



**BUSITEMA
UNIVERSITY**
Pursuing Excellence



FACULTY OF ENGINEERING

**DEPARTMENT OF MINING AND WATER RESOURCES
ENGINEERING**

FINAL YEAR PROJECT REPORT

**INVESTIGATING THE CAUSES OF ROCK
OVERBREAK DURING BLASTING OPERATIONS**

CASE STUDY: ROKO CONSTRUCTION STONE QUARRY LIMITED.

BY:

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EXECETIVE SUMMARY

Backbreak or overbreak: This is when the rock mass behind the row of blastholes farthest from the face is broken or cracked.

Roko construction stone Quarry is located in Nakagere Village, bukerere sub county, mukono district (Uganda)

ROKO construction quarry limited is a surface mine applying bench drilling and blasting and its operations being affected by one of the most issues associated with the blasting, backbreak/overbreak.

The quarry consists of five stable benches those of 10m, 15m,7m, 9m and 8m. These benches have high Q value ranging from (49.675-49.125) the Q system rock mass rating for the upper benches and for the lower benches are slightly weathered and high UCS ranging from (112-200Mpa) and (50-80Mpa) range for upper benches

The holes have a diameter of 50mm, subdrill of 0.8m and blasthole depth varying with the bench height, the holes are drilled vertically at a spacing of 2.1m, 1.6m burden

Generally, the quarry has a strong rock favouring stability despite for the first row of each bench

Although the design powder factor is 0.37 according to the research it increases to 0.46 which is within the range of hard rock blast but corresponding to small spacing and burden

These research addresses the cause of backbreak/overbreak after the investigation on the geological properties, drilling and blasting parameters, assessing of the rock strength and statistically analyzing the data using multiple linear regression method in SPSS

DECLARATION

I AUMA IRENE WASENA, 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

Date:/...../.....

Signature:

APPROVAL

This final project report has been submitted to the Faculty of Engineering of Busitema University for examination with approval of my supervisors.

Main Supervisor

MR. NUWABAREBA EDSON

Date: / /

Signature:

Co supervisors

MR WANJI MARIO

Date: / /

Signature:

DEDICATION

This report is dedicated to my beloved PARENTS in appreciation for their selfless care and parental support provided to me since childhood, and for the mentorship of hard work and determination delivered to me, which attributes I have cherished with firmness and which have transformed me to this level.

ACKNOWLEDGEMENT

Most importantly, I thank God for the gift of life He has offered to me to accomplish this project proposal and gather all the necessary information to compile this report.

My sincere appreciation goes to my supervisors **MR. WANJI MARIO** and **MR. NUWABAREBA EDSON** and all other lecturers for the guidance and time they sacrificed.

I am greatly indebted to my parents Mr. and Mrs. Wasena and the other family members. They have been there for me amidst all challenges. In scarcity of resources, they have sacrificed their time, spared their advice and the very last of their property for me. Surely, there is nothing I can do to pay them other than praying for God's providence and blessings upon them.

I also owe gratitude to my fellow students due to their unique trait of team work and cooperation and the necessary guidance they equipped me with during the compilation of this project report.

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LIST OF ACRONYMS

UCS Uniaxial Compressive Strength

RQD Rock Quality Designation

GPS Global Positioning System

SRF Stress Reduction Factor

PF powder factor

OB overbreak

WH mass of explosive in a hole

WR mass of explosive per delay/ per row