

APPLICATION

Due: Friday, March 6th , 2015

AMERICAN CONCRETE INSTITUTE – MISSOURI CHAPTER GRADUATE SCHOLARSHIP AWARD

PERSONAL INFORMATION

NAME: Zena Riyadh Aljazaeri	
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HIGHER EDUCATION

INSTITUTION	DATES ATTENDED	CREDIT HOURS	DEGREES AWARDED AND DATE
Nahrain university	2001	57	M.Sc degree in Structural Engineering ,2004
Nahrain university	1998	217	B.Sc in Civil Engineering, 2001

GRADUATE STUDY

Institution: Missouri university of science and technology	Location: Butler-Carlton Hall, 1401 N. Pine St., Rolla, MO 65409-0030	
Date of Admission: 2013	Period of Study: 5 years	
Degree Expected: 2017	Major Structure	Minor Civil
Previous MO-ACI graduate scholarship? Yes ☐ , No × If yes, when?:		

1. What reasons do you believe support your application for this award? (Financial need is not an important criterion.)

I am working on a new innovative material system called fiber reinforced cementitious matrix (FRCM) that used for strengthening or repairing of existing structural members in the last years. As reported by MoDoT(2013) that about 5,000 bridges are at least 50 years old and another 1,600 are at least 75 years old. There are 2,000 bridges which are structurally deficient. So there is necessity to upgrade these structures to their designed loading conditions or to increase their flexural and shear capacities to meet the new code requirements.

After many authors specified the effectiveness of FRCM for load carrying capacity, fire and moisture resistance, and energy absorption, Here at MST University; we are exclusively working on the fatigue performance of RC beams strengthened with FRCM system. One objective of this study is to evaluate the fatigue resistance of this new innovative material (FRCM) in terms of stiffness degradation at cyclic rates as high as two million cycles of applied service load. The other objective is to investigate the durability of the FRCM system after exposure of FRCM strengthened beams to severe environmental conditions.

This work would have a great influence on the acceptance of this new strengthening system in the bridge application field. The scholarship would help making progress in facilitating the required materials to be purchased rather than trying to find alternatives which sometime does not work and delays the work.

2. What is your background in the field of concrete? Of particular interest is your experience in design, materials, construction, and/or research. Include a summary of your work experience and accomplishments.

I had been involved as a member of many teams that worked on design of reinforced concrete building.

I was a Member in the team for checking and endorsement of the design on the construction of the Sharq Dijlah water treatment plant Phase II designed by Parsons.

I was one member who worked as a supervisor with other consultants on the construction of schools being built with structural steel elements.

I was a part of the team who checked and endorsed the design, and supervised the construction of Al-Rasheed water treatment plants Phase I designed by Binne & Partners.

As part of MSC degree, I had published two papers that related to "Bending Moment Influence Surfaces for Rectangular Concrete Plates Simply Supported at Three Edges and Built-in at the Fourth Edge".

3. What is your plan for continuing your education? What goals have you established for your education?

My plan is to get PhD degree in structural Engineering. In order to achieve this goal:

* I have been involved in many classes that increased my knowledge in structural engineering, concrete, prestressed concrete, composite materials, and the design of steel and Lightweight Structures.

* Getting knowledge from ACI codes, AASHTO specification for bridges, ASCE- Papers, and other journals of structural composites.

* As part of my research project:

RC beams and slabs were casted to be used for applying the new strengthening system.

Fatigue test for RC beams strengthened with FRCC systems are ongoing at the ERL lab of MST University.

Some RC beams are currently inside the environmental chamber.

Works started at the second phase for shear strengthening of RC beams using FRCC.

4. What specific work relating to concrete, such as design, materials, construction, or research, will you pursue during your graduate work?

1- Fatigue testing of RC beams strengthened with FRCC system after exposure to severe environmental conditions including temperature, moisture, and stress.

2-Studying the flexure capacity of RC slabs strengthened with prestressing- FRCC.

For this work, we will need enough budgets that help in providing the required air bags, heating system for accelerating the curing time and bed anchor system.

3- Shear strengthening of RC beams using fiber reinforced cementitious matrix.

4-Studying the bond performance of the fiber reinforced cementitious matrix or carbon fiber reinforced polymer grid.

5-Studying the Creep performance of a two way slab system reinforced by a grid of carbon fiber reinforced polymer.

5. What will your program of study be during the year of this award? (List coursework and research)

Research work:

Complete the phase of study for the fatigue performance for RC beams strengthened by FRCM.
Complete the phase of shear strengthening of RC beams using fiber reinforced cementitious matrix.
Study the flexure capacity of RC slabs strengthened by Prestressing-FRCM and Gird of FRP.
Study the bond performance between the fiber reinforced cementitious matrix or carbon fiber reinforced polymer grid and concrete substrate.

Next course work:

Class 1: Advanced finite element analysis

Class 2 : Stochastic theory of structural dynamics

REFERENCES

NAME	TITLE	EMPLOYER	ADDRESS
J.J Myers	Professor Director, Structural Engineer- ing High-Bay Laboratory Associate Director, Center for Transportation Infrastructure and Safety	Missouri University of Science and Tech- nology	325 Butler-Carlton Hall, 1401 N. Pine St., Rolla, MO 65409-0030
Ross Haselhorst	Director, Video Communications Center	Missouri University of Science and Tech- nology	G-8 Wilson Library, Mis- souri S&T, Rolla, MO 65409

I certify that the information contained in this application is true and that I have answered all of the questions to the best of my ability. I agree that I will notify the ACI Missouri Chapter immediately when my educational program is interrupted or changed in any manner that may jeopardize the intent of the award. I further agree that I will accept the award only as long as I successfully pursue the graduate study program I have described above and for which the reward was made.

Signature: *Zena*

Date: Feb-19-215