## CLAUDIA E. ZAPATA, Ph.D.

Arizona State University, Ira A. Fulton School of Eng., Dept. of Civil and Environ. Eng., P. O. Box 875306, Tempe, AZ 85287-5306. Telephone: (480) 727-8514; Fax: (480) 965-0557; E-mail: czapata@asu.edu

## EDUCATION

Ph.D., Arizona State University, Tempe, AZ, Geo-Environmental Engineering, 1999.

Major: Geotechnical Engineering; Minor: Environmental Engineering

Ph.D. Dissertation: Uncertainty in Soil-Water Characteristic Curve and Impacts on Unsaturated Shear Strength Predictions.

M.S.E., Arizona State University, Tempe, AZ, Geotechnical Engineering, 1996.

B.S., Universidad Nacional de Colombia, Manizales, Colombia, 1988.

## TEACHING APPOINTMENTS

Total of 17 courses taught with 705 students (47 graduate students).

### 2006 - Present

**Honors Disciplinary Faculty**. The Barrett Honors College, Arizona State University. Tempe, AZ.

* Mentorship of honors students by commitment of time, attention and intellectual resources.

### 2006 - Present

**Assistant Professor**. Ira A. Fulton School of Engineering. Arizona State University, Tempe, AZ.

#### Courses:

CEE 554 Shear Strength and Slope Stability

CEE 550 Soil Behavior

CEE 553 Advanced Soil Mechanics

CEE 100 Introduction to Civil and Environmental Engineering

### 2000 – 2006

**Faculty Research Associate**, Ira A. Fulton School of Engineering, Arizona State University, Tempe, AZ.

#### Courses:

ECE 100 Introduction to Engineering Design

CEE 210 Engineering Mechanics I: Statics

CEE 296 Civil Engineering Systems

### 1996 – 1997

**Teaching Assistant**, Dep. of Civil and Environmental Engineering & Del Webb School of Construction, Arizona State University, Tempe, AZ.

#### Courses:

CEE 351 - Geotechnical Engineering Laboratory

## ACADEMIC APPOINTMENTS

### 2006 - Present

**Assistant Professor**, Geotechnical Engineering, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ.

### 2000 – 2006

**Faculty Research Associate**, Advanced Pavement Group, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ.

### 1999 – 2000

**Research Specialist, Sr.,** Advanced Pavement Group, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ.

### 1995 – 1999

**Graduate Research Assistant**, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ.

### 1991 – 1992

**Graduate Research Assistant**, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ.

## INDUSTRY EXPERIENCE

### 1994 – 1995

**Engineering Consultant**, Tomas Shuk Engineers Inc. Bogota, Colombia.

### 1990 – 1991

**Intern Research Assistant**, Sergent, Hauskins & Beckwith & Arizona State University, Tempe, AZ.

### 1988-1989

**Engineering Consultant**, AQUATERRA, Engineering Consultants, Ltd. Manizales, Colombia.

### 1987 – 1988

**Engineering Assistant**, Hydroelectric Power Station of Caldas, Colombia (CHEC) & Universidad Nacional de Colombia. Manizales, Colombia.

### 1986 – 1988

**Engineering and Geology Assistant**, Colombian Geological Survey (INGEOMINAS). Manizales, Colombia.

## PROFESSIONAL ASSOCIATIONS AND HONORS

### Memberships

* Member, The International Association of Foundation Drilling (ADSC) since 2008.
* Member, American Society of Civil Engineers since 2007.
* Member, The International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) since 2007.
* Member, The Chicano and Latino Faculty and Staff Association of Arizona State University since 2006.
* Member, The Faculty Women Association of Arizona State University since 2006.
* Member, The United States Universities Council on Geotechnical Education and Research (USUCGER) since 2006.
* Registered Professional Engineer. Colombian National Professional Board of Engineering and Architecture. April 14, 1989. License # 17202-31908CLD.

### Honors

* ASU Barrett Honors College, Honors Disciplinary Faculty since 2006 for "her outstanding contributions and commitment of time to the honors students".
* Office of the Vice-President for Student Affairs at ASU. "Leader, mentor, and a person who has contributed in a significant way to the success of ASU students". Awarded Nov. 2004.

## SERVICE

### National Level

**Official reviewer** since 1997 for the following journals and editorials:

* The American Society of Civil Engineers - Journal of Geotechnical and Geoenvironmental Engineering
* American Society of Testing Materials - Geotechnical Testing Journal
* Soil Science Society of America Journal
* Geo-Institute Congress, ASCE Geo-Institute
* ASCE Geotechnical Engineering Division
* PWS Publishing Company, Boston, Massachusetts
* International Journal of Road Materials and Pavement Design
* Transportation Research Board

**Technical committee member** for the following organizations:

* Transportation Research Board - Engineering Behavior of Unsaturated Soils Committee (AFP60) (since 2007)
* Transportation Research Board – Latin American Transportation Research and Practice Subcommittee – A0010(1) (since 2006)
* 2006 Unsaturated Soils International Conference, Tempe, AZ (2004-2006).

### Local Level

**Technical committee member** for the following organizations:

* Ira A. Fulton School of Engineering, Arizona State University – FSE Research Advisory Committee (Elected: 2008-2011).
* Department of Civil and Environmental Engineering, IAFSE, Arizona State University – Academic Affairs (Curriculum) Committee (Appointed: 2006 – 2008; Elected: 2008-2011).
* ASU-ADOT Pavements/Materials/ Transportation Committee – 5 conferences. (since 2002)
* Arizona American Society of Civil Engineers – Arizona Geotechnical Division (AzASCE) subcommittee (2006).

## PUBLICATIONS

*Co-authors that have been students under my supervision are highlighted.*

### Referred Archival Journal Publications

* Zapata, C.E., Andrei, D., Witczak, M.W., & Houston, W.N. (2007). Incorporation of Environmental Effects in Pavement Design*. International Journal of Road Materials and Pavement Design*, Vol. 8, Issue 4. pp 667-693.

**Prior to 2006 while employed as Faculty Research Associate:**

* **Raghavendra, S.,** Zapata, C.E., Mirza, M.W., Houston, W.N., and Witczak, M.W. (2005). Verification and Improvement of the Rate of Asphalt Aging Simulated by AASHTO PP1-98 Protocol. *Transportation Research Record: Journal of the Transportation Research Board* No.1901, Bituminous Binders, pp. 24-32.
* Houston, S.L., Houston, W.N., Zapata, C.E., and Lawrence, C. (2001). Geotechnical Engineering Practice for Collapsible Soils. *Geotechnical and Geological Engineering Journal*. Vol. 19(3-4). pp. 333-355. Also in *Unsaturated Soil Concepts and Their Application in Geotechnical Practice*, David G. Toll (ed). Kluwer Academic Publishers, Durham, U. K.

### Journal Publications under Review

* Houston, S.L. **Dye, H.B.,** Zapata, C.E., Walsh, K.D. and Houston, W.N. A Study of the Performance of Slab on Grade Residential Foundations on Expansive Soils in Arizona. Submitted to the *Journal of Performance of Constructed Facilities,* October 2008.
* Zapata, C.E. Considerations of Climate in the New AASHTO Mechanistic Empirical-Pavement Design Guide. *Transportation Research Record: Journal of the Transportation Research Board,* July 2008. Accepted for presentation in the TRB Annual meeting and for publication in the Annual Meeting DVD.
* Zapata, C.E., Perera, Y.Y. and Houston, W.N. Matric Suction Prediction Model Used in the New AASHTO Mechanistic Empirical Pavement Design Guide. *Transportation Research Record: Journal of the Transportation Research Board,* July 2008. Accepted for presentation in the TRB Annual meeting and for publication in the Annual Meeting DVD.
* **Cary, C.** and Zapata, C.E. Evaluating the Utility of Existing Pavement Management System State Deflection Data For Use in the Implementation of the Mechanistic Empirical-Pavement Design Guide for Arizona. *Transportation Research Record: Journal of the Transportation Research Board,* July 2008. Accepted for presentation in the TRB Annual meeting and for publication in the Annual Meeting DVD.
* **Evans, A.** and Zapata, C.E. Age Related Changes in Soil Properties of Historic Structures. Submitted to the Journal of Geoarcheology: An International Journal, July 2008.
* Carlson, J., Golden, J., **Arab, M.**, Zapata, C., and Kaloush, K. Evaluations of Pervious Concrete Pavements Used to Mitigate Environmental and Climatic Impacts. Submitted to the Journal of Environmental Management, May 2008.

### Book Edited

* Miller, G.A., Zapata, C.E., Houston, S.L. and Fredlund, D.G. (eds). (2006). *Unsaturated Soils.* *Geotechnical Special Publication No. 147*. The Geo-Institute of the American Society of Civil Engineers. pp. 2581. Also Proceedings of the Fourth International Conference on Unsaturated Soils. April 2-6, Carefree, AZ.

### Monograph

* Zapata, C.E. and Houston, W.N. (2008). *Calibration and Validation of the Enhanced Integrated Climatic Model for Pavement Design*. *NCHRP Report 602*. National Cooperative Highway Research Program, Transportation Research Board, of the National Academies. ISSN 0077-5614. ISBN: 978-0-309-09929-5. Library of Congress Control Number 2008924251. pp. 62. <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_602.pdf>

### Peer Reviewed Conference Publications

* Zapata, C. E. and **Cary, C**. A New Generation of Resilient Modulus Characterization of Unbound Materials. *The International Foundations Congress and Equipment Expo ‘09 (IFCEE09).* International Association of Foundation Drilling (ADSC), the Geo-Institute of ASCE, and the Pile Driving Contractors Association (PDCA). Orlando, Florida, March 15-19, 2009. Accepted.
* Perera, Y.Y., Zapata, C.E., Houston, W.N. and Houston, S.L. (2007). Prediction of Soil-Water Characteristic Curves (SWCC) of Granular and Fine Grained Soils. In *Proceedings of the First Sri Lankan Geotechnical Society International Conference on Soil and Rock Engineering*, Colombo, Sri Lanka, August 6-11, 2007. CD-ROM.
* El-Basyouny, M., Witczak, M.W. and Zapata, C.E.(2007). Development of Asphalt Concrete Rutting Model Using Permanent Strain Database. *Transportation Research Board 86th Annual Meeting CD-ROM*, National Research Council, Washington D.C. (Paper accepted also for publication in the Transportation Research Record, Journal of the Transportation Research Board but pulled out for revision).
* Zapata, C.E., Houston, S.L., Houston, W.N., and **Dye, H.** (2006). Expansion Index and Its Relationship with Other Index Properties. *Unsaturated Soils. Geotechnical Special Publication No. 147*. Also in Miller, et. al (eds.), *Proceedings of the Fourth International Conference on Unsaturated Soils*, April 2-6, Carefree, AZ. pp. 2133-2137.
* **Dye, H.,** Zapata, C.E. and Houston, S. (2006). Geotechnical Evaluation of the Design of Post-Tensioned Slabs on Expansive Soils Using the PTI Third Edition Procedure for Arizona Conditions. *Unsaturated Soils. Geotechnical Special Publication No. 147*. Also in Miller, et. al (eds.), *Proceedings of the Fourth International Conference on Unsaturated Soils*, April 2-6, Carefree, AZ. pp. 355-366.
* Houston, W.N., **Dye, H.B**., Zapata, C.E., and **Perera, Y.Y**. (2006). Determination of SWCC Using One Point Suction Measurement and Standard Curves. *Unsaturated Soils. Geotechnical Special Publication No. 147*. Also in Miller, et. al (eds.), *Proceedings of the Fourth International Conference on Unsaturated Soils*, April 2-6, Carefree, AZ. pp. 1482-1493.
* **Raghavendra, S**., Zapata, C.E., Mirza, M.W., Houston, W. and Witczak, M.W. (2006). Verification of the Rate of Asphalt Mix Aging Simulated by AASHTO PP2-99 Protocol. *Transportation Research Board 85th Annual Meeting CD-ROM*, National Research Council, Washington D.C.

**Prior to 2006 while employed as Faculty Research Associate:**

* **Perera, Y.Y.,** Zapata, C.E., Houston, W.N., and Houston, S.L. (2005). Prediction of the Soil-Water Characteristic Curve Based on Grain-Size Distribution and Index Properties. In E.M. Rathje (ed.), *Geotechnical Special Publications 130-142 & GRI-18*; *Proceedings of the Geo-Frontiers 2005 Congress*, Jan. 24-26, Austin, Texas; ASCE Geo-Institute and Geosynthetic Materials Association of the Industrial Fabrics Association International Geosynthetic Institute. CD-ROM.
* **Perera, Y.Y.,** Zapata, C.E., Houston, W.N., and Houston, S.L. (2004). Moisture Equilibria Beneath Highway Pavements, Transportation Research Board 83rd Annual Meeting CD-ROM, National Research Council, Washington D.C.
* **Perera, Y.Y**., Zapata, C.E., Houston, W.N., and Houston, S.L. (2004). Long-Term Moisture Conditions under Highway Pavements. In M.K. Yegian & E. Kavazanjian, (eds.), *Geotechnical Special Publication No. 126, Geotechnical Engineering for Transportation Projects*, ASCE Geo-Institute. Los Angeles, CA, Vol. 1, pp. 1132-1143. Also *Proceedings of Geo-Trans 2004,* July 27-31.
* Zapata, C.E., Houston, W.N., Houston, S.L., and Walsh, K.D. (2000). Soil-Water Characteristic Curve Variability. In C.D. Shackelford, S.L. Houston, & N-Y Chang (eds), *Advances in Unsaturated Geotechnics. Geotechnical Special Publication No. 99*. Also *Proceedings of Sessions of Geo-Denver 2000*, August 5-8, 2000, Denver: ASCE Geo-Institute. pp. 84-124.
* Houston, W., Houston, S., Zapata, C.E., **Manepally, C**. and Lawrence, C. (1999). Influence of Compressibility on Use and Interpretation of Soil-Water Characteristic Curve. In *Proceedings of the XI Panamerican Conference on Soil Mechanics and Geotechnical Engineering*. August 8-12, 1999. Foz do Iguassu, Brazil: International Society for Soil Mechanics and Geotechnical Engineering. pp. 947-954.

### Articles in National Magazines

* Houston, W.N., Mirza, M.W., Zapata, C.E**.** and **Raghavendra, S.** (2007). *Research Results Digest 324: Simulating the Effects of Hot Mix Asphalt Aging for Performance Testing and Pavement Structure Design*, National Cooperative Highway Research Program, Transportation Research Board of the National Academies. October 2007. 7 pages.
* Darter, M.I., Mallela, J., Titus-Glover, L., Rao, C., Larson, G., Gotlig, A., Von Quintus, H., Khazanovich, L., Witczak, M., El-Basyouny, M., **El-Badawy, S., Zborowski, A.** and Zapata, C. (2006). *Research Results Digest 308: Changes to the Mechanistic-Empirical Pavement Design Guide Software through Version 0.*900, National Cooperative Highway Research Program, Transportation Research Board of the National Academies, September 2006. 22 pages.

### Research Reports

* Witczak, M.W., Zapata, C.E. and Houston, W.N. (2006). *Models Incorporated into the Current Enhanced Integrated Climatic Model: NCHRP 9-23 Project Findings and Additional Changes after Version 0.7*. Final Report. Project NCHRP 1-40D.
* Houston, S.L., Zapata, C.E., Houston, W.N. and **Dye, H.** (2006). *A Study of the Performance of Slab on Grade Residential Foundations on Expansive Soils in Arizona*. Final Report. Homebuilders Association of Central Arizona (HBACA).
* Houston, W.N., Mirza, M.W. and Zapata, C.E. (2006). *Calibration and Validation of The ICM Version 2.6*. Final Report. Project NCHRP 9-23: Environmental Effects In Pavement Mix And Structural Design Systems. National Cooperative Highway Research Program, Transportation Research Board.

**Prior to 2006 while employed as Faculty Research Associate:**

* Houston, W.N., Mirza, M.W., Zapata, C.E. and **Raghavendra, S.** (2005). *Calibration of PP1-98 (AASHTO Designation PP1-98: Standard Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel) and PP2 (AASHTO Designation PP2-99: Standard Practice for Mixture Conditioning of Hot Mix Asphalt) Protocols.* Final Report. Project NCHRP 9-23: Environmental Effects In Pavement Mix And Structural Design Systems. National Cooperative Highway Research Program, Transportation Research Board.
* Witczak, M.W., Zapata, C.E., and **Konareddy, P**. (2003). *Input Data for the Calibration and Validation of the 2002 Design Guide for Rehabilitated Pavement Sections with HMA Overlays*. Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures –Technical Report. National Cooperative Highway Research Program (NCHRP). Project 1-37A. Federal Highway Administration.
* Witczak, M.W., Mirza, M.W., and Zapata, C.E. (2002). *Estimation of Distress Quantities for Smoothness Models for HMA-Surface Pavements*. Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures –Technical Report. National Cooperative Highway Research Program (NCHRP). Project 1-37A.
* Witczak, M.W., and Zapata, C.E. (2002). *Input Data for the Calibration and Validation of the 2002 Design Guide for New Constructed Flexible Pavement Sections*. Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures –Technical Report. National Cooperative Highway Research Program (NCHRP). Project 1-37A.
* Witczak, M.W., Zapata, C.E., and Mirza, M.W. (2001). *Estimating Original Air Voids of GPS-LTPP Sections.* Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures –Technical Report. National Cooperative Highway Research Program (NCHRP). Project 1-37A.
* Houston, W.N., Mirza, M.W., Zapata, C.E., and others. (2001). *Environmental Effects in Pavement Mix and Structural Design Systems*. Technical Report. National Cooperative Highway Research Program (NCHRP). Project 9-23.
* Witczak, M.W., Houston, W.N., and Zapata, C.E. (2001). *Correlation of CBR Values with Soil Index Properties*. Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures –Technical Report. National Cooperative Highway Research Program (NCHRP). Project 1-37A.
* Witczak, M.W. and Zapata, C. E. (2000). *Implementation of the EICM to Arizona Climatic Conditions*. Development of Performance Related Specifications for Asphalt Pavements in the State of Arizona – Project Report. ASU-ADOT Research Program.
* Witczak, M.W., Houston, W.N., Zapata, C.E., Richter, C., Larson, G., and Walsh, K. (2000). *Improvement of the Integrated Climatic Model for Moisture Content Predictions*. Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures – Inter Team Technical Report (Seasonal 4). NCHRP project 1-37A.
* Houston, S.L., Houston, W.N., Zapata, C.E**.** and Johnson, M.J. (2000). *Hydraulic Loading Capacity for Groundwater Recharge Sites*. 15th Inter. Conf., ISSMCE, Istanbul, Turkey: International Society for Soil Mechanics and Geotechnical Engineering.

## SEMINARS AND CONFERENCES

### Keynote Speaker – International Venues

* “Incorporation of Environmental Effects in Pavement Design”. XVI Colombian Symposium in Pavement Engineering, Manizales, Colombia. Sept. 2007.
* "Incorporation of Environmental Effects in Pavement Design". International Workshop on Water in Pavements – WIP'05, Oct. 27th, Madrid, Spain. Oct. 2005.

### Invited Speaker – International Venues

* "Geotechnical Engineering and Problematic Soils". Universidad Metropolitana, San Juán, Puerto Rico. Nov. 2007.
* "Expansion Index and Its Relationship with Other Index Properties". Fourth International Conference on Unsaturated Soils, April 2-6, 2006, Carefree, AZ.
* "Sustainable Development: A New Approximation to the Design Materials and Construction of Roads". 12th International Symposium of Civil Engineering. Monterrey Tec University, Monterrey, Mexico. Feb. 2005.
* "State of the Art on the Behavior of Partially Saturated Soils. From the Theory to the Practice". First Week of Civil Engineering, University of Guadalajara, Guadalajara, Mexico. April 2003.

### Invited Speaker – National Venues

* "Characterization of Expansive Soils using Simple Index Properties". Symposium on Problem Soils and Surficial Deposits. Santa Fe, NM, May 6, 2008.
* "Unsaturated Soil Concepts applied to Environmental Effects in Pavement Design". 87th Transportation Research Board Meeting, AFP60 Committee Meeting. Jan. 2008.
* “Climate in the Mechanistic-Empirical Pavement Design Guide -MEPDG”. AASHTO Joint Committee on Pavements Seminar. Irvine, CA. April 10-11, 2007.

### Invited Speaker – Local Venues

* "Unbound Material Properties". ASU-ADOT Arizona Pavements/Materials Conference. Tempe, AZ. Oct. 2007.
* "Environmental Effects in Pavement Mix Design – Arizona Perspective". ASU-ADOT Arizona Pavements/Materials Conference. Tempe, AZ. April 2006.

### Attendant

* 2008 Civil Engineering Faculty Workshop on Deep Foundations. The International Association of Foundation Drilling (ADSC). Chattanooga, TN. June 8-14, 2008. Invited.
* Third European Asphalt Technology Association (EATA) Conference. Lyon, France. 14-15 April, 2008.
* GeoCongress 2008: The Challenge of Sustainability in the Geoenvironment. Annual Congress of the Geo-Institute of ASCE March 9-12, 2008.
* Transportation Research Board Annual Meeting. Jan. 2006, Jan. 2007.
* ASU-ADOT Arizona Pavements/Materials Conference. Tempe, AZ. Five conferences since 2001.
* Superpave Support and Performance Models Management. NCHRP & ASU. Tempe, AZ. Aug. 1999.
* Ninth Biennial Symposium on Artificial Recharge of Groundwater. Arizona Hydrological Society, Arizona Department of Water Resources, Dames & Moore, and U.S. Water Conservation Laboratory. Tempe, AZ. June 1999.
* Fourth Annual National Hispanic Sustainable Energy and Environmental Conference. U.S. Department of Interior and National Hispanic Environmental Council. San Jose, CA. April 1999.
* Fifth Geotechnical Congress: Geotechnical Engineering and the Environment. Geotechnical Colombian Society and EAFIT University. Medellín, Colombia. June 1994.
* Design and Maintenance of Flexible Pavements. Universidad del Cauca. Popayán, Colombia. Aug. 1987.

### Synergistic Activities

#### Broadening the Participation of Underrepresented Groups in Engineering

* Participation with Arizona State University’s College of Engineering WISE (Women in Science and Engineering) Program as instructor for the WISE Investments program, wherein Jr. High and High School Counselors and Teachers participate in laboratories and other activities designed to introduce them and their students (minorities in general) to engineering.
* Actively involved with the Hispanic Research Center in the MGE@MSA (More Graduate Education @ Mountain State Alliance) program by mentoring research for undergraduate female students from Puerto Rico in biogeotechnology aiming to promote inter-disciplinary work and attract minority students into engineering graduate programs.
* Participation with the Office for Pan-American Initiatives at ASU by promoting education, research initiatives, and cooperative activities with Latin American countries, especially with Mexico.
* Liaison for the Department of Civil Engineering at ASU for the recruitment of graduate students under the CONACYT (National Council for Science and Technology for Mexico) program.

#### Contributions to Development and Refinement of Computation Methodologies and Algorithms for Problem Solving.

* Generation of algorithms to represent unsaturated constitutive relationships and soils expansive potential as a function of material index properties.
* Enhancement of the Integrated Climatic Model as required to improve its moisture prediction capabilities under pavements; and the studies of environmental effects in pavement mix and structural design systems nationwide.

#### Development of Databases to Support Research and Education

* Generation of a robust database on unsaturated soil properties that has become the bases for several research studies at national and international levels.

## STUDENTS ADVISED

### Thesis Advisor Committee Chair or Co-Chair: A total of 8 students.

**1 Ph.D. student:**

Maie El-Keshky (current).

**5 M.Sc. students:**

Elham Hashem (current)

Brian Amos (current)

Gustavo Torres (current)

Carlos Cary (Expected graduation Fall 2008)

Mohamed Arab (2008)

**2 M.S.E. students:**

Jesse Graham (current)

Kiran Mohanraj (2007-Western Technologies) – Co-chaired with Dr. Kamil Kaloush.

### Thesis Advisor Committee Member: A total of 18 students.

**7 Ph.D. students:**

Ashley Evans (current)

Krishna Biligiri (current)

Maria Rodezno (current)

Sonal Singhal (current)

Heather Dye (2008)

Natalia Perez (2006 - Mexican Institute of Transportation)

Andres Sotil (2005 - Drake Cement LLC)\*

**5 M.Sc. students:**

Smita Dwivedi (current)

Atish Nadkarni (2007 – AMEC)

Sudheen Anantharaman (2007)

Suresh Raghavendra (2003 – PBS&J)

Andres Sotil (2002).

**6 M.S.E. students:**

Jeffery Schaper (current)

Sterling Crandell (current)

Jared Wegner (2007)

Rama Sabat (2006)

Maria Rodezno (2005)\*

Heather Czupak (2005)\*

### Student that have Worked under my Supervision: A total of 7 students.

Krishna Kilambi (current)

Natalie Lopez (current)

Berenice Barranco (B.S. in 2008 – Drake Cement LLC)

Armando Fuentes (B.S. in 2008 – Arizona Department of Transportation)

Leidy Feliz (MGE@MSA summer internship program- currently pursuing B.S. in cellular and molecular biology- Universidad Metropolitana, Puerto Rico)

Waleska Vasquez (MGE@MSA summer internship program - currently pursuing B.S. in cellular and molecular biology- Universidad Metropolitana, Puerto Rico)

Arianna Valle (B.S. in 2004)\*

\* Students advised prior to tenure-track position.

## GRADUATE AND POSTDOCTORAL ADVISORS

### Matthew Witczak, Professor, Arizona State University:

Advisor during the Faculty Research Associate appointment

### Sandra Houston, Professor, Arizona State University

Chair of the advising committee for doctoral degree

### William Houston, Emeritus Professor, Arizona State University

Member of the advising committee for doctoral degree

### Paul Johnson, Executive Dean, Ira A. Fulton School of Engineering, Arizona State University

Member of the advising committee for doctoral degree

### Dennis Duffy, Retired Professor, Arizona State University

Advisor during Master's program

## RESEARCH GRANTS

### Sponsored Research Funded

Overall amount: $745,850. Recognition for Zapata: **$276,200**.

* Co-Investigator, Collaborative Research: Surface Flux for Cracked and Intact Clays for Ponded and Sloped Conditions. National Science Foundation. Awarded amount: $224,500. P.I.: Sandra Houston. July 2008 – June 2011. 30% Recognition.
* Principal Investigator, 09-23A, Implementing a National Catalog of Subgrade Soil-Water Characteristic Curve (SWCC) Default Inputs for Use with the MEPDG, NCHRP, Awarded amount: $59,800. July 2008 to July 2009. 100% Recognition.
* Principal Investigator, Partnership with Industry to Advance Unsaturated Soil Mechanics. Hoque & Associates, Inc. Awarded amount: $11,500. May 2007 to April 2009. 100% Recognition.
* Co-Investigator, Development and Implementation of the Mechanistic Empirical (M-E) Pavement Design Guide for Arizona, Arizona Department of Transportation. Awarded amount: $350,000, PI: Matthew Witczak. Jan. 2008 to Jan 2009. 25% Recognition.
* Co-Investigator, Pavement Design Research towards the Implementation of the Mechanistic-Empirical Pavement Design Guide. Maricopa Department of Transportation. Awarded amount: $150,000. PI: Michael Mamlouk. May 2006 to May 2009. 50% Recognition.

### Prior to 2006 while employed as Faculty Research Associate

* Co-Investigator, "A Study of the Performance of Slab on Grade Residential Foundations on Expansive Soils in Arizona", Home Builders Association of Central Arizona, HBACA. Awarded amount: $300,000. Completion date: 08/2006. 0% Recognition.
* Research Associate, "Foundation Engineering for Expansive Soils in the Phoenix Area" sponsored by Construction, Inspection and Testing Co. (CIT) and Geo-Lab Inc. Completion date: 2005.
* Research Associate, "Environmental Effects in Pavement Mix and Structural Design Systems. Validation of the Integrated Climatic Model with Data from the Long Term Pavement Performance Seasonal Monitoring Program (LTPP SMP). (NCHRP 9-23) sponsored by the Federal Highway Administration. Completion date: 11/2006.
* Research Associate, "Development of the 2002 Design Guide for the Design of New and Rehabilitated Pavement Structures". (NCHRP 1-37 A) sponsored by the Federal Highway Administration. Validation of the moisture prediction of the Integrated Climatic Model (ICM) ver. 2.6. Completion date: 06/2004.
* Research Associate, "Development of Performance Related Specifications for Asphalt Pavements in the State of Arizona" sponsored by the Arizona Department of Transportation (ADOT). Completion date: 06/2004.

### Sponsored Research – Pending

* Principal Investigator, HMA Rut Depth Prediction Model for Direct Implementation into the New AASHTO ME-PDG Methodology, NCHRP, $39,918. 100% Recognition. In review process.

### Unsuccessful Research Proposals

* Co-Investigator, "Impact of Stress State Variables on Vadose Zone Soil Physical and Transport Properties". Proposal submitted to US Department of Agriculture. Award amount: $394,468. P.I.: Sandra Houston. 30% Recognition. March 2008.
* Principal Investigator, "Collaborative Research: Experimental and Modeling Studies to Develop a Fundamental Understanding of Design on Expansive Soil". Proposal submitted to NSF. Award amount: $170,935. 50% Recognition. Nov. 2007.
* Co-Investigator, " Collaborative Research: SWCC Based Modeling of Expansive Soils for Better Simulation of Heave Behavior". Proposal submitted to NSF. P.I.: Sandra Houston. Awarded amount: $253,717. 50% Recognition. Oct. 2007.
* Co-Investigator, "PIRE: Partnership for Advancement of Mechanics of Unsaturated Soils " Proposal submitted to National Science Foundation. P.I.: Sandra Houston. Awarded amount: $2'500,000. 35% Recognition. Feb. 2007.
* Co-Investigator, "Collaborative Research: SWCC Based Models for Realistic Simulation of Swell Expansive Soils". Proposal submitted to NSF. P.I.: Sandra Houston. Awarded amount: $243,307. 25% Recognition. Oct. 2006.

### Prior to 2006 while employed as Faculty Research Associate

* Co-Investigator, "Sustainable Initiatives Partnership". Proposal submitted to CEMEX- Mexico Operations Headquarters. P.I.: Charles Redman. Awarded amount: $816,040. 6% Recognition. April 2005.