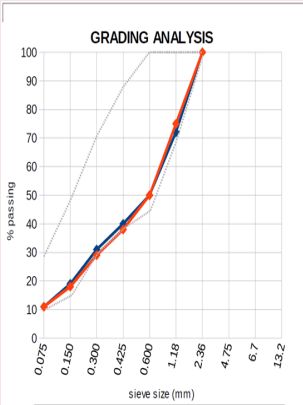
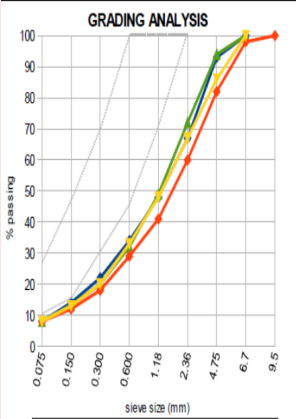




Manufactured Sand used for Plastering



Materials Physical Property

Overall Texture	Finish	Comment	Bonding
Manufactured Sand with particles >6.7mm	Rough surface	Suitable for exterior wall	Strong Bonds with all brick types
Manufactured Sand with particles >2.36mm	Smooth surface	Suitable for interior walls	Strong Bonds with all brick types

Comparison of the sieved and un-sieved manufactured sand

Feature	Name	Plastering with Manufactured Sand
	Blistering	No blisters Observed within 24hrs even after 4 seasons
	Cracking	No cracks Observed within 24hrs even after 4 seasons
	Efflorescence	No efflorescence Observed within 24hrs even after 4 seasons
	Grinning	No grinning Observed within 24hrs even after 4 seasons
	Peeling	No peeling Observed within 24hrs even after 4 seasons
	Crazing	No crazing Observed within 24hrs even after 4 seasons

Common Defects in Plaster Work



Manufactured Sand Experimental wall

Botswana Geoscience Institute

BGI

USE OF MANUFACTURED SAND



Experimental wall at Geological Survey in Lobatse, the wall is built from different brick types and plastered using sieved and un-sieved manufactured sand.

CHIEF EXECUTIVE OFFICER
BOTSWANA GEOSCIENCE INSTITUTE
Khama 1st Avenue, Plot 1734
Private Bag 14 Lobatse
Tel: +267 533 0428 Fax: +267 533 4295



INTRODUCTION

The studies made in rivers around Greater Gaborone have indicated that there is virtually no river sand. This is due to the construction boom in rural and urban areas. Also the later is due to high extraction rate and low production in the river streams.

The consequences of this is being; loss of aquifers, land degradation and the natural beauty of land. This is a natural crisis which we must all stand up for to protect our environment. In order to arrest the situation, The Government of Botswana through the Ministry of Minerals Energy and Water Resources has embarked on a project to promoted the alternative of Natural River Sand.

Manufactured Sand is a purpose-made crushed fine aggregate produced from a suitable source material which is a substitute to natural river sand. Through the adoption of Manufactured Sand our Eco system will have enough time to recover and the beauty of our land be reinstated.



Degraded River Stream

AIMS OF THE PROJECT

- ◇ To identify rocks that can be used for Manufactured Sand within the Greater Gaborone
- ◇ To classify rocks based on their suitability for Sand Manufacturing
- ◇ To identify possible sites for Manufactured Sand quarries
- ◇ To collaborate with Stakeholders (DEA, BOBS, Quarries, BITRIS, Private sector) to promote Manufactured Sand as an alternative to River Sand.
- ◇ To play a meaningful role in protecting our Environment

IMPACTS OF THE PROJECT

Sustainable Environment
Local Economic Empowerment
Economic Diversification
Job Creation

BENEFITS OF THE PROJECT


Recovery of our Rivers
Aquifer recharge



Construction of a brick wall using Manufactured sand as a mortar

COMPARISONS OF MANUFACTURED SAND WITH NATURAL RIVER IN BUILDING CONSTRUCTION

All Purpose Cement	Manufactured Sand (without pit sand)	Brick	Mortar	Plaster
50Kg (1 bag)		5	3	3

All Purpose Cement	Natural River Sand (with Pit Sand)	Brick	Mortar	Plaster
50Kg (1 bag)	Sand 	5	3	3
	Pit Sand	0	1	1