

Curriculum Vita

Dr. Mbakisy A. Onyango

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Gender: Female

EDUCATION

Kansas State University, Manhattan, Kansas, USA

Ph.D. in Civil Engineering

Graduation: May 2009

Major: Transportation Engineering (Pavements)

Dissertation Title: **VERIFICATION OF MECHANISTIC PERMANENT DEFORMATION PREDICTION MODELS FOR ASPHALT MIXES USING ACCELERATED PAVEMENT TESTING**

University of Birmingham, Birmingham, United Kingdom

M.Sc. Eng. in Highway Engineering

Graduation: December 1995

Major: Highway Engineering (Roadway Design and Traffic Planning)

Thesis Title: **ASSESSING THE EFFECTS OF LACK OF FUNCTIONAL HIERARCHY AMONG ROADS IN DAR ES SALAAM, TANZANIA.**

University of Dar es Salaam, Dar es Salaam, Tanzania

B.Sc. Eng. (Hons) in Civil Engineering

Graduation: Nov. 1992

Major: Structural Engineering and Transportation

TEACHING EXPERIENCE

Assistant Professor Jan. 2010 -

Department of Civil Engineering, University of Tennessee at Chattanooga.

Cause taught - spring 2010: Special Topics in Engineering Pavement Design

Visiting Assistant Professor Aug – Dec 2009

Department of Civil Engineering, Kansas State University, Manhattan, KS 66502

Classes taught: Fall 2009

Foundation Engineering CE 528, and pavement module of Highway Engineering, Planning and Management CE 572.

Teaching Assistant Aug. 2004 - Dec. 2008

Department of Civil Engineering, Kansas State University, Manhattan, KS 66502

Classes taught:

1. Highway Engineering, Planning and Management CE 572. Taught Pavement Module of CE 572, five hrs a week for five weeks. The course includes design of rigid and flexible pavements, material testing to obtain design parameters, traffic analysis for design purpose, subgrade soil properties. For this class I prepared and taught the class, gave and graded home works and exams (Fall 2007 and Fall 2008).
2. Civil Engineering Materials Labs CE 641. Prepare and teach CE 641 labs to include tests on cement, sand, aggregates, Portland cement concrete and asphalt concrete, (Fall 2004 and 2006)
3. Hot Mix Asphalt Design and Construction Labs CE 773. Prepare and teach CE 773 labs including tests on sand, aggregates, aggregates blending and Superpave mix design, (Spring 2005, 2006, 2007).
4. Mechanics of Materials CE 533. Grading and providing help to students taking Mechanics of Materials class, (Fall 2005 and Spring 2006).

Faculty March 1993 - Dec. 2000

Department of Highway Engineering at Technical College Arusha

Classes taught:

Mechanics of materials, Road design and construction, Reinforced Concrete Design and Civil Engineering materials.

RESEARCH EXPERIENCE

Graduate Research Assistant August 2004 - May 2009

Department of Civil Engineering, Kansas State University, Manhattan, KS 66502

Research Project 1: Development of Stiffness Based Specifications for In-situ Embankment Compaction Quality Control.

Project Sponsor: Kansas Department of Transportation

Tasks:

- Perform soil tests, Atterberg limits, Proctor, Sieve analysis and Resilient Modulus on sample collected from different sites.
- Analyze results and compare with field measured values.

Research Project 2: Verification of Mechanistic-Empirical Design Models for Flexible Pavements Using Accelerated Pavement Testing

Project sponsor: Midwest Accelerated Pavement Testing Pooled Funds Program

Tasks:

- Specimen fabrication using Superpave Gyratory Compactor
- Performing Superpave simple performance tests for six different Asphalt mixes from the states of Kansas, Missouri and Iowa.
- The tests include: Dynamic resilient modulus, Static and dynamic creep, Triaxial Compressive strength at 4 confining pressures, Uniaxial strength tests and 5 strain rates, Frequency Sweep at Constant Height and Repetitive Shear at Constant Height.
- Analyze test results to obtain fundamental materials properties required for permanent deformation prediction models.
- Develop permanent deformation prediction models using Abaqus software.
- Verify selected mechanistic prediction models using accelerated pavement testing results.

Project 3: Evaluating the suitability of lignin as sand stabilization material for road construction.

Project Sponsor: University Transportation Center

Tasks

- Obtain materials, sand and lignin
- Perform laboratory tests to evaluate the suitability of lignin
- Results analysis and reporting

Consulting Engineer June 1999 to May 2000

COWI Consulting Engineers and Planners (Danish Consulting firm, Tanzania office)

- Senior Materials Engineer on a “Pilot Study on the Possible use of Locally Available Pozzolans for Road Construction in Tanzania”. Findings were published on TRR Journal.

MANAGERIAL EXPERIENCE

Head, Information Research and Development Division, January 2001 - July 2004

The National Council for Technical Education (NACTE), Dar Es Salaam Tanzania.

- Developed research policy to be adopted by non-university institutions in Tanzania
- Developed staff training program and look for training opportunities, where six employees were trained while on this position.
- Conducted a research on the Participation of Women in Science and Technology fields. Results were used to find ways to improve enrolment of women in science and technology fields in Tanzania.

College Registrar, 1997-2000

Technical College Arusha,

- Responsible for students’ registration, curriculum and examinations administration
- Secretary to the College Executive Board

Senior Materials Engineer January 1996 - December 2000

- Head of Soil, aggregates and Bitumen Laboratory, Technical College Arusha, Tanzania
- Testing construction materials for clients (consultants and contractors) in the area. Few major projects include: testing soil, aggregates and hot mix asphalt for 15 roads which were funded by World Bank in Arusha and Moshi Regions in Tanzania. Tested materials for a 128 km road supervised by Nor-consultant, a Norwegian consulting firm.

COMPUTER SKILLS

1. Microsoft Office
2. Finite Element Methods: ANSYS and ABAQUS,
3. Traffic Analysis: HCS, aaSIDRA, TSIS, TRANSYT-7F, CORSIM,
4. Pavement KENLAYER, RoadRuf.
5. Statistics: SAS

MEMBERSHIP AND AFFILIATION

1. Engineer in Training - USA, since 2006.
2. Student member, American Society of Civil Engineers (ASCE), since 2005.
3. Student member, Society of Women Engineers (SWE), since 2006.
4. Student member, Institute of Transportation Engineers (ITE) since 2006.
5. Registered Professional Engineer, Engineers Registration Board (ERB), Tanzania since 2002.
6. Member, Women Engineers, Quantity Surveyors and Architects (WEQA), Tanzania, since 2001.

AWARDS/SCHOLARSHIPS

1. National Society of Black Engineers (NSBE) Major Sponsor Scholar, 2009
2. Outstanding PhD graduate award at Kansas State University, 2008
3. Candidate of the Rochester Institute of Technology (RIT) Future Faculty Career Exploration Program, 2008
4. DAAD (German Academic Exchange Services) Scholarship to pursue M.Sc. Eng at the University of Birmingham, UK (1994-1995)
5. Government of Tanzania Scholarship for B.Sc. Eng. in Civil Engineering (1988-1992)

PUBLICATIONS

1. **Onyango M.** Romanoschi S., Verification of Mechanistic Permanent Deformation Prediction Models for Asphalt Mixes Using Accelerated Pavement Testing. *2010 Transportation Research Board meetings Compendium of Papers CD*.
2. Nayyeri S. and **Onyango M.** Simply Supported Beam Response on Elastic Foundation Carrying Repeated Rolling Concentrated Loads. *Journal of Engineering Science and Technology (JESTEC)*, 2009.
3. **Onyango. M.**, Macha, I, Busch, C. The Use of Naturally Occurring Pozzolans for Road Construction in Tanzania. *Transportation Research Records, TRR 1989*, 2007. Vol. 2 pp 169 - 177.
4. Peterson, J., Romanoschi S., **Onyango. M.** , Hossain M. Evaluation of Prima Light Falling-Weight Deflectometer as Quality Control Tool for Compaction of fine grained Soils (07-1326) - A19, *TRB Annual Meeting*, Washington DC, 2007.
5. Perić. D, Bhavic R. S. **Onyango M.** Analytical Solutions for a Three-Invariant Original Cam Clay Model. *The Electronic Journal of Geotechnical Engineering (EJGE)*, 2006. ejge paper 2006 – 0683. <http://www.ejge.com/2006/Ppr0683/Abs0683.htm>.
6. **Onyango M**, Hossain M, Bethu S, Gisi A. and Romanoschi, S. Performance of SPS-1 Road Project in Kansas. *Mid-Continent Transportation Research Symposium*, Iowa State University, Iowa 2005.

7. **Onyango M.** and Rutayuga A., A general overview on examinations irregularities. *20th Annual Conference of the Association of Examining Authorities in Africa (AEAA)*, Arusha Tanzania, 2002.
8. **Onyango. M** and Macha I. The Possible use of Naturally Occurring Pozzolan Materials for Road Construction in Tanzania. *Engineers Registration Board Newsbrief*, 2001, Vol. II, 2001 Tanzania.
9. **Onyango M.** and Kassim S. Challenges Facing Women in Engineering and Technology Studies: Building a Better Tomorrow”, *TGNP Gender Festival*, Dar es Salaam, Tanzania, 2001.
10. Eriksen K, **Onyango M** et el. Feasibility of Pozzolan Stabilized Pavements in Developing Countries. *1st Technology Transfer International Conference*, Arusha Tanzania, 2001.

Submitted papers

1. Romanoschi S., Onyango M., Gedafa D. Accelerated Pavement Testing Validation of the Response and Distress Models for New Flexible Pavements in the Mechanistic - Empirical Design Guide. **Accepted for publication by:** *The International Society of Asphalt Pavements (ISAP)* to be presented at the *11th International Conference on Asphalt Pavements in Nagoya Japan, August 2010*.

Submitted Grant Proposals

1. Perić D., Davis L. and **Onyango M.** Renewable Materials for Transportation Infrastructure. *K-state for Targeted Excellence program*. - Paper reached final stage but was not funded due to budget cuts.
2. Perić D., Rashid H., **Onyango M.**, Davis L. Engineered Bio-composites for Sustainable Civil Infrastructure. *National Science Foundation*, September, 2009.

REFEREES:

1. Dr. Joseph Owino, Head of Department and Associate Professor, Department of Civil Engineering, EMCS Dept 2502, 615 McCallie Avenue, Chattanooga, TN 37403, Phone: (423) 425-4316, email: Joseph-Owino@utc.edu.
2. Dr. Yacoub Najjar, Interim Head of Department and Professor of Geotechnical Engineering, Department of Civil Engineering, Kansas State University, Manhattan, KS 66506-5000, Phone 785-532-1586, Email: ea4146@k-state.
3. Dr. Stefan Romanoschi, Associate Professor of Asphalt Pavements and Accelerated Pavement Testing, Department of Civil Engineering, University of Texas at Arlington, 408 Nedderman Hall, The University of Texas at Arlington, Arlington TX 76019. Ph: (817) 272-0340, Fax: (817) 277-2630, e-mail: romanoschi@uta.edu.