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# Sustainable roads precast Concrete blocks units by using construction recycled aggregate

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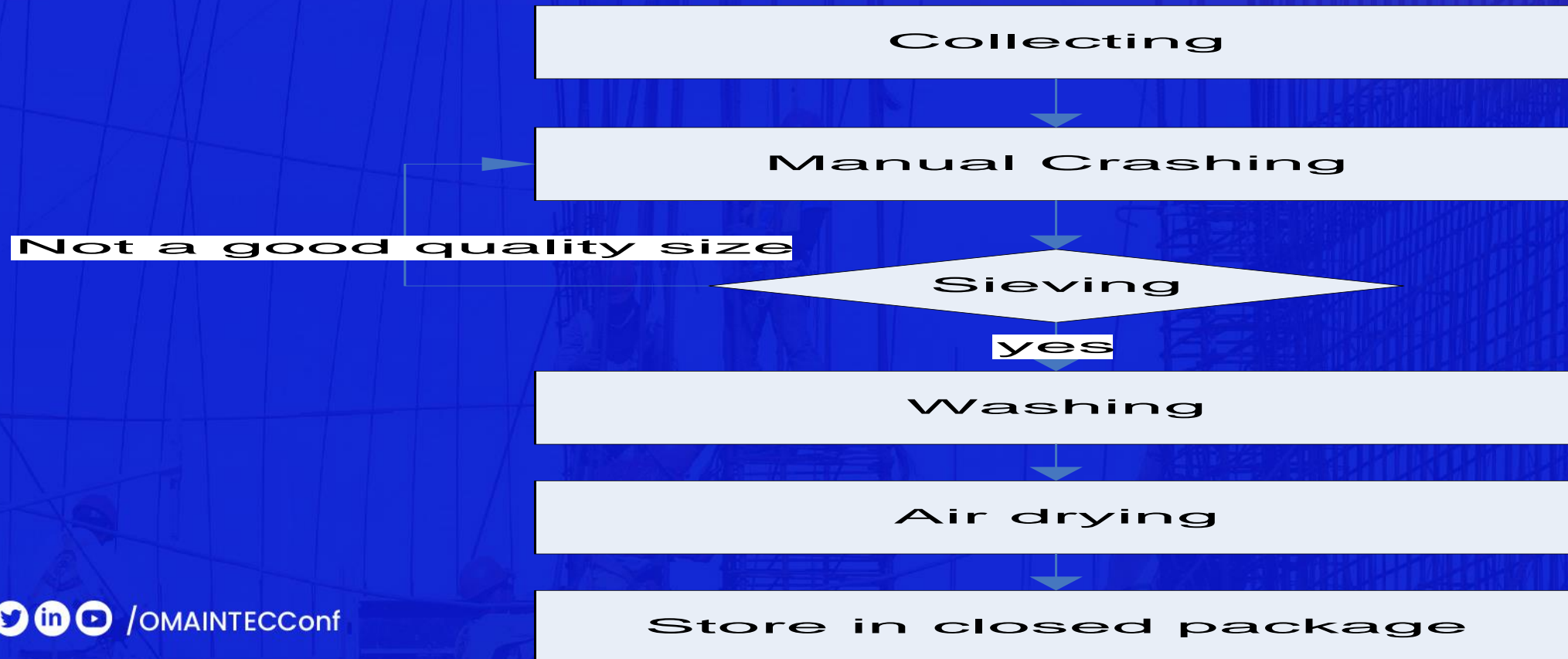
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# Introduction

Sustainability can define as meeting the needs of the present without effect in the ability of the future generations to meet their own needs; this definition was created by the World Commission on Environment and Development of the United Nations

Sustainable constructions are those constructions which are concern with the minimizing of environmental impact, while optimizing it economically capability. The size of construction industry all over the world is growing at a faster rate, the huge construction growth boosts demand construction materials. Due to continue mining the availability of aggregates; the main constituent of concrete, has emerged problems in recent times, therefore, there is need to find a replacement to some extent.

## Construction wastes preparation processes





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## Construction wastes collection



LOCATION 1



LOCATION 2

## Construction wastes after the preparation processes



Sieving



Washing



Packing



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### Physical properties of construction waste

Test	Bulk density kg/m <sup>3</sup>	Water Absorption %	fineness content %	Abrasion index %	Impact value %
Results	1.2	5.5	0.8	26	31

Physical properties of construction waste

## Preparation of the Mixes

Mix	OPC (g)	NS (g)	NA (g)	DW (g)	Water (g)
M1	3500	7500	11500	--	1800
M2	3500	7500	--	11500	2100

Mix proportions.



Tested cubes



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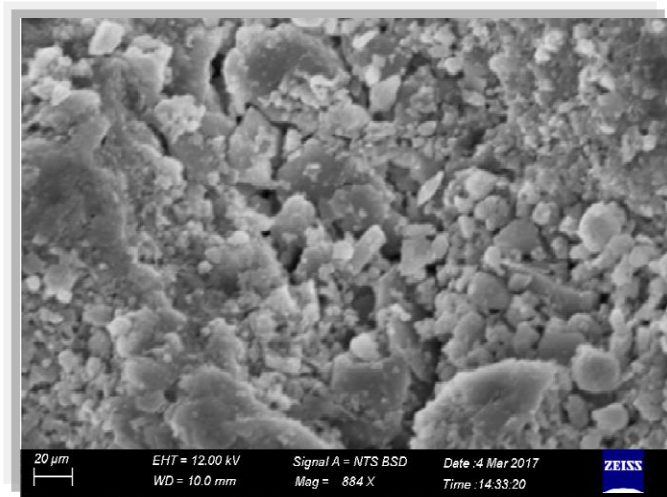
## Compressive strength results at the different ages of hydration

Mixture code	Compressive strength (kg/cm <sup>2</sup> )		
	7 days	28 days	90 days
M1	185	294	289
M2	170	267	265

Compressive strength results at the different ages of hydration



## Physical properties of construction waste

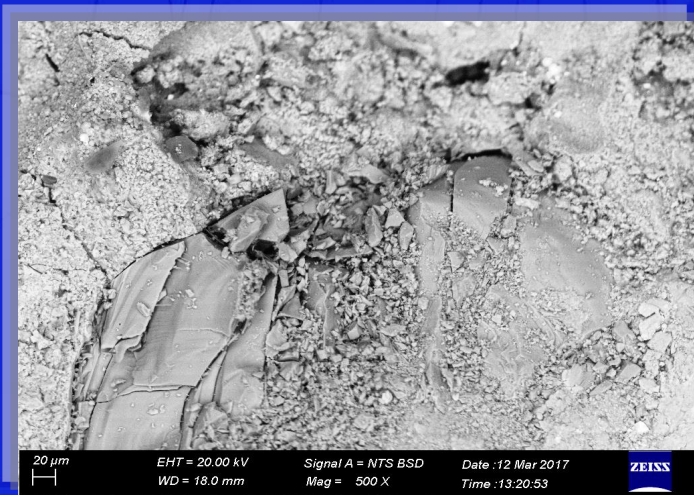


SEM of mix M1 at 7days of hydration

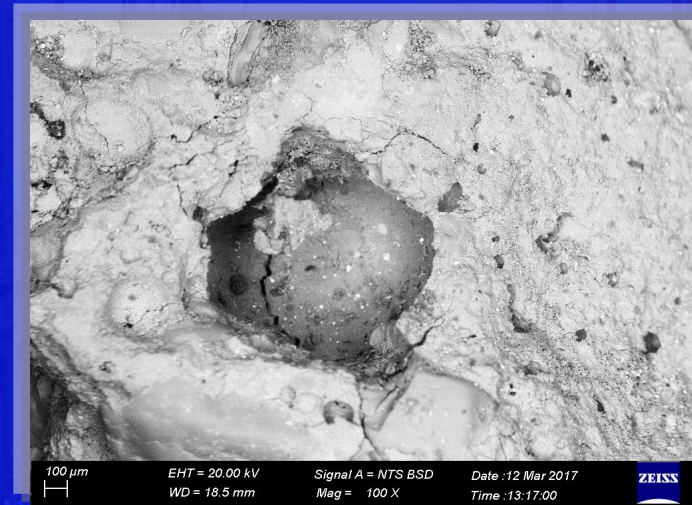


Mix M2 at 7 days of hydration

## Physical properties of construction waste



Mix M2 at 28 days of hydration.



Mix M2 at 90 days of hydration



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### CONCLUSIONS

- The hardened concrete trials investigated possess equal compressive strength values on those of control hardened concrete trials exhibited relatively
- The above wastes caused a great amount of environmental pollution so by reusing and recycling of these waste materials as raw materials in the manufacturing of industrial brick and other composite materials have a great contribution to the economy and to the environment by minimizing polluting effects coming from different plants.
- Based on the results of this study, the following conclusions can be drawn; In general, the addition of wastes played significant changes in the relevant functional characteristics like decreasing the compressive strength results so the mechanical properties of bricks were affected remarkably.



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