

COMPARISON OF PAVER BLOCK MADE FROM VARIOUS WASTAGE TO THE CONVENTIONAL PAVER BLOCK

Samadhan Pawar¹, Sachin sangde², Akshay shinde³, Shreyash patil⁴, Abhi patil⁵,

Shubham Arthmwar⁶

^{1,2,3,4,5,6} Under graduate student, Dept. Civil Engineering, d y patil institute of engg, Akurdi Pune,411033, Maharashtra, India

Abstract - This project studies the use of rubber waste and recycled paver block material in production of concrete paver block. aims to study possibility of using rubber waste, recycled paver block material in making of paver block. in this project investigation to analyse the compressive strength of paver block To compare the strength of paver block with various wastages to the conventional concrete paver block. Aggregate which passes through 20 mm is sieve and retain on 4.75 mm is sieve is used for making of paver block. This paver block is for footpath or parking areas. and those paver block are demolish are use as a recycled paver block material.



Fig -1: Tyre waste

Key Words: rubber waste, demolish paver block, compressive strength, comparison.

1. INTRODUCTION

Concrete paver block is attractive and effective with cost and requires little maintenance cost if correctly manufactured and laid on ground. Generally 200kg/m³ of cement is required for production of paver block. If we use different wastes such as rubber waste, recycled paver block material in making of paver then cost is minimize and wastages are utilize. in recent past paver block is widely used for parking lots, footpath areas. paver block have lot of demand. sometimes paver block are used for making of road pavement in low traffic area. In India huge amount of use of concrete which is made from natural material like river sand, coarse aggregate from demolition of stone and artificial material like cement.

1.1 Material Specification

A) Cement: The use cement ordinary Portland cement 53 Grade OPC (IS 12269-2013).

B) Aggregates: Materials obtained aggregate passing from 12mm and retained on 4.75 were used as coarse aggregate.

C) Crush sand: When crushed through machine, huge amount of powder form was obtained which included all mix ingredients from concrete waste material passing from 2mm IS sieve was taken as crush sand.

D) RUBBER WASTE: Rubber obtain from demolishing the tyre after successful use of tyre.

1.2 Components of Proportioning

- Grade of concrete :M30 , M35
- Type of cement :OPC 53 grade
- Minimum cement content.
: 200 kg/m³ (Moderate).
- Maximum water cement ratio: 0.6 % - IS 456-2000.
- Type of aggregate: Recycled crushed paver block aggregate.
- Maximum cement (OPC) Content : 420 kg/m³

1.2.1 Casting of Paver Blocks

For this project we brought the materials from the store and we casted the paver blocks by compression mould machine on the site itself with the help of their equipment's. All materials are properly mixed and pored in moulds. Moulds are compacted by table vibrator.



Fig -2: manufacturing of bloks.

2. TEST RESULTS

2.1 Compressive strength of paver block

Table -1: Compressive strength (14 days)

Sr no	%of rubber	Sample no.	Breaking load (KN)	Compressive strength	Average strength(N/mm ²)
1	0.1	1	345.15	12.87	13.06
		2	355.55	13.26	
2	0.2	1	480.50	17.92	17.82
		2	475.15	17.72	

Table -2: Compressive strength (28 days)

Sr No.	%of rubber	Sample no.	Breaking load (KN)	Compressive strength	Average strength(N/mm ²)
1	0.1	1	650.55	24.27	24.54
		2	665.42	24.82	
2	0.2	1	675.15	25.19	25.32
		2	682.26	25.45	

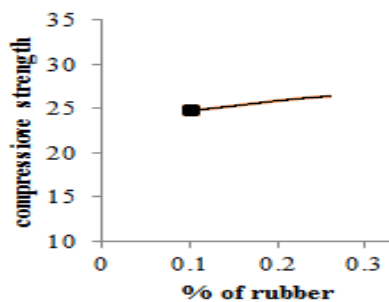


Fig -3: Average compressive strength(28days)

2.2 flexural strength test.

Table -3: flexural strength (28 days)

Sr no	%of rubber	Sample no.	Breaking load (KN)	flexural strength	Average strength(N/mm ²)
1	0.1	1	345.15	12.87	13.06
		2	355.55	13.26	
2	0.2	1	480.50	17.92	17.82
		2	475.15	17.72	

2.3 COST COMPARISION

Cost of one paver block (conventional) = 19 (in rupees).

Cost of one paver block (with wastages) = 16 (in rupees).

2.3.1 STRENGTH COMPARIION

Strength of conventional paver block = 27N/mm²9 (avg.)

Strength of paver block (with wastages) = 25.32N/mm²

3. CONCLUSIONS

In Compression strength test of paving block of 0.2% rubber waste give optimum result.

Demolished paver block aggregate has higher compressive strength.

The flexural strength of paving block of 0.3% rubber waste gives maximum result waste is minimize(tyre waste, broken paver blocks).

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REFERENCES

- [1] Vishal Kumar "utilization of waste material in concrete paver block" International Journal for Research in Applied Science & Engineering, Volume 4 Issue IV, April 2016 IC Value: 13.98 ISSN: 2321-9653
- [2] G. Navya "experimental investigation on properties of concrete paver block with inclusion of natural fibre" International Journal of Engineering Research and Applications www.ijera.com ISSN: 2248-9622, Vol. 4, Issue 8(Version 6), August 2014, pp.34-38
- [3] Shreeshail B.H. "effect of coconut fibres on the properties of the concrete". International Journal of Research in Engineering and Technology may 2014.eISSN: 2319-1163 | pISSN: 2321-7308

BIOGRAPHY



Samadhan Pawar
(civil engg. Student DYPIEMR
Akurdi, Pune)