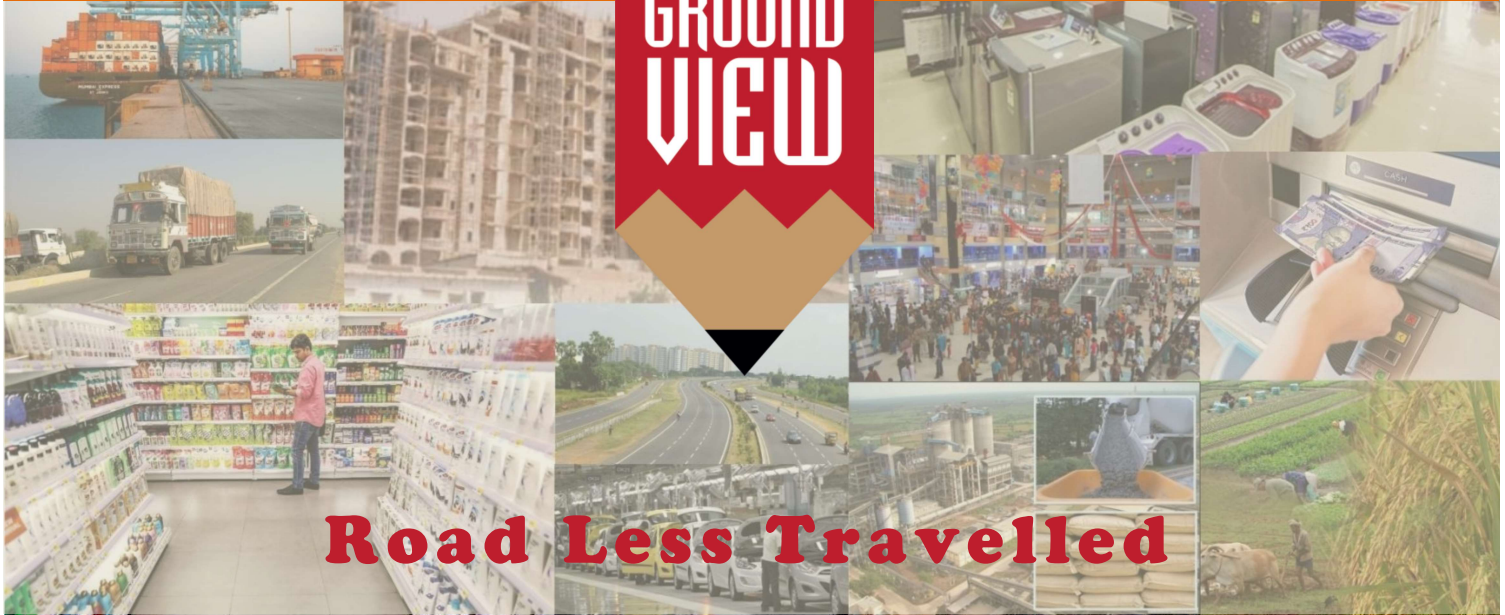


GROUND VIEW



Road Less Travelled

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Bigbloc Construction: The environment friendly, efficient world of AAC blocks

by Vikram Suryavanshi; (Detailed story on pg. 2)



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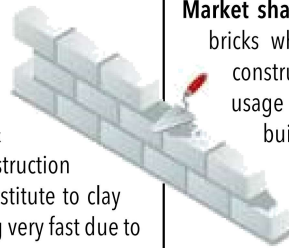
By Roshan Sony (Detailed story on pg. 3-9)



Bigbloc Construction: The environment friendly, efficient world of AAC blocks

by Vikram Suryavanshi

We visited the manufacturing facility of Bigbloc Construction, which makes building blocks – i.e., aerated autoclave concrete (AAC) blocks. The company sells these under the brand “NXTBLOC” and has reputed clients such as Lodha, HDIL, Regency Nirman, Mahindra, Larsen & Toubro, Shapoorji Pallonji, Raheja and many other big construction companies of Maharashtra. AAC blocks are used as a substitute to clay bricks in buildings and other construction, and are growing very fast due to their significant advantages over clay bricks.



Market share: Currently, around 85% of construction is done with clay bricks while AAC blocks have only c.8% market share in building construction. These blocks are widely accepted globally and their usage is likely to grow in India as well, as they are a high-quality building material that offers a combination of strength, low weight, thermal insulation, sound absorption, and fire resistance. AAC is a natural and non-toxic construction material, saves energy, and is environment friendly. AAC blocks use fly ash, which is generated in power plants and is polluting; due to this, manufacturing of AAC blocks gains carbon credits.



The manufacturing process for AAC blocks starts with mixing of fly ash and water to make a slurry with a density of 1.4-1.5 kg per litre. Fly ash is available free of cost from power plants and the company only pays for transportation to bring it to the factory. Fly-ash slurry is transported to batching sections, where the main mixing takes place – with other raw materials such as cement, lime, gypsum, aluminium powder, etc. Bricks are made into different grades (1 and 2), depending on client requirement, by changing

the mixing quantity of cement and lime, etc. The batching material is poured into moulds and stored for a few hours to form a cake, and then cut into required brick sizes. Bricks then pass through autoclaves with 12-hour cycle time. The high-pressure steam-curing in autoclaves achieves a physically and chemically stable product with an average density of one fifth of normal concrete and one fourth of clay bricks. The bricks get their required strength in the autoclave operation and are ready to use. Distribution is normally viable up to 400km and transportation cost is c.18% of sales.

Costs: Earlier (pre covid-19), clay bricks were 15% cheaper; post covid, they are 10-15% more expensive than AAC blocks. Usage of AAC blocks also leads to savings in terms of material costs, time, and labour costs for developers. Being light-weight, these significantly reduce the weight of a building, resulting in reduction of steel used (by c.27%), and cement (by c.20%) leading to structural cost savings. ACC blocks also save on the mortar used during wall construction by one third, due to their larger size. Automatic manufacturing process gives dimensional accuracy and smooth surfaces, eliminating the need of three-coat plaster walls.

Environment friendly and efficient

AAC blocks are a green building material with very high energy and resource efficiency, as they use the least amount of energy and material per m³ of product. Unlike the clay-brick manufacturing process, which uses precious agricultural soil, AAC blocks use fly ash (c.65% of its weight) which provides the most constructive solution to the nation's fly-ash utilization problem. One AAC block is equivalent in area to c.9 clay bricks, yet it is less than 1/4 the weight, leading to 2.5 times faster laying work than bricks.

One sq. ft. of carpet area with clay bricks consumes c.8 kgs of coal and emits 17.6 kgs of CO₂. Conversely, one sq. ft. of carpet area with AAC blocks consumes 0.9677 kgs of coal and emit 2.13 kgs of CO₂. Also, ACC blocks do not consume top soil and use waste material from thermal power plants.