastructures," 2020 Moratuwa Engineering Research Conference (MERCon), Moratuwa, Sri Lanka, 2020, pp. 337-342, doi: 10.1109/MERCon50084.2020.9185210P.
6. P. Vishnu, C. S. Lewangamage, M. T. R. Jayasinghe and K. J. C. Kumara, "Development of Low-Cost Wireless Sensor Network and Online Data Repository System for Time Synchronous Monitoring of Civil Infrastructures," 2020 Moratuwa Engineering Research Conference (MERCon), Moratuwa, Sri Lanka, 2020, pp. 72-77, doi: 10.1109/MERCon50084.2020.9185231.
7. Thevarajah, B. E., Jayasinghe, M. T. R., Lewangamage, C. S., & Ibell, T. J. (2020, July). Embodied Energy and Carbon Footprint of Two Storied Refuge Space with Lightweight Load Bearing Panels. Moratuwa Engineering Research Conference (MERCon) 28-30/7/2020 (pp. 19-24). IEEE. 10.1109/MERCon50084.2020.9185324
8. K.P.I.E. Ariyaratne, Chintha Jayasinghe, M.T.R. Jayasinghe and Pete Walker, "Alternative Methods in Numerical Modelling of Earth Masonry", Earthen Dwellings and Structures, Current status in their adoption, Springer Transactions in Civil and Environmental Engineering, ISBN 978-981-13-5883-8 (eBook), <https://doi.org/10.1007/978-981-13-5883-8>, pp 305 -318, 2019.
9. Eric, T. B., Gunawardana, S. G. W., Hasalanka, H. H. H., Jayasinghe, M. T. R., & Damruwan, H. G. H. (2019). Rapidly constructed two storey thermally comfortable houses for tropical climates with light weight loadbearing concrete panels. In International Conference on Civil Engineering and Applications –Kandy, Sri Lanka, 2019
10. Gunawardana, S. G. W., Eric, T. B., & Jayasinghe, M. T. R. (2019). Three storied apartment buildings constructed using lightweight EPS concrete panels for tropical climatic regions. In International Conference on Civil Engineering and Applications – Kandy, Sri Lanka, 2019
11. Vishnu, P., Lewangamage, C.S., Kumara, K.J. C., & Jayasinghe, M.T. R. (2018). Using Sub-Gigahertz Wireless Technology for Real-Time Structural Health Monitoring System for High Rise Buildings. 9th International Conference on Structural Engineering and Construction Management, Kandy, December, 2018
12. Jayasinghe, M.T.R., Kariyawasam, K.K.G.K.D. and Jayasinghe, C., Cost effective building systems for rapid construction in tropical climates, International Conference on Sustainable Built Environment, Kandy, December, 2016.
13. Sendanayake S., Jayasinghe M.T.R, "Rainwater harvesting system with distributed storage capacity for multi-level buildings" SAITM International Research Symposium on Engineering Advancements (IRSEA 2016), Malabe, Sri Lanka, 2016, Vol 6, pp. 7-7
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29. K.B.K Shanaka, W.A.S Gunathilaka, C.S. Lewangamage, M.T.R. Jayasinghe "A Study on Structural Behavior of Corrugated Soil- Steel Bridge Structure (Long Span) in Southern Highway for Different Depth of Soil Cover", Proceedings ERU symposium, University of Moratuwa, 2010, pp 40-42.
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32. Lewangamage C.S., M.T.R Jayasinghe, Rehabilitation of blast damaged pre-stressed concrete beams with Fiber Reinforced Polymers (FRP), proceedings of the International Conference on Sustainable Built Environments (ICSBE), Sri Lanka, 2010.

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61. Swarna, R.D.K., Jayasinghe, M.T.R., “Computer modelling of suspension bridges for light vehicular traffic”, Proceedings of symposium, Research for industry - 2001, University of Moratuwa, November, 2001, pp F14-F23.
62. Jayasinghe, M.T.R., Jayawardane, A.I, Attalage, R.A., “Thermal performance of free running three storey houses: An assessment through computer simulations”, Proceedings of symposium, Research for industry - 2001, University of Moratuwa, November, 2001, pp F35-F48.
63. Jayawardane, A.I, Jayasinghe, M.T.R, Attalage, R.A., “Passive concepts for improvement of thermal and visual comfort in houses in Sri Lanka”, Proceedings of symposium, Research for industry - 2000, University of Moratuwa, December, 2000, pp 80 – 96.
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79. Jayasinghe, M. T. R., Attalage, R. A., Minimisation of energy demand in commercial sector, Asia-Pacific conference on the Built Environment, Integrating Technology with Environment, November, 1997, Kuala Lumpur.
80. Sundaram, H.J., Burgoyne, C.J., Jayasinghe, M.T.R., “Development of an expert system for the design of prestressed concrete bridges”, in Topping, B.H.V., *Developments in artificial intelligence for civil and structural engineering*, Civil-Comp press, pp 205-209, 1995.
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## INVITED LECTURES

1. Energy Efficient Buildings - Question time, Society of Structural Engineers, Sri Lanka, November 1997.
2. Loadbearing Brickwork - Question time, Society of Structural Engineers, Sri Lanka, July 1998.
3. Earthquake loads and design - Question time, Society of Structural Engineers, Sri Lanka, July, 2000.
4. Blast resistant design of buildings - Question time, Society of Structural Engineers, Sri Lanka, April, 2002.
5. Design of earthquake and cyclone resistant structures - Question time, Society of Structural Engineers, Sri Lanka, September, 2005.

6. Ventilation and Thermal Comfort, Building Services Engineering Sectional Committee, The Institution of Engineers, Sri Lanka, 21<sup>st</sup> March, 2007.
7. Analysis and design of tall buildings –Full day seminar on “Vision for high-rise buildings, Society of Structural Engineers, Sri Lanka, 23<sup>rd</sup> September, 2008 at Colombo Hilton Hotel.
8. Prestressed concrete flyovers - Question time, Society of Structural Engineers, Sri Lanka, June, 2009.
9. Value engineering for tall building, Cambridge University Engineering Department, Cambridge, July, 2017
10. Value engineering for highway bridges, Department of Architecture and Civil Engineering, University of Bath, UK, August, 2017
11. Design of Tall Buildings - Can it be rule based, Department of Civil Engineering and Industrial Design, School of Engineering, School of Engineering, University of Liverpool, United Kingdom, February, 2019

## **SOME MAJOR CONSULTANCY ASSIGNMENTS**

### **Structural Design - in Sri Lanka**

1. Studies on Ground Reservoirs and Elevated Tanks for National Water Supply and Drainage Board, June 1988 to September 1988 - functioned as a junior design engineer in this contract research project involving structural design and cost evaluation for optimum tank forms.
2. Structural investigation on Reid Avenue Racecourse Grandstand - September 1993 - involved in computer modelling of a partially deteriorated large steel structure to assess the structural adequacy.
3. Investigation of cracks and leaks in the 750 m<sup>3</sup> water tower (July, 1993) – The remedial measures were suggested for the elevated water tank at the textile manufacturing facility of Kabool Lanka (pvt) Ltd.
4. Checking of 17 Storey Specialist Centre Building at James Peiris Mawatha, Colombo 2, for Maga Engineering (Pte) Ltd., September 1995 - assisting the check engineer with computer modelling.
5. Structural investigation on cracks on floor slab at Anchor Milk Food Factory, Biyagama, 1995 - determination of the causes for cracking and remedial actions on a slab treated with a wear resistant additives.
6. Structural investigation on cracks on piles used for transmission line tower foundations, 1995 - determination of the causes for cracking when cracks appeared in piles with grade 40 concrete.
7. Design of temporary steel bridges of spans 15m, 20m, 30m and 45 m for China National Automotive Industry in November, 2001.
8. Structural Design Engineer and construction coordinator for 4 storey canteen complex and the new Gymnasium of University of Moratuwa in year 2001.
9. Structural design of an 80 m long stressing bed for 25 m long prestressed concrete beams for State Development and Construction Corporation of Sri Lanka in February, 2002.
10. Checking of 35 m tall transmission towers for structural adequacy with SAP 2000 modelling for Ceylon Electricity Board, August, 2004.
11. Review of the proposed box culvert design at Talawakele railway station for multiple railway lines with SAP 2000 three dimensional modelling, Upper Kotmale Hydro-power project, Ceylon Electricity Board, September, 2004.
12. Structural Analysis of 30 Storey MTN Networks building with a thirteen storey high antenna tower and tower top restaurant for NCD consultants with SAP 2000 three dimensional modelling in 2006.
13. Design check for 30 storey Crescat Monarch building with SAP2000 three dimensional modelling in 2006
14. Design check for 17 storey Sampath Centre using SAP 2000 modelling in 2006.
15. Design check for 32 storey Fairmount residencies using SAP 2000 modelling in 2006.

16. Design for 330 m long (11 x 30 m) eleven span Orugodawatta flyover with four lanes supported on four box girders, post tensioned pier heads with 5.0 m cantilevers and pile foundations in 2006 as a value engineering solution.
17. Structural consultant appointed by University of Moratuwa for Five storey Mechanical Centre, Chemical Centre and three storey class room block in 2007.
18. Design check for 42 storey Ocean-View Tower using SAP 2000 modelling in 2007.
19. Design check for 30 m tall terminal tower for Ceylon Electricity Board in 2007.
20. Design review for the school building complex proposed at Mirissa, 2007
21. Proposing alternative and structural design for 300 m long Kalladi bridge in Eastern Province of Sri Lanka as prestressed concrete six span bridge, 2008.
22. Chairman of the three member Presidential Commission appointed to investigate the collapse of metal underpass and review suitability of underpasses over 35 km stretch of Southern Highway under construction in 2009.
23. Leader of the design team that proposed the strengthening of metal underpasses with concrete lining in Southern Highway for over 40 structures in 2010.
24. Design of 125 m and 75 m two bridges with 25 m long I girders on A4 highway at Thirikkovil, Eastern Province in Sri Lanka with piled foundations in collaboration with Maga Engineering (a turn key project for MAGA Engineering) in 2010.
25. Structural Design of Reinforced Concrete Box Culvert extensions to the existing structures of Southern Transport Development Project between Pinnaduwa (Galle) to Godagama (Matara) – Design of 46 structures in 2011.
26. A member of check engineers for 67 storey Indocean building with one vertical and another leaning against the vertical tower with 228 m height and also with two basements, 2012.
27. Check engineer for the 40 m and 60 m tall communication towers of service provider MOBITEL via ZTE Lanka Pvt Ltd, 2012.
28. Structural advisor for the 9 storey reinforced concrete car park supported on bored piles for the Central Bank of Sri Lanka, 2012.
29. Value engineering solution for 27 storey City Hotel Project of Sanken Construction Pvt Ltd in Colombo 03, 2012.
30. Check engineer for 35 storey Sky-Garden apartment building of Rajagiriya for MAGA Engineering Pvt Ltd, for a project carried out on turn-key basis, 2013.
31. Check engineer for 46 storey Clear Point apartment building of Rajagiriya for MAGA Engineering Pvt Ltd, for a project carried out on turn-key basis, 2014.
32. Value engineering solution for the eight storey entertainment complex for EAP Holdings Ltd with 16 m clear spans in all eight floors with use of a combination of post tensioned beams and reinforced concrete, 2015 – A saving of about 10% in a Rs 830 million project
33. Design and construction of 58500 sq ft of three numbers of two storey buildings and one three storey building within 50 days where the expected service life could easily exceed 100 years while having a construction cost of only US \$ 220 per sq meter which is one of the lowest for a building with concrete floors and tiled finishes while having a highly insulated walls and ceiling with a roof having a SRI index of only 35
34. Design review for the 14 storey reinforced concrete apartment building with transfer beams at 4th floor level for Homelands Pvt Ltd

#### **Feasibility Reports - in Sri Lanka**

1. Cost saving alterations in Type C house plans for Celinco Homes International's Attidiya housing project comprising 200 houses, for Ceylinco Homes International Ltd., April 1995 - involved in design checking and proposing alternatives.
2. Guidelines for selection of structurally efficient and economic structural forms for domestic buildings, for Ceylinco Homes International Ltd., May 1995 - involved conceptual design, detailed design and optimisation studies.

### **Structural Investigations - in Sri Lanka**

1. Assisted in the non-destructive testing of partially completed grandstand structure at Bandaragama for Messers. Jayaratne Contractors, 1987.
2. Load testing of floor slab at C.W.E. building, Narahenpita, September 1988 - involved water loading and deflection monitoring of a floor slab to be used for a purpose different to that designed for.
3. Load testing of floor and tier slabs in Reid Avenue Racecourse Grandstand for Department of Buildings, July, 1994 - involved loading by sandbags and deflection monitoring of typical critical slabs prior to renovation.
4. Load testing of a floor slab to determine the structural effects of extensive shrinkage cracking in a four storey flat at Torrington Housing scheme in May 2001.
5. Structural assessment of cracked beams of three storey school buildings at Ratgama with load testing and proposing remedial actions, 2008
6. Structural assessment of partially deteriorated three storey school building at Mount-Lavinia and proposing remedial actions, 2008.
7. Structural assessment of partially deteriorated four storey historical building owned by Central Bank of Sri Lanka and proposing remedial actions, 2009.
8. Structural assessment of partially deteriorated five storey historical building owned by Bank of Ceylon, Sri Lanka and proposing remedial actions, 2010.
9. Restoration of blast damaged prestressed concrete precast beams in the 4<sup>th</sup> floor of the Inland Revenue Department building with FRP technology in 2010.
10. Structural assessment for the dynamic behaviour of Deduru-Oya steel truss bridge to assess the safety against the stresses developed due to dynamic response in 2011.
11. Rehabilitation of 100 year old six storey Lloyds building in Colombo in 2011.
12. Rehabilitation of 100 year old six storey Whitaways building in Colombo in 2011.
13. Assessment of concrete quality and suggestion of remedial actions for one water intake of Ruhunupura Water Supply Scheme with client as National Water Supply and Drainage Board of Sri Lanka, 2012.
14. Rehabilitation of 80 year old Board of Investment owned building in Colombo in 2014.
15. Structural assessment for 8 storey Negambo Hospital building in 2015.

### **Sustainable built environments - in Sri Lanka**

1. Assisted MAS Holdings to plan, design and construct a green factory for 800 employees with the use of many principles of sustainable development as applicable to built environments in 2007; this building complex was awarded LEED Platinum rating.
2. Assisted MAGA Engineering to optimize the design of *Nelung Art Center* with many green features and also acted as the structural engineering consultant, 2008.
3. Structural consultant for eight storey Ministry of Environment building with many green features, 2008.
4. Assistance to obtain LEED Gold for the five star “Chaya Bay” hotel with 200 rooms
5. Technical assistance to International Construction Consortium Ltd to build a two storey display house with loadbearing straw panels to achieve a greater degree of sustainability as the contractor’s office of “Chaya Bay” construction site, 2010.

Prof M T R Jayasinghe.