

## BIOGRAPHICAL SKETCH

Born in South Florida

B.S. 2007, Florida Atlantic University, Boca Raton, Florida

M.S. 2008, Florida Atlantic University, Boca Raton, Florida

Ph.D. 2017, Florida Atlantic University, Boca Raton, Florida

## CONCERNING PERIOD OF PREPARATION & QUALIFYING EXAMINATION

**Time in Preparation:** 2011 – 2017

**Qualifying Examination Passed:** Summer 2011

The logo for Florida Atlantic University (FAU) features the letters 'FAU' in a stylized, serif font. The 'F' and 'A' are connected, and the 'U' is separate. A horizontal line is positioned below the letters.

COLLEGE OF ENGINEERING  
& COMPUTER SCIENCE

Florida Atlantic University

FLORIDA ATLANTIC UNIVERSITY

COLLEGE OF ENGINEERING & COMPUTER SCIENCE

announces the

Ph.D. Dissertation Defense

of

**JAMIE POLIDORA**

for the degree of

DOCTOR OF PHILOSOPHY (PH.D.)

October 2, 2017 at 12 p.m.

in

Engineering West, Room 187

777 Glades Road

Boca Raton, FL

## ABSTRACT OF DISSERTATION

### **Fracture and Fatigue Behavior of Geosynthetic Reinforced Asphalt Concrete for Pavement Overlays**

Asphalt pavements are an integral part of the world today spanning 2.7 miles of roadways in the United States with 94% of those roads being asphalt pavement. In most resurfacing or rehabilitation project, the existing asphalt pavement is milled and an overlay is placed. The average time between resurfacing projects varies depending on the level of pavement deterioration which is significantly accelerated when soft soils and poor subgrade conditions are encountered. Use of geosynthetics in the overlay may provide an effective near surface strategy to mitigate premature deterioration. However, some mixed reviews about the performance of the geosynthetic overlay have been found in the literature.

Therefore, the current laboratory investigation was undertaken to evaluate the fatigue, fracture and permanent deformation behavior of a geosynthetic reinforced asphalt overlay material. This mechanical behavior is tied directly to the cracking and rutting behavior of flexible pavement overlay in the field. In addition, the efforts are made to determine the optimum location of the geosynthetic within the overlay system.

Lessons learned from the laboratory investigations are used to model and analyze a pavement reconstruction case study involving a reinforced asphalt overlay under poor subgrade conditions in southeast Florida. Some design guidelines are provided on the use of geosynthetics for optimum performance of asphalt overlays.

DEPARTMENT: Ocean and Mechanical Engineering

DISSERTATION TITLE: "Fracture and Fatigue Behavior of Geosynthetic Reinforced Asphalt Concrete for Pavement Overlays"

CHAIR OF THE CANDIDATE'S PH.D. COMMITTEE:  
Khaled Sobhan, Ph.D.

PH.D. SUPERVISORY COMMITTEE:  
George Q. Cai, Ph.D.  
Javad Hashemi , Ph.D.  
Dronnadula V. Reddy, Ph.D.  
Chi-Tay Tsai, Ph.D.  
Yan Yong, Ph.D.