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# Assessment of Strength of Paver Blocks by Partial Replacement of Coarse Aggregate with LECA

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*Abstract*— **Presently the Concrete paving blocks has found its tremendous use in the construction industry because of its minimal maintenance after being it is laid, also of its good strength properties and durability characteristics. Paver blocks are mostly used in driveways, pavement, patios, town centres and non- traffic areas also. The main advantages of paver blocks include strength, maintenance, durability, environmental sustainability and abrasion resistance. This present study was dealt with the possibility of using Light Expanded Clay Aggregate (LECA) as the partial replacement of coarse aggregate in 10, 20 and 30 percentages for M40 Grade of concrete paver block to meet out the Medium traffic requirements as per IS 15658:2006 and to find the compressive, split tensile strengths, water absorption and abrasion resistance of control and LECA added specimens. Conclusions regarding the use of LECA in paver blocks based on the test results were drawn.**

*Keywords*— **Paver blocks, Unipavers, coarse aggregate, LECA and Strength properties**

## I. INTRODUCTION

Basically, the rigid pavements are done by paver blocks. They are presently used in many situations due to its abrasion resistance, resistance to acids, durability and strength. Paver blocks may get differed by their shapes, quality and grade of concrete which is used as per traffic requirements such as M30, M35, M40, M50, and M55. In the present study, an attempt was made to use LECA as partial replacement of coarse aggregate and the paver block was designed for M40 Grade to meet the Medium traffic requirements which includes ramps of shopping complexes, car parking, housing colonies, office complexes, rotaries on low volume traffic, farm houses, small market roads and boulevard. LECA being a Light Weight aggregate, because of its low density, it was selected to replace the normal coarse aggregate to assess the strength properties, abrasion resistance and water absorption.

## II. MATERIALS USED

### A. *Cement*

OPC 53 grade of cement conforming to IS 12269 – 2013 with specific gravity of 3.15 was used.

### B. *Fine Aggregate*

Fine aggregate of River sand with specific gravity of 2.60 conforming to Grading Zone II as per IS 383 – 2016 was used.

### C. *Coarse Aggregate*

Natural coarse aggregates from locally available quarries were used as per the specifications of IS 383 – 2016. Coarse aggregate with a maximum nominal size of 12 mm and specific gravity of 2.70 was used.

### D. *Light Expanded Clay Aggregate*

LECA with a specific gravity of 1.00 and maximum size of 12 mm was used.

### E. *Water*

Water used for the preparation of paver block was as per the requirements given in IS 456: 2000.

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