

CURRICULUM VITAE

Naveen Krishnan

M.S. Research Scholar

Building Technology & Construction Management (BTCM) Division

Department of Civil Engineering

Indian Institute of Technology Madras, Chennai – 600 036, India

Phone: +91 79078 31149

E-mail: naveenkrishnankc@gmail.com



EDUCATION

M.S. in Civil Engineering

January 2019 - Present

Indian Institute of Technology Madras, Chennai

Department of Civil Engineering (Pursuing),

CGPA: 8.80/10

B. Tech. in Civil Engineering

June 2017

Rajiv Gandhi Institute of Technology Kottayam

Department of Civil Engineering,

CGPA: 7.97/10

RESEARCH INTERESTS

- Corrosion assessment techniques in concrete structures
- Electrochemical repair of concrete structures
- Numerical modelling of cathodic protection system

RESEARCH EXPERIENCE

Performance evaluation of Cement polymer composite coated (CPCC) and uncoated TMT steel reinforcement bars (January 2017 - June 2018)

Naveen Krishnan, Priscila Cisily Thomas, Swathi R. Pillai, Adarsh Babu, Dhanya B.S.

The project aimed to evaluate the performance of cement polymer composite (CPC) coated and uncoated TMT steel bars in resisting corrosion initiation. A modified test set-up similar to the standard ASTM G109 test was employed to assess the corrosion initiation wherein, steel rebars, as collected from the site was used. It was observed that the mortar specimen cast with 0.5 water/cement ratio exhibited corrosion initiation faster than the specimens cast with 0.4 or 0.35 water/cement ratio.

Performance evaluation of different admixed corrosion inhibitors (ACI) in arresting corrosion (May 2018 – January 2019)

Sripriya Rengaraju, Radhakrishna G. Pillai, Naveen Krishnan

The long-term corrosion performance is assessed using the standard ASTM G109 test. Concrete specimens with different w/c ratio are cast using OPC and with fly ash replaced OPC. The comparative performance based on corrosion initiation is studied. Also, the reliability of the standard ASTM G109 test in assessing the performance of highly resistive (LC3) concrete was studied. The results suggested that the ASTM G109 test can be used for assessing the performance of OPC and flyash based concrete while the highly resistive concrete lead to macro-cell corrosion within a single rebar.

Electrochemical repair of the corroded sunshade of 105-year-old Rashtrapati Bhavan building in Delhi (May 2018 – Present)

Naveen Krishnan, Deepak Kamde, Radhakrishna G. Pillai

The project aims to arrest the corrosion in the heavily corroding sunshades of the rastrapati bhavan (The President's house) in Delhi, India. The sunshade is made up of lime mortar with mild steel rebars embedded as reinforcement. Cathodic protection (CP) using sacrificial galvanic anodes and hybrid-galvanic anodes were implemented on a 10 m stretch of the sunshade as a pilot project. The objective of the pilot study is to assess the performance of CP in lime-based concrete. The installed CP system was monitored for one year and the amount of depolarisation shift induced in the concrete is recorded for evaluating the performance of the galvanic anodes. Initial results suggest that the potential shift provided by the concrete area where hybrid-galvanic anodes are installed is sufficient enough to arrest corrosion as well as to passivate the steel.

POSITION OF RESPONSIBILITY

- Project associate in the BTCM division of the Dept. of Civil Engineering at Indian Institute of Technology Madras, Chennai from May to November, 2018.
 - Teaching assistant for B. Tech course CE2330, Construction materials, at IIT Madras, during the academic term January – May 2019.
 - Teaching assistant for B. Tech course CE3410, Construction materials laboratory, at IIT Madras, during the academic term July – November 2019.
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CONFERENCE PROCEEDINGS

- CP 1. D.V, Zameel., **Krishnan, N.**, Kamde, D.K., Pillai, R.G. (2018) "Effect of resistivity of the concrete on the performance of sacrificial anode cathodic prevention (SACP) Systems" Corcon 2018, Jaipur, organised by NACE international Gateway India Section.
 - CP 2. Kamde D.K., **Krishnan, N.**, Pillai, R.G. (2019) "8 – Year performance of cathodic protection systems in reinforced concrete slabs and life-cycle cost benefits" Rilem SMSS 2019, Sustainable Materials, Systems and Structures, Rovinj, Croatia.
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POSTER PRESENTATION

- PP 1. **Krishnan, N.**, Pillai, R.G. (2019) "Understanding the throwing power of galvanic anodes in reinforced concrete structures using numerical simulations" Corcon 2019, Mumbai, organised by NACE international Gateway India Section.
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ACADEMIC ACHIEVEMENTS

- **Best Student Poster Award of CORCON 2019**, International conference and Expo on corrosion, Mumbai, India, conducted during 23 – 26th September, 2019 for the poster titled "Understanding the throwing power of galvanic anodes in reinforced concrete structures using numerical simulations".
- **Best outgoing student award** of the year 2013 from Angels Arc Senior Secondary School, Kayamkulam, Kerala, India.
- Passed Graduate Aptitude Test with a score of 565 out of 1000 in 2018

WORKSHOPS AND INTERNSHIPS

- One month internship on understanding the fundamentals of cathodic protection in the Institute of building materials of RWTH university at Aachen, Germany, under the guidance of Prof. Michale Raupach, funded by the IGP program of IIT Madras.
 - One week certification workshop on REVIT software by the Autodesk during June, 2017.
 - Winter internship at the Building materials laboratory in the Dept. of Civil Engineering at IIT Madras, Chennai during the January 2017.
 - Two day workshop on corrosion in cement and concrete structures (C3S) at Indian Institute of Technology Madras, Chennai from 23rd to 24th of August 2016.
 - One month internship at the construction site of the international terminal of cochin international airport (CIAL) from May to June, 2015.
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PROFESSIONAL MEMBERSHIP

- NACE International Gateway India Section (NIGIS) (Member since August 2018)
 - RILEM, International Union of Laboratories and Experts in Construction Materials, Systems, and Structures (Member since September 2019)
 - Indian Concrete Institute (ICI) (Member since September 2019)
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REFERENCES

Dr. Radhakrishna G. Pillai

Associate Professor at Dept. of Civil Eng.,
Indian Institute of Technology Madras
Chennai, India
Email ID - pillai@iitm.ac.in

Dr. Manu Santhanam

Professor at Dept. of Civil Eng.,
Indian Institute of Technology Madras
Chennai, India
Email ID - manu@iitm.ac.in

Declaration

I hereby declare that all the information provided by me in this application is factual and correct to the best of my knowledge. Certificates will be provided upon request.

Naveen Krishnan