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# Comparative Study of AAC Blocks and Clay Brick and Costing

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Abstract—Brick is the most commonly used building material in construction. AAC blocks are new construction material which is very light in weight. Compare to same size of (200mm x 100mm x 100mm, its 3 times lighter than traditional brick (clay brick); it means it covers more area in same weight as clay brick gives in one bricks. In this paper; attempt has been made to replace the clay brick with light weight AAC blocks. The usage of AAC block reduces the cost of construction up-to 25%. The use of AAC block also reduces the requirement of materials such as cement and sand up-to 55%

*Index Terms*— autoclaved aerated concrete (AAC), light weight, clay bricks, cost reduction, difference.

### I. INTRODUCTION

Bricks are one of the most important building materials in the India. In recent years, with expanding urbanization and increasing demand for construction materials, brick kilns have grown to meet the demand. It has directly or indirectly caused a series of environmental and health problems. At a global level, environmental pollution from brick-making operations contributes to the phenomena of global warming and climate change. Also, extreme weather may cause degradation of the brick surface due to frost damage. Global warming and Environmental pollution is now a global concern. Various types of blocks can be used as an alternative to the red bricks, to reduce Environmental pollution and Global warming. AAC blocks may be one of the solutions for brick replacement. Similar to foam concrete, Autoclaved Aerated Concrete (AAC) is one of the certified green building materials, which can be used for commercial, industrial and residential construction. It is porous, non-toxic, Perusable, renewable and recyclable.

AAC was developed in 1924 by a Swedish architect, who was looking for an alternate building material with properties similar to that of wood having good thermal insulation, solid structure and reaction. It is one kind of new type green warm preservation wall material formed easy to work with, but without the disadvantage of combustibility, decay and termite damage. As AAC Block uses fly ash, sand as main raw material, cement, lime as accessory materials, aluminum powder as forming agent, it refers to foaming through

Chemical through raw materials grinding, batching and mixing, pouring and foaming, quiet stop and cutting, autoclave curing processes. It has lightweight, high strength, good durability, heat preservation, sound insulation, fire proofing, impervious, good anchoring properties.

Significant research studies have been conducted on the development of new construction materials using different kinds of material. However, the application of these construction materials in real construction is limited. Therefore more research is needed to study the actual behavior or performance of new construction materials under field conditions to encourage their practical applications. Many research studies had been conducted utilizing various new construction materials. Most of these research works focused on the physical and mechanical properties of construction products. Some of those studies attempted to investigate the durability performance of several construction materials including AAC block like material. However, more research studies are needed to confirm the beneficial effects of new construction material. In this context, research work has been started to investigate Cost effectiveness by using AAC Blocks for building construction. This paper highlights different aspects of using AAC block masonry construction. Findings of comparative statistical analysis of cost effectiveness of using AAC block instead of traditional bricks are presented in this paper.

#### II. OBJECTIVES

- The objective of study is practical comparison between traditional clay bricks, and AAC blocks under seismic loading.
- To study the economical, constructional and structural difference between the structures using above two constructional materials.
- Through this study, we will accomplish the relationship between the two materials. Also due to two different materials there would be changes in loading, structure, construction cost, construction techniques; which would be observed through this project.

# III. MATERIALS AND METHODS

The materials used for the study are burnt clay bricks and

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autoclaved aerated concrete blocks. The burnt clay bricks of size 200 x 100 x 100 mm are collected from locally available processing units of burnt clay bricks. AAC blocks are collected from the distributors of Aerocon blocks in Cochin. Aerocon is India's leading manufacturer of AAC blocks. These Aerocon has a long time association with Indian Green Building Council (IGBC) and consistently work together for the cause of sustainable construction. These blocks offer effective and practical solutions for the current building regulations and are manufactured using the latest technologies at India's most advanced AAC facilities located in Chennai and Surat . These blocks are manufactured by using fly ash, cement, lime and an aeration agent like aluminum powder. An AAC block of face size 600 x 200 mm is collected from GEETEE Traders, Aerocon supplier, Cochin. The thickness of the collected specimen is 100 mm. The density of blocks ranges from 600 to 800 kg/m3. The collected blocks are cut and conditioned before testing. The methodology adopted for the study is as follows: Literature survey of previous studies is conducted to derive the objectives and scope of work. Collection of AAC blocks are done on the basis of objectives. Cutting and conditioning of blocks into required sizes are done.

Comparative study of AAC blocks and burnt clay bricks are done.

Experimental studies:

Size of different brick taken in analysis:

Clay brick = 200mm x 100mm x 100mm

AAC block = 300mm x 200mm x 100mm

### IV. COMPARATIVE ANALYSIS

The comparative analysis is shown in Table-1.

#### V. COST ANALYSIS

The cost analysis is shown in Table-2

# VI. CONCLUSION

However it is difficult to replace 7millenium old materials with new one. Also availability is still a challenge in India. AAC blocks are easily available in southern and western regions of country. AAC blocks are gaining popularity in northern region and demand in tier –II cities. Comparative Analysis indicates that in almost all the parameters, the AAC blocks have a superior edge over burnt clay bricks. The use of AAC blocks leads to savings in overall project cost; enables to speed up the construction process reduced environmental and social impact. Therefore we can conclude that use of ACC blocks over burnt clay bricks is recommended. It is advisable to developers, contractors, and individuals to encourage this product as its use is in national interest.

 $TABLE\ II$  Cost Calculation for AAC Blocks and Clay Brick for 1  $M^3$  [1:4]

S. No.	Parameter	Clay Bricks	AAC Blocks
1.	Quantity Analysis	200mmx 100mm x 100mm	600mm x 200mm x 200mm
2.	No. of bricks / blocks	500 No.	37 No.
3.	Mortar Quantity	0.2766 M³	0.1344 M³
4.	No. of begs of cement	1.65 NO.	1 No.
5.	Quantity of Sand	$0.221  \mathrm{M}^3$	0.1075 M <sup>3</sup>
6.	Quantity of Water	31 Liters	16 Liters
7.	Rate Analysis	5252.00 Rs. per square meter (As per MP PWD SOR building work2014 clause no.6.3 page no.85)	5052.00 Rs. per square meter (As per MP PWD SOR building work 2014 clause no.6.27 page no.89)
	Plaste	er Work	
1.	Volume of mortar for plaster	$1.8M^{3}$	$1M^3$
2.	The volume of mortar by 25% for wastage and frog filling	2.25 M³	1.25 M³
3.	Quantity of cement	$0.45 \text{ M}^3$	0.25 M <sup>3</sup>
4.	No. of begs of cement	13.5 NO	7.5NO.
5.	Quantity of Sand	1.8 M³	1 M <sup>3</sup>
6.	Quantity of Water	236.25 Liters	131.25 Liters
7.	Rate Analysis	171.00 Rs .per square meter,(As per MP PWD SOR building work 2014 clause no.13.6 page no.244)	91.10.00 Rs. per square meter (As per MESSOR building work 2010 item no.14001 page no.287)



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TABLE I COMPARATIVE ANALYSIS

COMPARATIVE ANALYSIS				
S. No.	Parameter	Clay Bricks	AAC Blocks	Remarks
1.	Material	Silica (sand) + Alumina	Quartz sand + calcined	The raw materials used for AAC Blocks production,
	composition	(clay) +	gypsum +	have been found to be eco – friendly, as very little
		Lime + Iron oxide	lime (mineral) and/or cement	cement is used. The use of fly ash in this venture
		+ Magnesia	Aluminum powder + fly ash	makes us to utilize a waste material from thermal
		In other words-Top Soil	In Other Words-Cement +Fly	plants. AAC blocks can use fly ash(70% of its
			Ash	weight), thus provides the most constructive
				solution to the nation's fly-ash utilization problem
2.	Size	225 mm x 100 mm x 65 mm	600 / 625 mm x 200 / 240	Bricks need more mortar since size is smaller. But
		/ 230 mm x 75 mm x 115	mm x100-300 mm	Mortar requirement is lesser in AAC blocks due to
2	D	mm	1.5	Bigger size.
3.	Precision in Size	5 mm (+/-)	1.5 mm (+/-)	The AAC block is dimensionally more accurate as it is produced with wire cut technology in a certified
				factory.
4.	Compressive	2.5-3 N/mm <sup>2</sup>	3-4 N/mm <sup>2</sup> (IS 2185, Part-	AAC blocks has higher compressive strength i.e.it
4.	Strength	2.3-3 N/IIIII	3) 3-4 N/IIIII (15 2165, Part-	can withstand greater loads than bricks
5.	Dry Density	1800-2000 kg/ m <sup>3</sup>	600-800 kg/m <sup>3</sup>	Using AAC Blocks reduces the load on the
3.	Dry Delisity	1800-2000 kg/ III	600-800 kg/III	foundation and other structural components in a
				structure due to its lower self-weight. 55% reduction
				in weight of walls. Up to 15% savings in cost of
				structure has been observed. Because of reduction in
				self-weight, AAC block
				Construction attracts, Less earthquake load.
6.	Fire	Around 2 hours	Up to 7 hours.	AAC blocks have air voids and hence have better
	Resistance (8"		F 10 / 110000	fire resisting property compared to red clay bricks.
	wall)			The melting point of AAC blocks are over 1600
	, ,			Degree Celsius, more than twice the typical
				temperature in building fire 650 degree Celsius.
7.	Energy Saving	Low	Approx. 25% reduction in air	AAC blocks are resistant to thermal variations. It
	J		conditioner load /25 – 30%	reduces the total load of refrigeration and air
			less electricity consumption	conditioning. Though initial installation cost may
			on HVAC	remain same but AAC blocks reduces operation and
				maintenance cost drastically.
8.	Reuse of waste	None	Fly ash	AAC blocks use Bio product of power plants
	product			
9.	Efflorescence	Generally Present	Absent	AAC blocks don't have efflorescence, superior than
10	D:	M' 1 '1 ' 1 1	N7	Bricks
10.	Pigmentation	Mineral oxides in clay plus	Natural and synthesized	-
		natural and synthesized miner a oxide pigments	mineral oxide pigments	
11.	Thermal	K value = 0.81 W/mk	K value = 0.16 W/mk	AAC Blocks with very low thermal conductivity
11.	Conductivity	K value = 0.81 W/IIIK	K value = 0.10 W/IIIK	keeps interior remain cool in summer and warm in
	Conductivity			winter and best for both internal and external
				construction
12.	Embodied			AAC Blocks consume approx. 70% less energy
12.	Energy /Energy	High (900-1000 kWh/m <sup>3</sup> )	Low. (50-100 kWh/m <sup>3</sup> )	than Clay bricks. AAC block covers greater area for
	needed to	Ingli (500 1000 kwii/iii )	Low. (30 100 k w II/III )	the same mass of brick used thus saves on
	produce the			transportation costs and conserves precious fuel.
	building			a unisportation costs and conserves precious ruen
	material			
		Soil Cor	nsumption	AAC block is 100% Green building material & is a
		One clay brick consumes	No top soil consumed	walling material of a choice in LEED certified
		3.2 kgs of top soil	*	buildings. This helps in reducing carbon Footprint.
		One sq. ft. of carpet area	Uses fly ash which is a	In India itself AAC blocks has potential to avert
		with clay brick	thermal power plant waste	200mn tones of CO <sub>2</sub> emissions into environment – a
13.	Environmental	walling will consume 25.5	product & thus no	saving of \$20 billion every year.
	Impact	kgs of top soil	consumption of top soil	
		Fuel Con	nsumption	
		One sq. ft. of carpet area	One sq. ft. of carpet area with	
		with clay bricks will	AAC blocks will consume	
		consume 8 kgs of coal	0.9677 kgs of	
		coal		_
		CO <sub>2</sub> E	mission	_
		One sq. ft. of carpet area	One sq. ft. of carpet area will	
		will emit 17.6 kg of CO <sub>2</sub> .	emit 2.2 kg of CO <sub>2</sub>	



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# TABLE I COMPARATIVE ANALYSIS

S. No.   Parameter   Cley Briefs   AAC Blocks   Remarks	COMPARATIVE ANALYSIS				
Unorganized sector (child labor rampant in unorganized sector)   Labor rampant in unorganized	S. No.		Clay Bricks	AAC Blocks	
Labor rampant in unorganized section   Soveramenes   Surface   Labor and lift practices   Tax Contribution   Does not contribute to government   exchesper (need)   Production Pacifity	14.	Social Impact			
Internation of certification   Contributes to government taxes in form of Central exchequer (taxes)   Exists, VAP. Romain.			Unorganized sector (child		
Accordant   Does not contribute to government exchequer (taxes)   Production Facility   Unbeatity working conditions due to training gases. Mostly involves manual processos.			labor rampant in		and has standardized factory facility.
Tax Contribution   Does not contribute to government axes in form of Central Excise, VAT& Outario.			unorganized sector)		
Does not contribute to government at taxes in form of Central taxes in the construction of the construction and jointing mortar due to elimination of vertical joints of the construction of the construction of vertical joints of the construction of the construction of the construction of the construction of continuous providing healthire and long lasting interiors to the occupancy of the mason (with AAC blocks on the cases of less number of joints and provided to the construction of the construction of the construction of the construction of the mason (with AAC blocks can be an under of the construction of the construction of the construction in hortest.)  15. Speed of construction of the mason (with AAC blocks can be an under of times and the construction of the construction in hortest.)  16. Moisture Resistance  17. Water Absorption Calculate Accounts an				and HR practices	
axes in form of Central   Excise, VATE Ontario.			Tax Contribution		
Excise VAT& Ontario.   Production Facility   Unhealthy vorking conditions due to toxic gases. Mostly involves manual processes   Sundantized factory facility with automated processes.			Does not contribute to	Contributes to government	
Production Facility   Unibathly working conditions due to toxic grass. Mostly involves manual processes			government	taxes in form of Central	
Unhealthy working conditions due to toxic gases. Mostly involves manual processes    Speed of construction			exchequer (taxes)	Excise, VAT& Ontario.	
with automated processes.    Speed of construction   Comparatively lower			Production Facility		
Speed of construction			Unhealthy working	Standardized factory facility	
Speed of construction			conditions due to toxic	with automated processes.	
Very high due to bigger size, light weight. Can have a Tongue-Groove Profile, which can have a Tongue-Groove Profile, which is necessary to 3 times, because of less number of points and jointing morar due to elimination of vertical joints			gases. Mostly involves		
15. Speed of construction			manual processes		
Tongue-Groove Profile, which construction   Tongue-Groove Profil					
results in faster construction swing on Labor and jointing mortar due to elimination of vertical joints  AAC Blocks do not have any "micro-pores" or continuous "capillaries" through which exterior surface water can be absorbed to interiors. It means longer life to the paints and interiors free from growth of any kind of frunges, providing healthier and long lasting interiors to the occupants. AAC Blocks do not have any "micro-pores" or continuous "capillaries" through which exterior surface water can be absorbed to interiors. It means longer life to the paints and interiors free from growth of any kind of frunges, providing healthier and long lasting interiors to the occupants. AAC Blocks water barrier properties are further enhanced by adding silico on based additives.  17. Water AAC Block water barrier properties are further enhanced by adding silico on based additives.  18. Water absorption Sorrier and the paints and healthy interiors.  19. Very High. 45% by volume  Wery High. 45% by volume  The volume of AAC is 20% solid material and80% air. Due to the closed cell structure of AAC, the water absorption on AAC strongly reduces. The AAC Block has better sound insulation properties, due to your healt and the water absorption of AAC strongly reduces.  The AAC Block has better sound insulation properties, due to size viole presence. AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore it is an ideal material for wall construction in hotels, aditioning state in index and adminished.  AAC Blocks can be easily cut, drilled, nailed, and growed to Individual requirements. Available in custom sizes. Simplifies hydro-sanitary and effective in insulation such as pipes of duets, which can be installed after the main construction is complete.  21. Cost Benefit  Low High Durability  Normally varies Uniform and finished  AAC Blocks make construction easier					
and jointing morar due to elimination of vertical joints  AC Blocks do not have any "micro-pores" or continuous "capillaries" through which exterior surface water can be absorbed to interiors. It means longer life to the paints and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants.  AC Block's water barrier properties are further enhanced by addistions based additives.  17. Water Absorption Coefficient in Kg' m2 x h0.5  18. Water absorption % by weight  19. Noise 19. Noise 19. Noise 19. Noise 19. Noise 19. Low 19. Ease of Use / Workability 20. Ease of Use / Workability 21. Cost Benefit 22. Speed of manufacturing 22. Speed of manufacturing 23. Quality / Durability 24. Water Usage Uniform and finished 25. Water usage Uniform and finished 26. AC Blocks and to Long life of paint and healthy interiors.  AC Block so mot have any "micro-pores" or continuous surface water can be absorbed to interiors. It means longer life to the paints and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants.  AC Block water barrier properties are further enhanced by addistines.  AC Block leads to Long life of paint and healthy interiors.  The volume of AAC is 20% solid material and80% air. Due to the closed cell structure of AAC, the water absorption only takes place through the soli material. This solid is only of the volume, which the water absorption of AAC strongly reduces.  The AAC Block has better sound insulation properties, due to its air voids presence. AAC blocks have an excellent Sound transmission Class (STC) rating of up to 4 first of the value absorption of AAC strongly reduces.  AC Blocks can be easily cut, drilled, nailed, and grooved to fireduction in leads or cut dues, which can be installed after the main construction is complete.  AC Blocks make construction time by 20%. Different sizes of blocks help reduce the number of joints in wall massorry.  AC Blocks being produced in a factory with au	15.		Comparatively lower		increases up to 3 times, because of less number of
and jointing mortar due to elimination of vertical joints		construction			joints
International content   Inte					
Acc Blocks do not have any "micro-pores" ocnitious" capillaries" through which exterior surface water can be absorbed to interiors. It means longer life to the paints and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants. AAC Block's water barrier properties are further enhanced by adding silicon based additives.  17. Water Absorption Coefficient in Kg/m2 x h0.5  18. Water absorption Sy by weight High. 20% by volume Very High. 45% by wolume of AAC is 20% solid material and 80% air. Due to the closed cell structure of AAC, the water absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption only takes place through the soli material and 80% air. Due to the closed cell structure of AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore it is an ideal material for wall construction in hotels, and to the water absorption of the closed cell structure of AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore					
16. Moisture   Resistance   Average   Very Good   Very Good   Continuous "capillaries" through which exterior surface water abe absorbed to interiors. It means longer life to the pains and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants. AAC Block's water barrier properties are further enhanced by adding silicon based additives.    17.   Water   Absorption   Coefficient in Kg/m2 x h0.5   Absorption   Coefficient in Kg/m2 x h0.5   Absorption   Water absorption   Water absorption   Water absorption   Were than 500 by volume   Very High. 45% by				elimination of vertical joints	
16. Moisture Resistance   Average   Very Good   Surface water can be absorbed to interfors. It means tonger life to the pains and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants. AAC Block's water barrier properties are further enhanced by adding silicon based additives.  17. Water Absorption Coefficient in Kg/ m2 x h0.5   Very High. 45% by prose and capillaries)   Use of AAC Blocks leads to Long life of paint and healthy interiors.   Use of AAC Blocks leads to Long life of paint and healthy interiors.   Use of AAC Blocks leads to Long life of paint and healthy interiors.    18. Water absorption   Wery High. 45% by volume   Very High. 45% by volum					
16. Moisture Resistance   Average   Very Good   longer life to the paints and interiors free from growth of any kind of fungus, providing healthier and long lasting interiors to the occupants. AAC Block lock's water barrier properties are further enhanced by adding silicen based additives.					
Resistance    Resistance					
lasting interiors to the occupants. AAC Block's water barrier properties are further enhanced by adding silicon based additives.    17. Water	16.		Average	Very Good	
AC Block's water barrier properties are further enhanced by adding silicon based additives.  17. Water Absorption Coefficient in Kg/ m2 x h0.5    Noise   Fransmission   Sound Insulation   230mm thick wall		Resistance			
17. Water Absorption Coefficient in Kg/m2 x h0.5					lasting interiors to the occupants.
17. Water Absorption Coefficient in Kg/ m2 x h0.5  18. Water absorption % by weight  18. Water absorption % by weight  19. Noise Transmission / Sound Insulation  19. Noise Workability  20. Ease of Use / Workability  21. Cost Benefit  22. Speed of manufacturing  23. Quality / Durability  24. Water Usage during  27. Water Usage during  28. Water absorption and capillaries)  49. G (no continuous pores and capillaries)  40. G (no continuous pores and capillaries)  40. G (no continuous pores and capillaries)  40. G (no continuous pores and capillaries)  50. Cost Benefit  40. Cost Benefit  50. Cost Benefit  51. Cost Benefit  52. Speed of manufacturing  52. Quality / Durability  52. Water Usage during  52. Low, needs only surface wetting before use					AAC Block's water barrier properties are further
Absorption Coefficient in Kg/m2 x h0.5  18. Water absorption % by weight  19. Noise Transmission / Sound Insulation  20. Ease of Use / Workability  21. Cost Benefit  None  22. Speed of manufacturing  Absorption (Coefficient) Absorption wanufacturing  Absorption of All size and capillaries)  Pores and capillaries)  Provious of AAC is 20% solid material and80% air. Due to the closed cell structure of AAC, the water absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption of AAC strongly reduces.  Physical Country of AAC strongly reduced.  Physical Country of AAC strongly reduces.  Physical Country of AAC strongly reduces.  Physical Countr	17	***	22 20 / 1 1	1 5 ( )	
Coefficient in Kg/ m2 x h0.5	17.			,	
In Kg/ m2 x h0.5			capillary action)	pores and capillaries)	nealtny interiors.
18. Water absorption					
18. Water absorption   High. 20% by volume   Very High. 45% by volume   AAC Blocks hake can be easily out, drilled, nailed, miled and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or dutes, which can be installed after the main construction is complete.  21. Cost Benefit   None   Dead weight reduction leads reduction in consumption of steel and cement and lesser excavation for foundations.   AAC Blocks reduce overall cost of construction is woll masonry.   Lighter blocks make construction easier and faster.   Easy to install. Sets and hardens quickly.   AAC Blocks being produced in a factory with automated processes, so, they have uniform quality and hence are more durable.		1n Kg/ m2 x n0.5			The endower of AAC := 200/ ==1:1 ===400/
Water absorption   Water absorption   Water absorption   Water absorption   Wery High. 45% by volume   Very High. 45% by volume   Absorption only takes place through the soli material. This solid is only 20% of the volume, which the water absorption of AAC strongly reduces.    Part   AAC Block has better sound insulation properties, due to its air voids presence. AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore it is an ideal material for wall construction in hotels, auditoriums, studios, hospitals etc.    Part   AAC Block can be easily cut, drilled, milled, and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.    Part   AAC Blocks can be easily cut, drilled, milled, and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.    Part   AAC Blocks be pipe or ducts, which can be installed after the main construction is complete.    Part   AAC Blocks reduce overall cost of construction with a proposed to fit individual requirements. And be piped to the proposed to fit individual requirements. And be piped to the proposed to fit individual requirements. And be piped to the proposed to fit individual requirements. And be piped to the piped to					
18. Water absorption % by weight   High. 20% by volume   Very High. 45% by volume   Very High. 45% by volume   Absorption of AAC strongly reduces.					
Solution	10	Water absorbion	High 200/ by volume	Vary High 450/ hr	
The AAC Block has better sound insulation properties, due to its air voids presence. AAC blocks have an excellent Sound transmission / Sound Insulation	16.		High. 20% by volume		
Properties, due to its air voids presence. AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore it is an ideal material for wall construction in hotels, auditoriums, studios, hospitals etc.   Properties, due to its air voids presence. AAC blocks have an excellent Sound transmission Class (STC) rating of up to 45 db. Therefore it is an ideal material for wall construction in hotels, auditoriums, studios, hospitals etc.   AAC Blocks can be easily cut, drilled, milled, and grooved to fit individual requirements. Available and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.   21.		70 by weight		Volume	
Noise   Transmission / Sound Insulation   Sound Insulation   Transmission / Sound Insulation   Sound Insulation   230mm thick wall					
19. Noise Transmission / Sound Insulation  20. Ease of Use / Workability  21. Cost Benefit  22. Speed of manufacturing  22. Speed of manufacturing  23. Quality / Durability  24. Water Usage during  25. Water Usage during  26. Water Usage during  27. Water Usage during  28. High Can be cut into require sizes. It can be sawn, drilled, nailed, and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.  28. AAC Blocks can be easily cut, drilled, nailed, and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.  29. AAC blocks reduce overall cost of construction  AAC Beduces construction time by 20%.  AAC Reduces construction time by 20%.  Different sizes of blocks help reduce the number of joints in wall masonry.  Lighter blocks make construction easier and faster.  Easy to install. Sets and hardens quickly.  AAC Blocks being produced in a factory with automated processes, so, they have uniform quality and hence are more durable.  AAC saves water consumption.					
Transmission / Sound Insulation  20. Ease of Use / Workability  Low  Ease of Use / Workability  Low  Cost Benefit  None  21. Cost Benefit  None  Dead weight reduction in consumption of steel and cement and lesser excavation for foundations.  22. Speed of manufacturing  23. Quality / Durability  Durability  Durability  Normally varies  Dead water Usage during  Water Usage during  More than 50db for 200mm thick wall for wall construction in hotels, auditoriums, studios, hospitals etc.  AAC Blocks can be easily cut, drilled, nailed, and grooved to fit individual requirements. Available in custom sizes. Simplifies hydro-sanitary and electrical installations, such as pipes or ducts, which can be installed after the main construction is complete.  AAC Blocks readuce overall cost of construction  AAC Reduces construction time by 20%. Different sizes of blocks help reduce the number of joints in wall masonry. Lighter blocks make construction easier and faster. Easy to install. Sets and hardens quickly.  AAC Blocks being produced in a factory with automated processes, so, they have uniform quality and hence are more durable.  AAC saves water consumption.	19	Noise			
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#### TABLE I COMPARATIVE ANALYSIS

S. No.	Parameter	Clay Bricks	COMPARATIVE ANALYSIS  AAC Blocks	Remarks
5.110.	1 ar ameter	City Directs	-Load Bearing masonry up to 2 to 3 story.	Band width of applicability is higher in AAC Blocks, they are especially used in
25.	Applicability	Load bearing & Non-load bearing	-Partition walls in Load Bearing and Framed Structures. -Infill walls in Multistory Building Frames both internal and external Walls. -All Filling are as including in flat slabs and instead of brick bats in Weathering course, over roof.	
26.	Earth quake resistant	Average. Conditional Conformance to	Good. Generally, they have Conformance to requirement of	Earthquake forces on structure are proportional to the weight of the building, hence AAC blocks shows
	resistant	seismic zones IV & V	seismic zone IV & V.	excellent resistant to earthquake forces. They absorb and transmit less seismic forces in event of any earthquake. The structure has millions of tiny cells which cushions buildings from major force, preventing progressive collapse. Regions of the seismic activities like exclusively use AAC blocks. It has been proven to withstand wind loads of category 5 tropical storms
27.	Mortar consumption per M3 with 1:6	1.40 bag of cement	0.5 bag of cement	AAC blocks are 7 times bigger than the size of the conventional bricks. Bigger size means less number of joints. Less joints results in lesser quantity of mortar for building. There is overall60% reduction in use of Mortar.
28.	Savings in Plaster	-	Overall 35% reduction in the cost of plastering.	AAC blocks have uniform shape and texture which gives even surface to the walls. The AAC Block, when built has both faces as fair faces unlike brick work, which has only one face as a fair face. Hence, the thickness of Plaster for AAC block is much less compared to conventional bricks
29.	Maintenance	High	Comparatively Lesser due to its superior properties	-AAC block reduces operating cost by 30% to40%Reduces overall construction cost by 2.5% as it requires less jointing and reduces need for cement and steelHigh-insulation blocks save up to 30% in energy costsWall painting and plastering last longer as almost nil efflorescence affects AAC. This translates into lower maintenance costs.
30.	Wastage Due to Breakages	Approximate 10 to 12%	Minimal (1-2%)	If any breakage in the AAC blocks, it would be into two or three pieces which can be utilized in masonry as "brick bat".
31.	Pest & Termite Resistance	Low	High.AAC blocks are in organic, insect resistant and solid wall Construction material. Termites and ants do not eat or nest in AAC Blocks.	AAC Blocks do not allow spread of termites and growth of pests and hence provides longer life to expensive wooden interiors.
32.	Fume Resistance	Average	Good.	AAC Blocks are completely inorganic and hence do not generate any toxic fumes or poisonous gases harmful to the occupants. The air tight nature of blocks also prevents toxic fumes from spreading into other parts of building.

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