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MICRO APARTMENTS- A SOLUTION FOR URBAN LACK OF LAND

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Abstract - *The rapid increase in urban population is a result of rural urban migration. The population from the rural area migrate to urban areas in search of better living standards, better facilities, better job etc. With the growing population in cities it is a hard task to provide housing for all migrants due to scarcity of land. The three basic necessities for a life are food, shelter and dressing. And providing shelter for the migrants is commonly handled without much importance resulting in crowded living, un clean and unhygienic environment etc. the concept of micro apartments in shipping containers with required modification can become a solution*

Key Words: Urban population, scarcity of land, housing, micro apartments, shipping container

1. INTRODUCTION

The micro apartments are the best solution for the increasing demand in housing industry. Since these are tiny compact, they can be even accommodated to prime locations without much land requirements. These are best suited for providing accommodation in cities, company townships, universities etc.

The rapid increase in population always is accompanied with an increase in housing facility requirement. In these days where we experience high volume migration from rural areas to urban areas add on to the existing scarcity of land or housing. The time required for construction of a new units also leads to demand in housing. A rapid housing solution in limited space can be the best solution for this issue.

1.1 Micro apartment in containers

The delay in construction can be considerably reduced by using readymade steel structures. A shipping container is an element capable of holding materials with strength suitable to withstand shipment, handling, and storage.an tiny compact living space can be squeezed into these steel containers and ca be provided with all basic requirement for a comfortable living like plumbing, electricity and insulation. Shipping containers are available in various range from large reusable steel boxes to the ubiquitous corrugated boxes. Usually the containers are in two shape 20 feet long or 40 feet long, with a height and width around 8 ft.

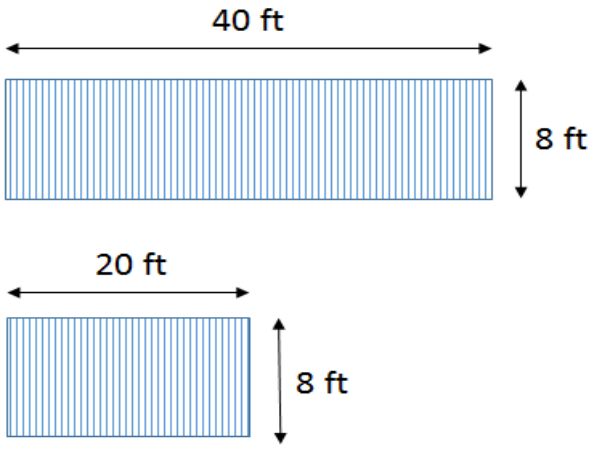

Fig -1: Common shipping containers

Table -1: Dimensions of Common Shipping Containers

	Internal Dimensions		
	Length (mm)	Width (mm)	Height (mm)
20 feet Dry container	5897	2348	2385
40 feet Dry container	12000	2348	2385

Courtesy: container-size-for-logistic-in-india.html

Table -1: Dimensions of Common Shipping Containers

A micro apartment in shipping containers is a compact, independent living space, usually designed to accommodate a living space, sleeping space, bathroom and kitchen. The apartment interior may contain collapsible sofa, a number of cabinets and a shower room with toilet facility, as well as an air-conditioning unit and required ventilations.

1.2 Reasons for Micro apartments in containers

The micro apartments help incorporating the following characters to the housing

Rapid construction- Since these micro apartments are fitted inside a shipping containers the major part is prefabricated. There by facilitating rapid construction. The steel

construction also helps rapid construction compared to concrete structures.

Low initial investment- Low initial investment compared to conventional housing solutions.

Minimum land requirement- Small patch of land only required for the micro apartments in containers. The foundation may be done in the site before bringing in the container

Changeable layouts- Since gypsum boards or any other partition boards are used for separating rooms, the layout may be changed to break monotony over the years of stay.

Relocatable- Since all the apartment is fitted into a shipping container this can be moved from one location to another as required. A new foundation should be constructed at the new location

Recycling of Containers-the containers used for micro apartments may be the single use containers which are considered unfit to freight after the first use or the out of service containers. In both cases a small step for recycling of used metal is done.

Besides the above mentioned characters, the micro apartment in containers also help in reusing out of service containers and save money with prefabricated and modular homes.

2. CONSTRUCTION

This makes a tiny compact space, the design takes a shipping container in good quality and health, treated to prevent any deterioration. All the requirements for a single person or a couple may be squeezed into the container including living space, bed room, open kitchen, wardrobes and bathrooms Space-saving, foldable light weight furniture are provided to make the apartment look more lively and spacious

The containers may be stacked in staggered pattern to the height of a low-rise building making a small community. Since the containers are used not much time is needed for installation and construction. It can be constructed like a precast building. The stacked apartments may be allocated to a group of people having common grounds like employees of same company or students of same university.

1.1 Micro apartment – interior, insulation

The front wall may be provided as a fully glazed wall with a sliding door. The interiors may be finished with thin false ceiling and white washed to give a better look. Temporary movable walls made of materials like gypsum boards may be used to make partitions inside the apartments. This also facilitates change in layouts over the span of years.

Windows may be provided to facilitate ventilation and light supply. The shipping containers have very strong corners, however the roof may require replacement in some cases. This can be done with a canopy roof or a translucent roof if required to improve the appearance and lighting of the apartment. A portion of the top may also be made glazed to facilitate light during day time.

Huge glazed windows and doors can be provided to facilitate light in the apartment. These may need to provide some additional reinforcement. The insulation for the apartments may be provided on exterior walls to maximize the interior Area. Thin foam spray insulations may also be adopted for insulation.

The whole apartment units are packed into a container there by making it possible to relocate the containers to a new location when needed. All the bathrooms are located to the rear end so as to provide access to drainage and water supply lines

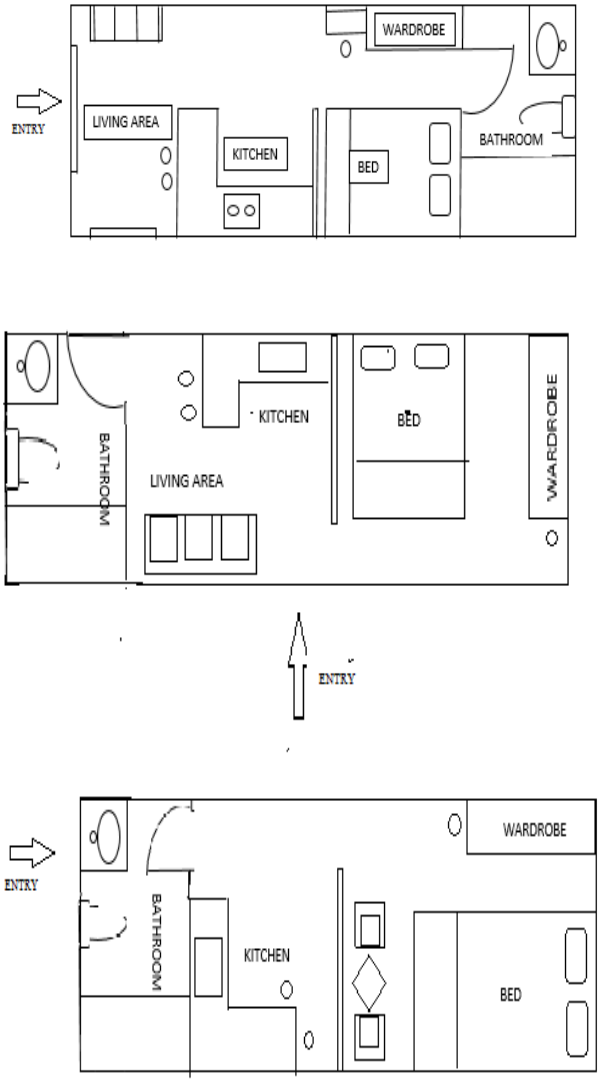

Fig -2: Sample layouts

3. PROS AND CONS OF MICROAPARTMENTS IN CONTAINERS

PROS	CONS
Low initial cost	Require additional insulations
Sustainable	Need building permits
Eco friendly	Risk of spillage or damage
Uniform shape and size	Limited space

Table 2-Pros and cons of micro apartment in shipping container

The apartment in shipping containers have a lot of advantages like they have low initial cost compared to conventional concrete structures as we are getting a readymade container, they are sustainable because no additional manufacturing is employed. The used containers can be employed for micro apartments. They have uniform size and shape, which facilitates easy stacking and arrangement when used to create a community. It can be relocated with the help of a crane, to the occupied land in between the existing city buildings. It is an Innovative and creative solution to housing problems. Rapid construction since they used readymade containers. Movable room partition prevents the monotony of an apartment for long stays

When these apartments are used in tropical countries which experience high temperatures, additional insulations may be provided. Since they have confined compact space, only limited occupancy is possible. The size of furniture that can be used are limited due to the size of container. The risk of the container getting heated may exist. This can be reduced by providing wood or fibre sheets for insulation.

4. CONCLUSION

Micro apartments in shipping containers can be an important development in the future of housing serving the rapidly growing population in cities. These micro apartments can be built in very less time and can be placed at any locations. This technique also facilitates to make temporary accommodations at worksites and fields.

The outer surface of the container is fitted with solar panels to absorb solar energy and provide it as electricity to the apartments. The apartments can be built by stacking one over the other there by saving space. The sides of these apartments can be converted to a vegetative cover and hence reduce pollution and temperature rise in the building.

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