PERSONNEL QUALIFICATIONS

Karthik Pattaje | Associate II

EDUCATION

- B.M.S College of Engineering, Bangalore, India
  - Bachelor of Engineering, Civil Engineering, 2015
- University of Illinois at Urbana-Champaign
  - Master of Science, Civil Engineering, 2018
  - Doctor of Philosophy, Civil Engineering, 2023

PRACTICE AREAS

- Construction Materials
- Sustainability
- Laboratory Evaluations
- Research and Product Development
- Bridges and Civil Infrastructure

REGISTRATIONS

- ACI Concrete Field Testing Technician - Grade I
- ACI Concrete Laboratory Testing Technician - Level I

PROFESSIONAL AFFILIATIONS

- American Concrete Institute (ACI)
- American Ceramic Society (ACerS)

CONTACT

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EXPERIENCE

Karthik Pattaje has conducted condition assessments of civil infrastructure, performed the repair design of concrete structures, researched the development of and evaluated concrete materials, and performed nondestructive evaluations.

Before joining WJE, Dr. Pattaje conducted research at the University of Illinois, focusing on fresh properties and mixture design of concrete. In his graduate research, he studied the effect of vibration on the rheology of concrete for 3D printing applications.

REPRESENTATIVE PROJECTS

Construction Materials

- Precast Wall for Wastewater Treatment Plants - United States: Development and laboratory testing of self-consolidating concrete mixture to mitigate ASR damage and improve service life
- The Rolex Building - New York, NY: Creep testing of high-strength concrete mixes
- Indiana Toll Road - Hammond: Development of ultra-high performance concrete (UHPC) specifications and acceptance testing for use in link slabs
- Illinois Tollway - Chicago: Specification development based on laboratory and field performance of concrete with superabsorbent polymers *

Sustainability

- Low Carbon Concrete Demonstration Projects: Collaboration with the ClimateWorks Foundation to demonstrate feasibility of using lower carbon concrete in construction applications
- Low Embodied Carbon Concrete Mixes: Research and development of carbon reduction technologies for industrial floors

Laboratory Evaluations

- Laboratory Evaluations for Alkali Reactivity of Aggregates: ASTM C1260, C1293, C1567
- Laboratory Evaluations for Physical Testing of Concrete: ASTM C39, C78, C157, C469, C496, C512, C1581, C1609
- Laboratory Evaluations for Durability: ASTM 666, C1012, C1202, C1556, C1646, C1876, NT Build 492
- Laboratory Evaluation of Bricks: ASTM C67

Research and Product Development

- IHRB Project TR-820 Performance Monitoring of Two-Course Bridge Deck Utilizing UHPC: Construction and performance evaluation of two-course bridge deck with UHPC overlay
- IHRB Project TR-791 Bridges Designed for Minimum Maintenance - IA: Analysis of bridge maintenance needs and evaluation of potential design/construction strategies minimizing maintenance
- Wisconsin Department of Transportation: Laboratory testing and specification development for vertical and overhead concrete repair patches
- ACI 222: Round robin testing of new method for estimating chloride threshold of reinforcing steel
- WJE In-House Research: Development of strength correction factors for compression testing of high-strength concrete

Bridges and Civil Infrastructure

- Concrete Bridge Decks - Chicago, IL: Condition assessment using nondestructive and laboratory evaluations of material samples
- Mechanically Stabilized Earth Walls - Chicago, IL: Condition assessment, corrosion evaluation, laboratory testing, and repair recommendations
- Indiana Toll Road - Hammond: Monitoring of construction progress and quality of deck and joint repairs in compliance with project specifications

** Indicates work conducted during graduate studies at the University of Illinois*

TECHNICAL COMMITTEES

- ACI 123 - Research and Current Developments
- ACI 238 - Workability of Fresh Concrete
- ACI 564 - 3D Printing with Cementitious Materials