

# A mining engineer's excitement in the world of rocks - charge to young engineers: Probity, Integrity and Service to Country

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Keisha Whittaker, BSc; MSc; GMICE; R.Eng.

*A chat with Engineer Keisha Whittaker, one of the New Faces of Engineering in Trinidad and Tobago.*

*The field of mining engineering has become a passion for Keisha. A national scholar, she first pursued a BSc in Geology. A keen curiosity and interest in rock mechanics soon got the better of her and this led to her pursuit of Geotechnical Engineering which in turn led to her full exposure to rock mechanics and mining and resulted in her decision on a career path as a mining engineer. With the full support of her family and the mentorship of a highly regarded professional mining engineer, Keisha was provided with the impetus to achieve professional status in her field.*

*As the first and only female Registered Mining Engineer with the Board of Engineering of Trinidad and Tobago and the Chief Operating Officer of the company in which she is employed, Keisha is a trailblazer in the professional practice of Mining Engineering in T&T.*

**Q1. Congratulations on achieving your professional engineering license! Can you tell us about your journey to become a Registered Engineer and what motivated you to pursue this milestone?**

My journey to becoming a Registered Engineer started before I even knew I would become an engineer! I was a 2006 National Scholarship winner from St. Joseph's Convent San Fernando, and I pursued a BSc in Geology at University of the West Indies (UWI) Mona. During my time at UWI my awareness of the earth's structure, and my interest in rock mechanics grew. Instead of going the traditional route of Petroleum Geology or working in the Oil and Gas industry I pursued my MSc in Geotechnical Engineering at

University of Birmingham in 2011. During this course I was exposed fully to rock mechanics, slope stability, underground mining and tunneling etc. and from this point onwards my outlook changed on the direction in which my career should go; the exciting world of rocks.

My national obligatory service from my scholarship compelled me to return home as service to the country was my priority. I decided to pursue my REng upon returning home after graduating in 2012. However, I required the minimum 4 years engineering proficiency training, and I went after jobs that would give me the necessary exposure and experience. Working under the mentorship of Eng. Professor Herbert Sukhu for the past 11 years honed my skills in mine development and motivated me to become Registered since he was the first registered mining engineer in the country. He demonstrated that there is a critical need for certification of competency and proficiency in your profession and as engineers we must become registered or chartered.

My family supported my dreams and gave me the impetus to achieve at the highest level. I have recognized that a Mining Engineer License demonstrates the highest level of professional competency, and it promotes the opportunity to contribute with a duty-of-care and ethics. Mining Engineering is a highly specialized field that is not widely recognized or practiced in Trinidad and Tobago and the wider CARICOM region. Naturally filled with passion, I recognized that I needed to further my academic qualifications and now I am enrolled as a Doctoral Candidate in Process (Mining) Engineering with University of Trinidad and Tobago (UTT). Learning and achieving are never ending as I want to be the best in my field and continue contributing to country and humanity.

**Q2. How do you believe obtaining your professional engineering license will enhance your career prospects and impact your role in your field of engineering practice?**

My professional license will certainly impact my career prospects since multinational companies operating locally as well as the company I am employed with engage the services of registered Mining Engineers so that therefore gives me a competitive edge. My career prospects can also extend globally, but home is where my heart is and it is where I can make a difference. While this field of engineering has been long in existence, it is not well known and professionally practiced locally. Unfortunately quarrying is not widely viewed locally as a science and we do not associate these activities as mining.

We are stuck in the shovel and barrow approach or associate it with hard labour historically performed by prison inmates. Mining is fundamentally different and requires knowledge across many areas ranging from material science, process engineering, rock mechanics, geomechanics, geology, geotechnical engineering. Professional regulatory bodies such as the Board of Engineering of Trinidad and Tobago (BOETT), indeed recognize that mere academic qualification is not sufficient to achieve professional status. The BOETT therefore has a critical role in driving the initiative to attract qualified engineers to become registered as well as empowering local companies to engage registered engineer in their employ.

**Q3. What are the responsibilities that come with your job?**

I am the Chief Operations Officer of Geominex Resources Limited. Along with leadership responsibilities and reporting to the Executive Chairman on daily operations, training personnel and supervising staff, I also plan and design mines for new and existing quarries while following OSHA regulations. For new business ventures I conduct feasibility studies, manage physical and electronic databases for each client. As needed, I will implement and coordinate mine plans, manage budgets and consult with statutory and regulatory agencies among many other functions.

**Q4. What technical skills helped you achieve this position?**

As a Geologist and Engineer, I have acquired skills across both areas of my academic qualifications. While education supports the acquisition of qualifications and knowledge, the experiential factor hones our ability to provide the required technical skills. These skills include mapping and data collection, using GIS to develop maps and plans and analysis of the areas. Other skills such as project management, mine design, reserve estimation and valuations are critical in performing my duties since mine development requires information related to these topics. In depth knowledge of rock mechanics and how the rock behaves under loading, blasting and extraction and resultant slope stability/instability are fundamental to the field and job.

**Q5. What nontechnical skills helped you achieve this position?**

Non-technical skills are crucial to the successful performance of my job. My methodical approach and being attentive to details really help me to excel since no two mineral resources sites are the same or even two locations within the same mineral resource have similar characteristics and the circumstance being examined requires innovative step wise thought. My natural curiosity relating to the genesis of rocks guides solution finding. Oftentimes, the problem presents itself for which developing solutions are required. This alone is insufficient as execution plays a significant role in its outcome.

**Q6. Can you discuss a specific project or experience from your engineering career that you believe exemplifies your readiness and competency as a professional mining engineer?**

One project that exemplifies my readiness and competency as a professional mining engineer involves my input in optimizing mining and production at a state-owned company. National infrastructure development requires about 2.0 million metric tonnes per annum of finished aggregate products for road development, resurfacing, and construction of bridges.

Optimization of a quarry is a staged process whereby key constraints related to financial and operational viability were identified and re-evaluated based upon accepted mining and quarrying technologies. Designs were developed to be legally compliant, and exercise of due care with regards to health and safety protocols. To inform on the creation of a formal and structured production and operations mining system requires mine designs, blast designs, explosives and blasting, extraction scheduling, production rates; operational life, economic stripping ratio, internal haulage routes, impacts of storm water flows, erosion control and stockpile facilities.

My Mining Engineering role involved the redesign of the facility, addressing available land space, equipment selection, appropriate working methods, on and off-site transport arrangements and mineral quality aspects. Corporate governance, probity and adherence to all statutory requirements are critically important and were also considered. My project plan was accepted for implementation and is ongoing. These plans are being implemented in alliance with strict risk assessment for OSHA compliance. My overall project management input will ensure execution oversight until the end of the project.

**Q7. What quote or principle do you try to live by in your work or personal life?**

I strongly believe that you should treat people how you want to be treated. In this way you are always aware of your actions and the consequences that can arise from those actions. Therefore, it makes me take account of things and people around me because I know what I would not appreciate or tolerate. One other guiding principle I believe in is that without probity and integrity, we are lost. These are crucial elements needed to

conduct all functions either at entry or executive levels. These two characteristics guide my decision making as I want to reflect on my life and always see that I acted honestly, legally, morally, and ethically and with due care without forsaking my convictions.

**Q8. Who or what inspired you to pursue your field of engineering?**

The state of the local quarrying industry created the drive to assist in developing a formal and structured Mining sector. Therefore, my inspiration was out of national concern. My love for rocks really kept me focused to persevere in finding a solution for circumstances that may appear to be difficult.

**Q9. Finally, what do you hope to achieve or contribute to your field of engineering in the coming years now that you have obtained your professional engineering license?**

As the first Board Registered Lady Mining Engineer I want my legacy to count towards developing an industry that is functional and operated by personnel that are trained and within a relevant well organized regulatory framework. Engineering capability will promote viable and cost-efficient opportunities. I hope my involvement in this field can demonstrate to other young women that it is possible to enter despite it being traditionally male oriented, dangerous, and dirty. I want to promote to all young people that this field is worth getting into as it is technologically advanced, exciting, and multi-dimensional. No longer is it about diggers and big trucks but satellites and drones can be employed in surveys, tomography, and other earth penetrating equipment to map the ground, GIS for maps and other computer software and explosives in controlled environments for blasting rock are all activities to be excited about. Then there are other mineral resources that can be exploited that are found globally.

We should not limit our thinking to only what is available in Trinidad and Tobago as the world is our oyster and available for us to explore and learn about. Mining of gold, diamonds, lithium, cobalt, and tar sands are part of this incredible field waiting for curious and determined people to join. Personally, I hope that upon completion of my PhD in Sustainable Development of our Mining and Mineral Resources and continued working in the profession, that key problems will be addressed and the attitudes of quarry operators, regulators and state authorities will change.