

CURRICULUM VITAE

Dyana Joseline

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Building Technology and Construction Management Division (BTCM)
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PROFESSIONAL DEGREES

Ph. D. in Civil Engineering

Ongoing

Indian Institute of Technology Madras, Chennai, India
Area of research: Service Life Estimation and Preventive Maintenance Strategies for Pre-Tensioned Bridge Girders
CGPA- 9.0 / 10

M. Tech. in Structural Engineering

July 2015

B. S. Abdur Rahman University, Chennai, India
Project title: Strength, Durability and Thermal Performance of Ferrocement Panels for use in Secondary Roofing
CGPA - 9.59 / 10

B. E. in Civil Engineering

July 2013

Sri Sairam Engineering College
Anna University Chennai, Chennai, India
Project title: Sequestration of Carbon Dioxide on Concrete Surface using Fly Ash and Brine
CGPA - 9.05 / 10

AWARDS AND ACHIEVEMENTS

- NACE India Scholarship by the NACE Foundation, 2018
 - Best paper award in 'poster' category, CORCON 2016, New Delhi, India
 - Best presentation award, CORSYM 2015, IIT Madras, Chennai, India
 - Gold medal (out of 36 students), M. Tech., B. S. Abdur Rahman University, 2015
 - University rank 5 (out of 2821 students), B. E., Anna University, 2013
 - Best outgoing girl student award, Sri Sairam Engineering College, 2013
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ACADEMIC RESEARCH WORK

1. Service Life Estimation and Preventive Maintenance Strategies for Pre-Tensioned Bridge Girders

- *Ph. D. work under the guidance of Dr. Radhakrishna G. Pillai, Associate Professor, Indian Institute of Technology Madras, Chennai, India (ONGOING)*

Majority of the world's bridge stock comprises of pre-tensioned concrete (PTC) members and these important and expensive PTC bridges are expected to be serviceable for a 'deemed-to-satisfy' life of more than 100 years. However, many of them have started showing signs of corrosion-related distress in less than 40 years. Corrosion induced failures in PTC bridges are catastrophic in nature. Though the number of reported failures is low at present, it is still a point of concern as most of the existing PTC structures are relatively 'young' and may not have sufficient build-up of chlorides yet. But what if they start corroding? Structural performance is more drastically lost due to corrosion of prestressing steel at a given rate, as opposed to that of conventional reinforcement. The behaviour of a corroding PC structure is unpredictable. The nation will also find it difficult to cope up with the repair and rehabilitation work that this would necessitate. At present, most repair activities are done on an adhoc/break-down/corrective maintenance basis. Instead, a preventive maintenance strategy should be adopted to extend the service life of PTC bridge girders. The present work aims at developing an accelerated test method and determine the Cl_{th} of prestressing steel, understand corrosion propagation mechanism and evaluate the technical feasibility of electrochemical chloride extraction and sacrificial anode cathodic prevention techniques for preventive maintenance of pre-tensioned girders.

2. Strength, Durability and Thermal Performance of Ferrocement Panels for use in Secondary Roofing

- *M. Tech. project work under the guidance of Prof. M. S. Haji Sheik Mohammed, B. S. Abdur Rahman University, Chennai, India*

The performance of ferrocement panels was investigated for use as secondary roofing units in tropical climatic conditions. The meshes used in the study were crimped wire mesh and galvanized wire mesh. The mix ratio adopted was 1:2 and sodium nitrite-based corrosion inhibitor was added at 2% by weight of cement, to delay the onset of corrosion. The influence of inhibitor addition on fresh and hardened mortar properties was studied as per Indian standards. Tests such as chloride penetration test, rapid chloride penetration and accelerated corrosion test were conducted to assess the durability of inhibitor admixed mortar. Flexural strength test on ferrocement panels was conducted as per Indian standards under four-point loading and the variables considered are type of mesh, number of mesh layers and type of mortar mix. Thermal performance of ferrocement panels in laboratory and field conditions was also studied. It was concluded that ferrocement panel as secondary roofing is a viable option to provide effective thermal insulation to buildings.

3. Sequestration of Carbon Dioxide on Concrete Surface using Fly Ash and Brine - B. E. Project work

Concrete is the most frequently used construction material in India, but one of the major demerits of using concrete is the large amount of carbon dioxide evolved during production of cement (from raw material limestone and burning of fuel during manufacture). This project work explored the possibility of using fly ash and brine solution to aid absorption of carbon dioxide on the surface of concrete to reduce atmospheric carbon footprint. For this, concrete specimens of M20 grade were cast, coated with a mixture of fly ash and brine and placed in 3 traffic prone areas in Chennai. Then, the coating was scraped off and back titration technique and stoichiometric analysis were used to estimate the amount of carbon dioxide absorbed from the polluted atmosphere. A five-fold increase in carbon dioxide absorption was observed in specimens coated with fly ash and brine.

JOURNALS

SCOPUS Indexed

1. Ibrahim M., **Joseline D.**, and Mohammed M. S. H., “Strength, Durability and Thermal Performance of Ferrocement Panels for use in Secondary Roofing”, *International Journal of Applied Engineering Research*, Research India Publications, ISSN: 0973-4562, Vol. 12, No. 17, pp. 6658-6768, 2017.

Non-SCOPUS Indexed

1. Ibrahim M., **Joseline D.**, and Mohammed M. S. H., “Durable Ferrocement Panels for Use in Secondary Roofing- an Experimental Study”, *International Journal of Advanced Technology in Engineering and Science*, ISSN: 2348-7550, Vol. 3, SI No. 01, pp. 112-121, 2015.
 2. Priya S., **Joseline D.**, Gunasri D., and Alagusankareswari K., “Sequestration of CO₂ on Concrete Surface Using Fly Ash and Brine”, *International Journal of Advanced Information Science and Technology*, ISSN: 2319-2682, Vol. 32, pp. 76-79, 2014.
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CONFERENCE PAPER/POSTER PRESENTATIONS

1. **Joseline D.**, Haridasan H., Rathnarajan S., Rani D., Raja T., Pillai R. G., Sengupta A. K., and Menon A., “Restoration of Reinforced Lime Concrete Sunshades of a Century Old Heritage Building in New Delhi, India”, 11th International Conference on Structural Analysis of Historical Constructions, 11th to 13th September, Cuzco, Peru, 2018. (Accepted for publication in proceedings)
2. **Joseline D.**, Kamde D., Rengaraju S. and Pillai R. G., “Residual Service Life Estimation and its importance for Pretensioned Concrete (PTC) Bridges in Coastal Areas”, 6th International Conference on the Durability of Concrete Structures, 18th to 20th July, Leeds, UK, 2018.

3. **Joseline D.**, Karuppanasamy J., Priya P., and Pillai R. G., "Corrosion Behaviour of Prestressing Steel in some Practical Scenarios", *International Conference and Expo on Corrosion (CORCON 2017)*, NACE International India Section, 18th to 20th September, The Sahara Star, Mumbai, India, 2017.
4. **Joseline D.**, Karuppanasamy J., Dhanya B. S., and Pillai R. G., "Effect of Corrosion Inhibitor on Critical Chloride Threshold of Prestressing Steel", *International Conference and Expo on Corrosion (CORCON 2016)*, NACE International India Section, 18th to 21st September, The Leela Ambience Convention Hotel, New Delhi, India, 2016.
5. Ibrahim M., **Joseline D.**, and Mohammed H. S., "Durable Ferrocement Panels for Use in Secondary Roofing - an Experimental Study", *2nd International Conference on Science, Technology and Management (ICSTM)*, 27th September, University of Delhi, India, 2015.
6. Ibrahim M., **Joseline D.**, Priya S., and Mohammed H. S., "Strength and Thermal Performance of Ferrocement Panels for use in Secondary Roofing" *National Conference on Sustainable Civil Engineering Technologies and Practices (SCETEP)*, 29th to 30th April, B. S. Abdur Rahman University, Chennai, 2015.
7. **Joseline D.**, Maryline S. W. and Mohammed H. S., "Sodium Nitrite Based Mixed Inhibitor for Corrosion Protection of Steel Rebars Used in Construction", *International Conference and Expo on Corrosion (CORCON 2015)*, NACE International India Section, 19th to 21st November, Chennai Trade Centre, Chennai, India, 2015.
8. **Joseline D.**, Maryline S. W. and Mohammed H. S., "Sodium Nitrite Based Inhibitor for Corrosion Control of Steel Rebar in Concrete - Compatibility, Strength and Durability Performance", *International Corrosion Prevention Symposium for Research Scholars (CORSYM 2015)*, NIGIS-SZ Student Section, July 31st to August 1st, IIT Madras, India, 2015.

CONFERENCE PARTICIPATION

1. *International Conference on Advances in Construction Materials and Systems (ICACMS)*, 71st Annual RILEM week, Chennai, 3rd to 8th September, 2017.
 2. *National Conference on Futuristic Innovations & Emerging Trends in Civil Engineering*, B. S. Abdur Rahman University, Chennai, 5th to 6th May, 2014.
 3. *1st International Conference on Structural Integrity (ICONS 2014)*, Convention Centre, Indira Gandhi Centre for Atomic Research, Kalpakkam, 4th to 7th February, 2014.
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WORKSHOPS/ PROFESSIONAL TRAINING

1. *The Carmen Andrade Workshop on Corrosion Control in Concrete Structures (C³S)*, 8th September, Indian Institute of Technology Madras, Chennai, India, 2017.
 2. *National Workshop on Impact of Climate Change on Durability of RCC Structures*, 19th to 24th April, B. S. Abdur Rahman University, Chennai, India, 2016.
 3. *Workshop on Design of Experiments*, 10th April, Indian Institute of Technology Madras, Chennai, India, 2016.
 4. *National Workshop on Innovative Concepts for Seismic Response Control of Structures*, 11th to 12th February, B. S. Abdur Rahman University, Chennai, India, 2015.
 5. In-plant training, Chennai Port Trust, 1st to 15th June, 2011.
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CERTIFICATION

1. Diploma in Computer Applications (DCA), Regd. No. 4555, Computer Software College (CSC), 2007, Grade: A.
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PROFESSIONAL SERVICES

1. Part of Student Organizing Committee, *5th International Corrosion Prevention Symposium for Research Scholars (CORSYM)*, 23rd to 24th March, 2018.
 2. Part of session management team in CORCON 2015, CORCON 2016 and CORCON 2017 organized by NACE India Section.
 3. Part of Student Proceedings Editing Team, *International Conference on Advances in Construction Materials and Systems (ICACMS)*, 71st Annual RILEM week, Chennai, 3rd to 8th September, 2017.
 4. Volunteered towards the NACE Corrosion Impact Study, 2017.
 5. Part of Student Proceedings Editing Team, *International Conference and Expo on Corrosion (CORCON 2016)*, NACE International India Section, 18th to 21st September, The Leela Ambience Convention Hotel, New Delhi, India, 2016.
 6. Volunteered towards the 1st Workshop on Corrosion Control in Concrete Structures (C³S) jointly organized by NIGIS-SZ and IIT Madras, 5th to 6th August, 2016.
 7. Volunteered towards the ICI-IITM National Concrete Canoe Competition (NCCC) organized by CEA, IIT Madras, 21st to 23rd August, 2015.
 8. Student Secretary, Indian Concrete Institute (ICI) Student Chapter, B. S. Abdur Rahman University, 2014-2015.
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NON-PROFESSIONAL SERVICES

1. Organized and participated in various programmes held under National Service Scheme (NSS) and completed 2 years of service during 2010-2012.

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PROFESSIONAL MEMBERSHIP

1. Life member, Indian Concrete Institute (M. No. 10936)
2. Student member, National Association of Corrosion Engineers (M. No. 843590)

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