BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF WATER AND MINING ENGINEERING

FINAL YEAR PROJECT REPORT

REVIEW OF THE GRANITE EXTRACTION PRACTICES AT SEYANI INTERNATIONAL COMPANY

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ABSTRACT

The mining industry has been key to the development of civilization. This is due the fact that development and technology are highly articulated to infrastructure and because of the need for construction materials; stone aggregate, cement, dimension stones, gravel, sand.

The extraction of the rock involves stripping to expose the rock, the drilling and blasting from where the rock is reduced in size from its natural state into a size that it can be handled by the machinery and the processed into the required materials. Mining companies must therefore adopt mining operations through which they have to extract the minerals from the ground at lower costs so as to maximize the profits generated.

All operations should be done in their subsequent order. The purpose of this report the operations involved in granite extraction identifying the lags in the operations and recommending the appropriate operations at a low cost.

A geophysical survey of the proposed site of extraction was carried out using a terrameter instrument set so as to know the extent of overburden and the extent of the rock at different points of the site of extraction and a map was developed in GIS software for the co-ordinate points of instrumentation. The current mining operations on site were reviewed that's; stripping and waste management, drilling, blasting and cycle time of operations. The effect of each was explained and the idle time between the operations was also determined. Production and the production in terms of trucks crushed per day was also considered in the project.

The project aimed meeting the required production target with in the limited time, machinery and resources available at the quarry.

The production target was set at 50 trips per day and was not achieved, identifying and utilizing all the idle time without considering the crusher delays, seen to improve the production by 40% while making sure that the mean fragmentation size in a range of 20-35cm which would ease loading and hauling operations since large sized particles where observed to consume longer time of loading, hauling and crushing.

Drilling and blasting parameters where analyzed in the in the excel spreadsheet, keeping the burden in a range of 1.5 – 1.7m giving a mean fragmentation size of less than 35cm, implies that the hydraulic rock breaker can thus be used as an exactor by fitting the excavating bucket and thus be in other mining operations, that's stripping or feeding material into the crusher.

Stripping should be sufficient, making sure that all the burden soils are transported to the waste damp so as to avoid ore dilution.

Mean fragmentation size maintained to easy hauling and crushing.

During hauling, the material can be pilled near the crusher to reduce on the crusher-truck time delay.

Material haulage should be continuous, piled near the crusher so as to shorten the travel distance and cycle time.

For holes affected with water, the ANFO should be packed in bags, so as to avoid the water dissolving the ANFO.

DISCLAIMER

I **Katetegirwe Matthias**, hereby declare to the best of my knowledge, that this project report is an outcome of my original work and that it has not been presented to any institution of learning for an academic award.

Name: KATETEGIRWE MATTHIAS BU/UG/2013/54

Signature .....

Date: .....02:06:2017.....

APPROVAL

This final research report has been submitted to the Faculty of Engineering for examination with approval of my supervisors;

Main supervisor

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Co-supervisor

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DEDICATION

This report is dedicated to my beloved parents Mr. Mpora James and Mrs. Mpora mackling in appreciation for their selfless care and unflinching support provided to me since childhood, and for the spirit of hard work, courage and determination instilled into me, which attributes I have cherished with firmness and which have indeed made me what I am today without forgetting my friends Nabaasa Harriet Kazungu, Kataza peter, Mande sam, Mukundane Emmanuel, Komuhendo Matinah, Asiimwe Dan Olweny Aldo

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

The mining industry has been key to the development of civilization, underpinning the iron and bronze ages, the industrial revolution and the infrastructure of today's information age. In 2001, the mining industry produced over 6 billion tons of raw product valued at several trillion dollars. Downstream beneficiation and minerals processing of these raw materials adds further value as raw materials and products are created to serve all aspects of industry and commerce worldwide. (Ashraf, 2015)

Quarrying is carried out in virtually every country in the world. This is due the fact that development and technology are highly articulated to infrastructure and because of the need for construction materials; stone aggregate, cement, dimension stones, gravel, sand etc...., this has led to the creation of large number of quarries all over the world thus need to cope up with a mining operation that ensures continual supply of mineral products.

For many developing countries mining accounts for a significant proportion of GDP and, often, for the bulk of foreign exchange earnings and foreign investment. For example the contribution of quarrying and aggregate production to the economy of New Zealand economy (NZIER, November 2008) was 45.4 million tons of aggregates in 2007, worth an estimated $550 million. Production has been increasing over the current decade due to growth in demand for roads and construction. Over half of output is used for roading, and 21% (a quarter by value) for construction of residential and commercial/industrial buildings.

Associated with this output is:

- employment of 1,890 persons, with average earnings in 2005/06 of over

$49,000 per annum, 25% above the national average

- value added of $240 million (the equivalent of the industry's Gross Domestic Product (GDP)

The adverse environmental impact of mining activities on the environment is well documented (Kitula, 2006). Particular attention has been directed towards the impacts of large scale and small-scale mining activities on environmental contamination. While the land degradation caused by the mining is pronounced, chemical contamination from the extraction process imposes a double

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