

## **Dr. Eng. Siphila Wanjiku Mumenya**

### **Curriculum Vitae**

#### **Personal Details**

Name: Siphila Wanjiku Mumenya  
Nationality: Kenyan  
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Gender: Female  
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#### **Education Background**

1970: Certificate of Primary Education  
1974: Certificate of Secondary Education (Ordinary Level)-1<sup>st</sup> Division  
1976: Advanced ('A') Level Certificate of Education- 3 principal passes,  
1 Subsidiary  
1980: BSc. Civil Eng. (Hons), University of Nairobi  
1990: MSc. Civil Eng. Structures, City University, London  
2007: PhD. University of Cape Town

#### **Membership in Professional Associations**

1998: Member of Institution of Engineers of Kenya (IEK), M598  
Registered by Engineers Registration Board of Kenya (EBK) E040  
2000: Registered Consulting Engineer by EBK  
2017: Member of Engineers Chapter of Architectural Association of  
Kenya (AAK) M 2890

#### **Employment Record:**

April 2010: Senior Lecturer, Department of Civil and Construction  
Engineering, University of Nairobi  
March 1999: Lecturer, Department of Civil and Construction Engineering,  
University of Nairobi  
1996 -1998 Project Manager, SmithKline Beecham  
1984-1985: Assistant Structural Engineer, Ministry of Public Works and  
Housing. Responsibilities included Civil and Structural  
Engineering design, detailing and supervision of Public and  
privately owned properties.

1980-1983: Graduate Engineer training at the East African Engineering consultants, an international firm of engineers and surveyors.

### **Management Courses Attended**

1989: Project Development and Management course No. 35/89 at Kenya Institute of Administration (KIA)  
1992: (i) Personnel Accounting and Supplies Management; and (ii) Administration, and Resource Management  
1993: Course for Senior Women Managers  
1995: Course on (i) “Women in Management” and (ii) Senior Management course at KIA

### **Professional Workshops and Seminars Attended**

1993: Seminar on Timber Engineering organized by Ministry of Public Works  
1994: (i) Professional Engineers training  
(ii) Attended the First African Region Conference on Non-Destructive Testing (NDT) in Nairobi, Kenya

### **Appointments in Boards and Professional Associations**

2021: Board Member: Joint Building and Construction Council (JBCC), current chair of Research, Advocacy & Training  
2020 to date: Council Member: Association of Consulting Engineers of Kenya (ACEK), chair Research & Publication Committee  
2017 to date: Member: United Kenya Club  
September 2015 to date: CAE Representative at Committee of Student Mentorship Programme (SMP)  
November 2014 to 2017: Chairman, Department of Civil and Construction Engineering, University of Nairobi  
2015 to date: CAE Representative at the Board of Centre for Self Sponsored Programmes (CESSP)  
2011-2014: Chairman of Board of Directors, Kenya Industrial Research and Development Institute (KIRDI)  
2010: Member, University of Nairobi Disability Mainstreaming Committee  
2009 to date: Chairperson, Forum for Women Engineers and Girl Scientists in Africa (Forum WEGSA) – Kenya Chapter  
2009-2012: Chairperson, Steel Technical Committee, Kenya Bureau of Standards

### **Peer Reviewed Articles**

1. Mumenya S.W., Tait R.B. and Alexander M.G.: **“Textile concrete: Preliminary mechanical characterization of a new ductile material”**. Proceedings of Materials Research Society Conference, Witwatersrand, Johannesburg, 12th December 2003.
2. Tait R.B., Mumenya S.W., Alexander M.G., and Hourahane D.: **“Textile concrete provides special architectural and permanent shuttering opportunities”**. Paper presented at the conference: Developing concrete to serve practical needs, Mindrand, South Africa, 13th -14th October 2004. Publication ISBN: 1-920-01717-8 pp. 281-289. Available online at <http://www.intagliocomposites.com/images/018.pdf>
3. Mumenya S.W., Tait R.B. and Alexander M.G.: **“An appropriate specimen geometry for direct tensile testing of textile concrete”**. Proceedings of 3rd Young Concrete Engineers, practitioners and Technologists, pp. 1-10, Cape Town and Mindrand, 2006.
4. Mumenya S.W., Tait R.B. and Alexander M.G.: **“Mechanical behaviour of textile concrete under accelerated ageing conditions”**, (Submitted to Cement & Concrete Composites-Journal: comments received on 9<sup>th</sup> August 2009, revision sent in December 2009)
5. Mumenya S.W., Tait R.B. and Alexander M.G. **“Evaluation of toughness of weathered textile concrete”**, (Submitted to Materials & Structures Journal on 3<sup>rd</sup> December 2009)
6. Mumenya S.W., Tait R.B. and Alexander M.G. **“Effect of environmental exposure on microstructure of textile concrete”** (Proceedings, Seventh International RILEM Symposium on Fibre Reinforced Concrete; Design and Applications (BEFIB 2008), Chennai, India, 17-19 September 2008, Editor, Ravindra Gettu, RILEM Publications S.A.R.L., France, ISBN: 978-2-35158-064-6, pp. 293-302)
7. Mumenya S.W., Tait R.B. and Alexander M.G. **“Evaluation of mechanical behaviour of weathered textile concrete”**, (Proceedings, International Conference on Advanced Concrete Materials, Stellenbosch, South Africa, 17 -19 November 2009, Editors, G.P.A.G. van Zijl & W.P. Boshoff, CRC Press/Balkema, Netherlands, ISBN 978-0-415-87637-7, pp. 137-142)
8. Mumenya S.W., Tait R.B. and Alexander M.G. **“Evaluation of toughness of weathered textile concrete”**, Materials & Structures Journal (2011) Vol. 44, page 279-289, DOI 10.1617/s 11527-010-9626-4.
9. Mumenya S.W., K.K.Kaberere K.K., Mbugua R.N., J. Mutulili J. and Macharia L.N. **“Baseline Study on the Status of Women in Engineering and**

**Technology at Tertiary Institutions in Kenya**” Journal of Women in Science and Engineering.

<https://search.informit.com.au/documentSummary;dn=957748650600963;res=IELENG>> ISBN: 9780858259973.

10. Mwero J.N., Abuodha S.O., Mumenya S.W., Rading G.O. and Kavishe F.P.L., “**Sugarcane Waste Fiber Ash: Composition, Particle Size Distribution and Pozzolanic Properties**” ICASTOR Journal of Engineering, (2011) Vol. 4, No. 2 page 137-144.

11. Mwero, J.N., Abuodha, S.W., Mumenya, S.W., Rading, G.O., Kavishe, F.P.L., “**The effect of partial replacement of Portland cement with sugarcane waste fiber ash (SWFA) on mechanical properties of concrete**”, INCASTOR Journal of Engineering; Vol 6, No. 3 (2013) pp 97-114.

12. Mwero, J.N., Abuodha, S.W., Mumenya, S.W., Rading, G.O., Kavishe, F.P.L., “**Durability characteristics of concrete containing sugarcane waste fiber ash (SWFA)**”; INCASTOR Journal of Engineering; Vol 7, No. 2 (2014) pp 95-114.

13. Kariuki J., Nyomboi T., Mumenya, S.W., “**Effect of Orientation and Arrangement of Bamboo Strips on Structural Strength of Laminated Bamboo Beam**”, International Journal of Engineering Sciences & Emerging Technologies, 7 (2), pp. 555-567; <http://www.ijeset.com/media/0003/4N18-IJES0702905-v7-is2-555-567.pdf>

14. Kariuki, J., Shuaibu, R.A., Nyomboi, T., Mumenya, S.W., (2014), “**Flexural Strength Technology, of Laminated Bamboo Beams**”, International Journal of Engineering Sciences & Emerging Technologies, 7 (5), pp.1531-1538. <http://www.e-ijaet.org/media/21123-IJAET0723786-v7-iss5-1531-1538.pdf>

15. Njiru Joseph Mwaura, Siphila Wanjiku Mumenya, “**Computational approach to investigation of crack behavior under vehicular loading of a typical concrete pavement (A case study of Mbagathi Road in Nairobi)**”, ABC Research Alert Journal Online, Vol. 3 No. 7/2015 <http://abcreal.weebly.com/> pp. 1-11.

16. Gideon Nzioki Mutala, Siphila Wanjiku Mumenya, “**Modelling Natural Frequencies of vibration of three dimensional frames under two dimensional loading**”, Asian Journal of Applied Science and Engineering, Vol. 5 No. 1 (2016), ISBN 2305-915X(p): 2307-9564(e), pp. 71-92.

17. Teresa Ngendo Mbogo, Siphila Wanjiku Mumenya, “**Portland cement paste microstructure characterization using autogeneous shrinkage and heat of hydration**” Asian Journal of Applied Science and Engineering, Vol. 5 No. 2 (2016), ISBN 2305-915X(p): 23079564(e), pp. 93-104.

18. Lodficus Katimi, Siphila Wanjiku Mumenya, **“The effect of retarding chemical superplasticizers on the setting time of cement pastes in Kenya: A case study of Ready Mix Concrete in Nairobi”** ISSN 2307-4351 on-line; International Journal of Sciences: Basic and Applied Research (IJSBAR) (2016) Volume 28, No. 2 pp. 184-219.

19. Ogola P.E. Arika W.M., Nyamai D.W., Osano K.O., Rachuonyo H.O., Wambani J.R., Lagat .RC., Njagi S.M., Mumenya S.W., Koteng’ A., Ngugi M.P. and Oduor R.O. **“Determination of Background Ionizing Radiations in Selected Buildings in Nairobi County, Kenya”**. Journal of Nuclear Medicine & Radiation Therapy (2016) Volume 7, Issue 3, ISSN: 2155-9619 JNMRT; <http://dx.doi.org/10.4172/2155-9619.1000289>

20. Mumenya S.W., Nyangwachi, J. , **“Integrated programme for civil engineering and construction management”** Journal of the Institution of Engineers of Kenya on-line: <http://www.kenyaengineer.co.ke/features/item/3633>

21. Mengo.W. K., Munyasi M. D., Mutuli M. S., & Mumenya W. S. **“Flexural Properties of Surface-Modified Sisal Fiber-Reinforced Polyester Resin Composites”**. Journal of Natural Fibres, Online, (2021). <https://doi.org/10.1080/15440478.2021.1993471>

#### **Book and Book Chapter**

1. Mumenya S.W.,” Evaluation of Mechanical Behaviour of Textile Concrete: Mechanical Properties of Textile Concrete Subjected to Different Environmental Exposures”, VDM Verlag Dr. Muller VDM, ISBN: 978-3-639-28687-8.
2. Mumenya S.W., **“Development of Textiles Customized as Reinforcement to Cementitious Materials”**; Textiles, Types, Uses and Production Methods”; Ahmed El Nemr, Editor; Nova Science Publishers, New York; ISBN: 978-1-62100-239-0 (2013) pp. 223-273.

#### **Conference Proceedings**

1. Mwero, J.N., Abuodha, S.W., Mumenya, S.W., Rading, G.O., Kavishe, F.P.L., **“Heat of hydration and chemical shrinkage characteristics of sugarcane waste fiber ash blended cement”**, African Materials Science and Engineering Network (AMSEN): 2<sup>nd</sup> AMSEN Workshop, Nairobi, Kenya, 21-23rd March 2012, pp. 20-21
2. Nganga, G., Alexander, M., Beushanusen, H., Mumenya, S.W.,” **Design for strength and durability”**, Proceedings; 20th Engineers’ International Conference, Institution of Engineers of Kenya, Kisumu, Kenya; 8th -10th May 2013; pp. 33.

3. Mumenya S.W., “**Structural integrity assessment of buildings: case study of urban centres in Kenya**” ACoRCE Conference: National construction authority, Kenya 31<sup>st</sup> October - 4<sup>th</sup> November 2016, Kenyatta International Conference Centre, Nairobi, Kenya.
4. Mumenya S.W., Nyangwachi, J. , “**Integrated programme for civil engineering and construction management**”
5. Muthomi M., Mumenya, S., Mwero, J., Mwea, S. & Kyalo, G. “**Academia & Practice: A Case Study of Retrofitting Reinforced Concrete Columns with Carbon Fibre Reinforced Polymer Wrap**”. Institution of Engineers Conference, 2020.
6. Muthomi, M., Mumenya, S., Mwero, J. “**Effect of Carbon Fibre Reinforced Polymer Strengthening on the Axial Capacity and Ductility of Non-slender Square Concrete Columns**”. Architecture & Engineering Conference, University of Nairobi, 2020.

#### **Technical Reports**

1. Mumenya S.W., “**Use of organic fibres and cement for repair and retrofitting of structural elements**” Collaborative research between Kenya Building Research Centre and Department of Civil and Construction Engineering, University of Nairobi. Report submitted in June 2011.
2. Mumenya S.W., “**Optimization of production techniques for structural bricks**”: Collaborative research between Kenya Building Research Centre and Department of Civil and Construction Engineering, University of Nairobi. Report submitted in June 2011.
3. Mumenya S.W., Nganga, G.,: “**Abstracts of past research in the department of civil and construction engineering from 1971 to 2015**”: 46 years of engineering research at the Department of Civil and Construction Engineering.

#### **Post-graduate Supervision**

1. John Nyiro Mwero, “**Behavior of sugarcane waste fiber ash as a cementing material**” Doctor of Philosophy in Civil Engineering, University of Nairobi (2013).
2. James K. Kariuki, “**Performance of glue laminated Bamboo beams and trusses**”; Master of Science in Civil Engineering (Structural Engineering Option), Pan African University Institute for Basic Sciences Technology and Innovation, (2014).
3. Njiru Joseph Mwaura, “**Crack Behaviour under vehicular loading along Mbagathi Road in Nairobi County**”, Master of Science in Civil Engineering (Structural Engineering Option), University of Nairobi, (2016).

4. Gideon Nzioki Mutala, “**Modelling natural frequencies of vibration of three dimensional frames under two-dimensional loading**”, Master of Science in Civil Engineering (Structural Engineering Option), University of Nairobi, (2016).
5. Teresa Ngendo Mbogo, “**Characterization of the microstructure of ordinary Portland cement paste using autogenous shrinkage and heat of hydration**”, Master of Science in Civil Engineering (Structural Engineering Option), University of Nairobi, (2016).
6. Ogola Phillip Einstein Otieno, “**Determination of background ionizing radiation in quarries and premises around Nairobi County**”, Master of Science (Biochemistry), School of Pure and Applied Sciences, Kenyatta University, (2016)
7. Lodficus Katimi “**The effect of retarding chemical superplasticizers on the setting time of cement pastes in Kenya: A case study of Ready Mix Concrete in Nairobi**” Master of Science in Civil Engineering (Structural Engineering Option), University of Nairobi, (2017).
8. Adrian Muthomi Munyua, “**Effect of Carbon Fibre Reinforced Polymer Strengthening on the Axial Capacity and Ductility on Non-Slender Square Concrete Columns**” Master of Science in Civil Engineering (Structural Engineering Option), University of Nairobi, (2021).
9. Mengo Kiithia “**Static Mechanical Properties of Mercerised and Cornified Sisal Fibre Reinforced Cement and Polyester Resin Composites**” Master of Science in Mechanical Engineering, University of Nairobi, (2021).
10. Gladwell Wanjiku Nganga, de-registered from University of Cape Town, registered again at the University of Nairobi in 2019 for PhD titled: “**Towards a Performance-based Approach in Kenya for the design of durable concrete mixes for reinforced concrete (RC) structures**”. The other supervisors are: S.O. Abuodha, and O. Mbuya, both based at The University of Nairobi.

#### **Post-graduate Collaboration with The Concrete Materials & Structural Integrity Research Unit (CoMSIRU) at the University of Cape Town**

1. Mark Otieno, a University of Nairobi graduate of 2007, proceeded to The University of Cape Town and enrolled for MSc in Structural Engineering in 2007. Mark graduated with MSc in 2008 and thereafter enrolled for PhD, and graduated in 2014.  
Mark’s thesis was “**Corrosion propagation in cracked and un-cracked concrete**”. Mark is a lecturer at The University of Witswatersrand in Johannesburg, South Africa.
2. Rachel Njeri Muigai, a University of Nairobi graduate of 2007, proceeded to The University of Cape Town and enrolled for MSc in Structural Engineering

in 2007. She graduated with MSc in 2008 and thereafter enrolled for PhD. She graduated in 2014.

Rachel's thesis was "**Probabilistic modeling for durability design of reinforced concrete structures**". Rachel is a lecturer at University of South Africa.

3. Kungu Githachuri, a University of Nairobi graduate of 2007, proceeded to The University of Cape Town and enrolled for MSc in Structural Engineering in 2008. Kungu graduated in 2010. Kungu's thesis was on "**Influences on the transport properties of a range of South African marine concretes**". Kungu is back in the country and is practicing as an engineer.
4. Moses Waliswa Wopicho graduated from University of Nairobi with MSc in Structural Engineering in 2012. Moses proceeded to The University of Cape Town and enrolled for PhD in 2014, graduated in 2016.
5. Ezekiel Arito, a University of Nairobi graduate of 2009, proceeded to The University of Cape Town and enrolled for MSc in Structural Engineering in 2012, which he is pursuing to-date.
6. Gladwell Wanjiku Nganga, a University of Nairobi graduate of 2009, proceeded to The University of Cape Town and enrolled for MSc in Structural Engineering in 2010. Gladwell graduated in 2012. Gladwell's MSc thesis was "**Practical implementation of the durability index-based performance approach**". Gladwell enrolled for PhD in 2013, which she is pursuing to-date.
7. Gladwell Wanjiku Nganga, registered at the University of Cape Town in 2013 and on the last lap of PhD titled: "**The effects of a reduction in clinker content on concrete properties.**" The other supervisors are: M.G. Alexander, and H. Beushausen, both based at The University of Cape Town.

#### External Examination for Post-Graduate Theses (4 PhD and 12 MSc)

	<b>Name and Registration Number</b>	<b>Title of Thesis</b>	<b>Year of Examination</b>	<b>Level of Study/ Institution</b>
1	Simpson Nyambane Osano	"The effects of vegetation roots on stability of slopes"	2012	<b>Thesis</b> Doctor of Philosophy in Civil Engineering Doctor of Philosophy ( <b>PhD</b> )  University of Nairobi



2	Njiike Mamette CE 300-0016/12	“Potential of stabilized composite mud blocks as an eco construction material”	2014	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
3	Abraham Mengesha Woldemariam CE 300-0005/12	“The effect of plant extract on the structural performance of concrete”	2014	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
4	Anan Largeau Moussa CE 300-0007/17	“Effect of iron oxide partially used as cement replacement on the compressive strength and porosity of concrete exposed to chemical attacks”	2018	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
5	Athman Caroline Mwende CE 300-008/16	“Effectiveness of gum arabica as a superplasticizer in self-compacting concrete and its cost effectiveness”	2018	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
6	Namakula Hidaya: CE300-0001/16	“Effects of sugarcane bagasse ash on the physical and mechanical properties of fibre reinforced concrete”	2018	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
7	Nounagnon	“Analysis of	2018	<b>Thesis</b>

	Sppolinaire Vodounon CE 300-0003/7	engineering properties of laterite blocks reinforced with pineapple leaf fibres”		Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
8	Fouad El Ame	“Performance of reinforced concrete beams with unreinforced openings loaded in shear and bending”	2019	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
9	Brains Jarwolu Dorr: CE300-0019/2018	“Shear and flexural performance of recycled tyres steel fibres reinforced lightweight concrete beams using palm kernel shells as partial replacement of coarse aggregates”	2019	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
10	Sanewu Isaac Fundi	“Structural response of interlocking stabilized laterite soil block panels for single storey housing”	2019	<b>Thesis</b> Doctor of Philosophy (PhD)  Jomo Kenyatta University of Agriculture and Technology
11	Mogire Phillip Osiemo F80/51086/2016	“Simulation model for prediction of the service life of water conveyancing reinforced concrete structures”	2020	<b>Thesis</b> Doctor of Philosophy (PhD)  University of Nairobi
12	Mshanga Mary Manuela F56/80854/2015	“Suitability of polypropylene fibre reinforced concrete on port hardstanding areas”	2020	<b>Thesis</b>  MSc: University of Nairobi

13	Blaise Dabou CE 300-008/19	“Structural performance of laterite soil stabilised with cement and blue gum ( <i>eucalyptus globulus l.</i> ) wood ash for use as a road base construction material”	2021	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
14	Kudzai Mushunje  Student Registration No. 464396	“Characterisation of Time-Dependent Deformations in Structural Rubberised Concrete”	2021	<b>Thesis</b> Doctor of Philosophy (PhD)  University of Witwatersrand Johannesburg, Faculty of Engineering and the Built Environment Private Bag 3 Wits, 2050 Fax: 011 7177009 Tel: 011 7177007
15	Vinny Nyembo	“Physico-mechanical properties of particleboard from finger millet husk-recycled expanded polystyrene composite for use as interior partition panels of buildings”	2021	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  Pan African University Institute for Basic Sciences Technology and Innovation
16	Geoffrey Kiprotich Sang F56/82169/2015	investigating the potential use of tuff aggregates to produce lightweight concrete	2021	<b>Thesis</b> Master of Science in Civil Engineering (Structural Engineering Option)  University of Nairobi

### Involvement in Donor Funds

1. Participant in a project on Technical Cooperation Programme running for 4 years starting quarter one 2012 to quarter four 2016. The project was titled: “*Establishment of A Teaching, Training and Research Centre of Non-Destructive Testing of Materials at The Institute of Nuclear Science and Technology, University of Nairobi (Project National- KEN2010004)*”

The Donor was International Atomic Energy Agency (IAEA). The funding consisted of Human Resource and Procurement components. During the first year of the project, (2012), a total of 44,750 Euros (approximately **KES. 4.5 million**) was approved for procurement of equipment for the establishment of NDT laboratory with necessary facilities at the Institute of Nuclear Science and Technology, University of Nairobi for training, research and service provision in the field of NDT applications consistent with international standards.

The Human Resource capacity component consisted of: meetings and workshops, fellowships, scientific visits, and training courses. The financing for each of subsequent years i.e. 2013 to 2015 was a total of 14,750 Euros (approximately KES. 1.5 million). During the first year of the project (2012–2013), building of local capacity by facilitating a young member of staff in the department to acquire standard skills in non-destructive testing of materials (NDT). In the subsequent years, NDT laboratory was utilized for students research activities.

2. Collaborator in 5<sup>th</sup> Competitive Research Grant by National Council for Science and Technology FY 2012-2013:  
Research title: *“Assessment of indoor background ionizing radiation in human habitat: a potential cause of rising cancer incidences in Kenya”*.  
Value of grant was **KES. 6.1 million**.  
Produced one MSc. And one publication in a peer reviewed journal.
3. Participant in putting together a competitive Proposal to the African Development Bank through Ministry for Higher Education, Science and Technology (GOK/ADB HEST Project) to meet demand for training and research equipment.

A multi-disciplinary team was put together comprising of different disciplines within the school of engineering.

The selection and appraisal of the winning proposal was implemented and the Department of Civil and Construction engineering benefited from twelve state-of-the-art equipments valued at 270,338.94 Euros (approximately **KES. 27 million**).

4. Collaborator in National Research Fund NRF/R/2016 FY 2016-2017:  
Research title: *“Determination of levels of ionizing radiation in human habitat, water and food: a potential cause of rising cancer incidences in Kenya”*.  
Value of grant applied for **KES. 19.9 million**.  
Short listed under “successful multi-disciplinary Grantees” No. 92.
5. Participated in operationalization of Hon. Dr. Patrick Mweu Musimba Fund at the School of Engineering, whereby, each year, students compete for monetary prizes through either individual or group-based innovative projects.  
Value of fund was **KES. 1.5 million** per year has been provided with a prize fund aimed at encouraging student innovations that address challenges within the three thematic pillars of Kenya Vision 2030, namely economic, political and social.

The fund was launched in December 2016 and it is now in its second year.

6. Recipient of National Research Fund NRF/2/MMC/687 FY 2020-2022:  
Research title: “*Development of Novel Construction Materials and Energy Generation Systems that make use of Selected Agricultural Waste*”.  
Value of grant approved: **KES. 19,930,000.**

### **Main Competencies Gained From Engineering Practice**

Experience covers engineering designs for a wide range of high-rise as well as low level structures and the associated civil and geotechnical works. For a period of over 20 years, structural engineering work has been undertaken under employment in the Public sector as well as in the capacity of a Consulting Engineer. The responsibilities have ranged from design and supervision of residential buildings, commercial complexes, schools, religious institutions, water reservoirs and basements. The civil engineering works have essentially been in design of roads, car parks, and drainage as well as waste water disposal systems.

For over 15 years, extensive consultancy work has been undertaken in liaison with reputable firms of architects and quantity surveyors. The responsibilities have comprised of contract and project management of new schemes, site investigation, assessment of structural soundness of old structures, renovations and alternative design solutions for problematic sites.

A wealth of expertise has been acquired while attempting to offer solutions to problems which are unique to the building industry such as; advising clients on cost effectiveness in project management as well as identification of critical paths during project implementation. In the course of project administration and Structural Engineering consultancy work, the local authorities’ by-laws have been well understood.

By being affiliated with an academic institution, experience in research and development has been acquired, which complements the engineering challenges encountered in the Construction Industry.

### **Referees**

1. Prof. S.K. Mwea (Tel. 0722 720435)  
Chairman,  
Department of Civil and Construction Engineering  
University of Nairobi  
P.O. BOX 30197 – 00100  
**NAIROBI**
2. Prof. Patts Odira (0722 849191)

Dean,  
School of Engineering  
University of Nairobi  
P.O. BOX 30197 – 00100  
**NAIROBI**

3. Eng. Mbiu Kimani (Tel. 0722 884848)  
Chief Engineer (Structural),  
Structural Department,  
Ministry of Public Works,  
P.O.BOX 30260 -00100  
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Dr. Eng. Siphila Wanjiku Mumenya.....Date 11/11/21