Sahand Mardi

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❖ Research Interests

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➢ Nonlinear Analysis, Seismic Analysis and Design, High Strength Concrete, Bridges, Large-Scale Structural Testing, Numerical Modeling, Fragility Curves.

➢ **Thesis Subject:** *The Effects of Hexagonal Wire Mesh as Inner Jacket on Behavior of Reinforced High Strength Self-Compacting Concrete Beams*

❖ Educational Background

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- **M.S. in Structural Engineering** (2015-2017)   **GPA: 18.88/20**

  Qazvin Azad University, Nokhbegan Blvd. Qazvin. Iran http://qiau.ac.ir/

- **B.S. in Civil Engineering** (2011-2015)   **GPA: 16.79/20**

  Qazvin Azad University, Nokhbegan Blvd. Qazvin. Iran http://qiau.ac.ir/

❖ Journal Papers

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- M. Aziminezhad, *S. Mardi,* P. Hajikarimi, and F. M. Nejad. "**Energy-Based Method for Evaluating Cracks and Resistance of Fiber Reinforced Ultra-High Strength Concrete under Impact Loads**." *AUT Journal of Civil Engineering*, Accepted in August 2019 (In Press)

- *S. Mardi*, and M. Bastami. "**Developing a Cost-Effective Approach for Enhancing the Rheological and Mechanical Behavior of High Strength Self-Compacting Concrete**." *Journal of Structural Engineering and Geo-Techniques* 8, no. 1 (2018): 41–54.

- M. Aziminezhad, *S. Mardi*, P. Hajikarimi, F. M. Nejad, A. H. Gandomi. "**Loading Rate Effect on Fracture Behavior of Fiber Reinforced High-Strength Concrete Using Semi-Circular Bending Test**." *Construction and Building materials (under review).*

- *S. Mardi*, and M. Bastami. "**Cyclic Performance of High Strength Concrete Beams Reinforced with Hexagonal Wire Mesh**." Engineering Structures (*ready for submission.*)

- *S. Mardi*, and MS. Razzaghi. "**Nano particles Influence on Rheology and Mechanical Properties of Self-Compacting Mortars: Experimental and Artificial Neural Network Predictions**." *Archives of Civil and Mechanical Engineering* (*will be submitted in two months.*)

❖ Teaching Experience

➢ Foundation Engineering

Qazvin Azad University (Civil Engineering Department) – (2014-2017)

Under supervision of Professor Ali Ghassemi, for Bachelor of Science students

❖ Recent Academic Projects

M.S. Projects and Term papers:

➢ M.Sc. Thesis
Winter 2016 – Summer 2017, supervised by Prof. Morteza Bastami

Abstract: The target of the research was about examining cyclic performance of full-scale high strength self-compacting concrete beams reinforced with hexagonal wire mesh (HWM) and it was aimed at replacing HWM instead of traditional stirrups. The project included rheology tests of self-compacting concrete on different mixtures and compressive strength, tensile strength, flexural strength test for hardened phase of concrete. Furthermore, reinforced concrete beams were tested under monotonic and cyclic loading condition with various scenarios of reinforcing techniques with different HWM types. An economic analysis was conducted to evaluate proposed methods from practical and economic standpoint.

➢ Term Paper of Structural Dynamics course
Fall 2015, supervised by Prof. Omid Bahar

Abstract: The project objective was aimed at developing a numerical model for analyzing multi-degree of freedom structures under earthquake acceleration records and user-defined harmonic and step loads. Two multi-story buildings with extreme torsional irregularity were analyzed by ETABS under specific earthquake acceleration records using time-history analysis and response spectrum dynamic analysis methods. Same buildings were programmed and analyzed in MATLAB by numerical methods. Results of numerical models such as mode shape, frequency, modal mass, modal stiffness and time-history and absolutes responses in displacement, shear and moment for each degree of freedom were acquired and verified by making comparison between different methods.

➢ Term Paper of Seismic Design of Structures course
Spring 2016, supervised by Prof. Majid Ghasemi

Abstract: The project objective was to design and control a multi-story reinforced concrete special moment resisting frames from scratch. Firstly, the building was modeled and analyzed by ETABS. Afterward, the obtained analysis results were used for manual design of beams, columns, shear walls and connections using ACI codes. Using NEHRP guidelines and provisions, additional controls were also taken into consideration such as reinforcement detailing in beams and columns, joint shear control and loading capacity control, to name but a few.

➢ Term Paper of Advanced Reinforced Concrete Structures course
Fall 2016, supervised by Prof. Ali Delnavaz

Abstract: The objective of this project was to model and analysis reinforced concrete structures such as beams, columns, shear walls and connections by

ABAQUS program and verify the results from the FEM model to existing experimental results in published papers.

➢ Term Paper of <u>Finite Element Method</u> course
Spring 2016, supervised by Prof. Hamid Moslemi
Abstract: The project objective was to develop two flexible MATLAB code for analyzing 3D truss structures and 2D cantilever beams. The number of nodes and elements (mesh size), material properties and element type should be defined by the end-user as an input parameter and output results included the stiffness matrix, internal force, displacements, stress and strain for each element or node. Lastly, results from MATLAB code were verified by other FEM analysis packages.

➢ Term Paper of <u>Seismic Retrofitting of Existing Structures</u> course
Spring 2016, supervised by Prof. Seyed Ali Haj Seiyed Taghia
Abstract: A comprehensive research was conducted on old and new methods for retrofitting of existing bridge structures. Different approaches, including new health monitoring methods, smart sensors and nondestructive testing (NDT) methods were studied. At the final step, 100-page report on damage inspection and retrofit approaches for existing bridge was given both orally and written to finish the project.

➢ Term Paper of <u>Seminar</u> course
Spring 2016, supervised by Prof. Morteza Bastami and Prof. Seyed Ali Haj Seiyed Taghia
Abstract: An investigation on high strength concrete behavior on either micro and macro structures were conducted. In addition, HSC limitation on use in reinforced concrete structures was also studied to get a better understanding of HSC application, pros, and cons.

➢ Term Paper of <u>Advanced Concrete Technology</u> course
Fall 2016, supervised by Prof. Ali Delnavaz
Abstract: The objective of this project was to conduct research on the different aspects of high strength concrete properties, from microstructures to macrostructures. Both chemical and mechanical behavior of high strength concrete from mixing to the testing of the hardened phase of HSC were studied. To finalize the project, it was necessary to provide written and oral report for the research subject.

Miscellaneous undergraduate projects:

➢ Full seismic design and analysis of a multi-story concrete building by ETABS, SAFE and also manual design.
➢ Full seismic design and analysis of a multi-story steel building by ETABS, SAFE and also manual design.
➢ Developing a software (by Delphi programming language) to simulate wind loading calculation based on building type, shape, height and environmental condition according to Iranian National Building Code for Loading.
➢ Providing mechanical and electrical installations detailing for regular buildings.
➢ Developing a software (by Delphi programming language) that is able to calculate and draw moment, shear and loading diagram of the beams with flexible support condition and loading type.

❖ Computer Skills

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➤ *General Computer Knowledge*
  Proficient in Using **Windows**, **Office, Linux**
➤ *Programming*
  Proficient in **Turbo Pascal, Borland Delphi, Visual Basic** and
  MATLAB programming
➤ *Numerical Analysis Software*
  Proficient in **MATLAB, OpenSees** and **Origin**
➤ *Computer Graphics and Data Visualization*
  Proficient in **AutoCAD, Revit Structures, Plot Digitizer,
  Photoshop, ImageJ, GetData Graph Digitizer, Image Processing
  Methods**
➤ *Finite Element Software*
  Proficient in **ABAQUS** and **MATLAB**
➤ *Exclusively Structural and Civil Engineering Software*
  Proficient in **ETABS, SAP2000, SAFE, ABAQUS, OpenSees,
  SeismoSignal, Civil 3D**

❖ Related Courses to my interests

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M.S. Courses

•	Structural Dynamics	20/20
•	Theory of Elasticity	19.75/20
•	Seismic Design of Structures	20/20
•	Advanced Reinforced Concrete Structures	19/20
•	Advanced Concrete Technology	19.25/20
•	Finite Element Method	17.5/20

B.S. Courses

•	Principles of Wind and Earthquake Engineering	19/20
•	Reinforced Concrete Structures Project	20/20
•	Design of Reinforced Concrete Structures 2	19/20
•	Computer Programming	20/20
•	Structural Analysis 2	18/20
•	Earthquake Resistant Masonry Structures	20/20

❖ Honors and Awards

- Memorial of Distinguished Student Award, For outstanding performance in Master program among all students of civil engineering faculty- QIAU – 2017

- Ranked 3rd in National High Strength Concrete Competition - 14th ICI (Iran Concrete Institute) concrete competition in Tabriz, Iran. – 2016

- Ranked 1st among all master program students in structural engineering - Civil Engineering Department of QIAU – Fall semester 2015

- Appreciation from university president for the sake of cooperation in holding charity bazaar in QIAU – 2015

- Ranked 2nd in Mathematical Olympiad - Department of Education - Bandar-e-Anzali City – 2011

- Ranked 5th in Computer Olympiad - Department of Education - Gilan Province – 2010

- Ranked 1st in Computer Olympiad - Department of Education - Bandar-e-Anzali City – 2009

❖ Work Projects

- Design of self-compacting concrete mixing plan for Azadegan concrete batching plant company in Tehran - 2019
- Design of pumpable light-weight concrete mixing plan for Azadegan concrete batching plant company in Tehran - 2018
- Structural BIM designer of Pasargad Insurance head office in Tehran – 2017
- Design of high strength concrete (140 MPa) mixing plan for BHRC organization (Road, Housing and Development Research Center) – 2016
- Supervisor of a research group at Civil Engineering & Construction Research Center (CCRC) – 2016 to 2018

❖ Additional Certifications

- The Third International Conference on Fourth Industrial Revolution- European Project Leaders (EPL) – 2017
- MATLAB programmers – Center of Specialized Courses (CSC) - 2016
- Scientific Research Paper Writing Workshop - Civil Engineering Department of QIAU – 2016
- EBSCO Discovery Service Workshop - EBSCO Information Services – 2016
- Concrete Technology Workshop - Civil Engineering & Construction Research Center (CCRC) – 2016
- Nanotechnology and its practical aspects Workshop – Iran Nanotechnology Initiative Council – 2014

❖ Additional Information
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- Fluent in Persian and English
- Part-time web developer

❖ References
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1. Morteza Bastami, Associate Professor, International Institute of Earthquake Engineering and Seismology (IIEES), Tehran, Iran.

2. Pouriya Hajikarimi, Assistance Professor, Department of Civil Engineering, Qazvin Azad University, Qazvin, Iran.

3. Omid Bahar, Assistant Professor & Director of Structural Engineering Research Center, International Institute of Earthquake Engineering and Seismology (IIEES), Tehran, Iran.

4. Ali Ghassemi, Research Associate, Lassonde School of Engineering, York University, Toronto, Canada.