

Prefabricated Techonology :Mobile Dormitory

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ABSTRACT: India is known as land of villages with 6, 40,687 in number. According to Census 2011, the population of India was 121 crore with 83.3crore persons living in rural and 37.7 crore living in urban areas. More than 70% of our population lives in rural areas. This rural population is moving to urban area as workers and build makeshift houses for living.The present project of mobile dormitory is aim to put forth an inclusive model for the growth of infrastructure, construction and to provide product that can enhance the comfort and status level to reduce stress anxiety of workers who are involve in hard work of construction.Our aim is to design a mobile dormitory which can be easily transported anywhere. The materials will be light in weight for a transport purpose. The dimension of mobile dormitory is 12*3m .The structure is design in such a way that it can be load, transport and unload on a standard size of truck. We are providing double bed system, window on back side besides each bed, sliding door, two bath and one WC. Wall consists of three layer for temperature control inside the dormitory. Steel, synthetic fiber, plywood these three layer will be provided. The Solar plate is used for supply of electricity. Well design and safe connection will provide for electricity. We are adopting the bore well technique for disposal of the human excreta. It is ecofriendly and economical.

KEYWORDS: India, worker; Portable/ Mobile dormitory, Rural India; construction site.

I. INTRODUCTION

According to India national commission for enterprises in the unorganized sector, over 92% of India's labor force was employed in the informal economy in 2007, and this number has been consistency increased.This implies that more than 92% of Indian labour force is exposed to job and income insecurity, exploitation, violation of rights and absence of legal protection. Even after independence, these rural areas are still under the process of development. After the waves of globalization, the Indian economy is booming. The rural markets are insulated from the global meltdown. This has also affected the growth of Indian rural economy. It is observed that rural India likes to contribute in the overall growth of economy & is very proactive to adapt the new ways of modernization and innovation. A manufactured home is defined as a movable or portable housing structure that exceeds either a width of eight feet or a length of forty feet and constructed to be towed on its own chassis and designed to be installed with or without a permanent foundation for human occupancy. The housing structure may come in multiple sections such as a double wide or triple wide, etc.

Construction workers are however treated largely as second class citizen, deprived of means to protect their dignity. A group of workers are transported directly to work site in big groups from state where the cost of labor is lower at the work site.

We studied that the majority of worker are male but some time entire family work together almost all the work force at the site belong to lower class, and all live in precarious conditions.

Makeshift houses they built for themselves adjacent to the work site have no basic amenities, and all laborers have to fetched the drinking water from outside. During extreme summers and winters it becomes very hard to survive

Workers in develop countries have high living standard. As India is fastest developing country in the world, living standard of workers in India is increasing day by day.

II. DESIGN

The structure is design in such a way that it can be load, transport and unload on a standard size of truck.The dimension of mobile dormitory is 12*3m.



Fig- line plan of mobile dormitory

III. COMPONENTS

i. Floor Base

- ii. Floor includes steel as outer layer and Plywood as middle layer and thin carpet outer layer.
- iii. Thickness of steel layer and bottom rails - 10cm
- iv. Thickness of plywood – 1.2cm
- v. Thin carpet

vi. Side walls

- vii. It contains steel as outer layer and plywood as middle layer and thermal fibre as outer layer.
- viii. Thickness of steel – 0.7m
 - Cavity -0.7cm
 - Thickness of plywood -1.2cm
 - Thermal fibre- 6mm

i. Windows and doors

- ii. Five windows - 1.3*0.8 m
- iii. Two windows - 1.3*1 m
- iv. Three toilet and bathroom windows - 0.5*0.5 m
- v. One sliding door of - 2.1*1.1 m
- vi. One bathroom door - 2.1*0.8 m
- vii. Two toilet doors - 2.1*0.6 m

viii. Toilets and baths

- The toilet is efficient and more sanitary variation of a common facility for the elimination of human waste that existed before the advent of indoor plumbing the outhouse.
- Toilet waste may be discharged to a publicly-owned treatment works (POTW) facility through the local sewage system or land-applied on farming property.
- There are one baths and two water closet (WC).
- Dimensions :
 - Toilet- 0.8 x 0.8 m
 - Bath- 1 x 1 m
- Partition wall between Toilet and bath is made up of PVC synthetic fibre. which is cheap in cost.
- The fibre is water resistant and have long life span.

i. Interior – a)bed

b)light and fan

D) CORNER POSTS

- Grade = SM50A
- Rolled high tensile steel
- Yielding point = 33 kg/mm²
- Tensile strength = 50 kg/mm²
- Bottom side rails (left)
- Top side rails (right)

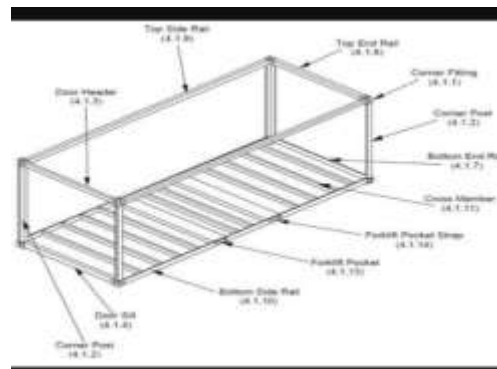


Fig 1- rails and corner posts

IV. RAILS

- Grade: structural steel SS41
- Front top end rail
- Front bottom end rail
- Bottom side rails (right)
- Inter top end rail
- Yielding point = 25 kg/mm²
- Tensile strength = 41 kg/mm²

II) CORNER FITTINGS

- Casted weldable steel.
- Grade = SCW480(SCW49)
- It is designed in accordance with ISO 1161
- Low carbon steel
- Yield point = 275 N/mm²
- Tensile strength = 480 N/mm²
- Required= 8 corner fittings

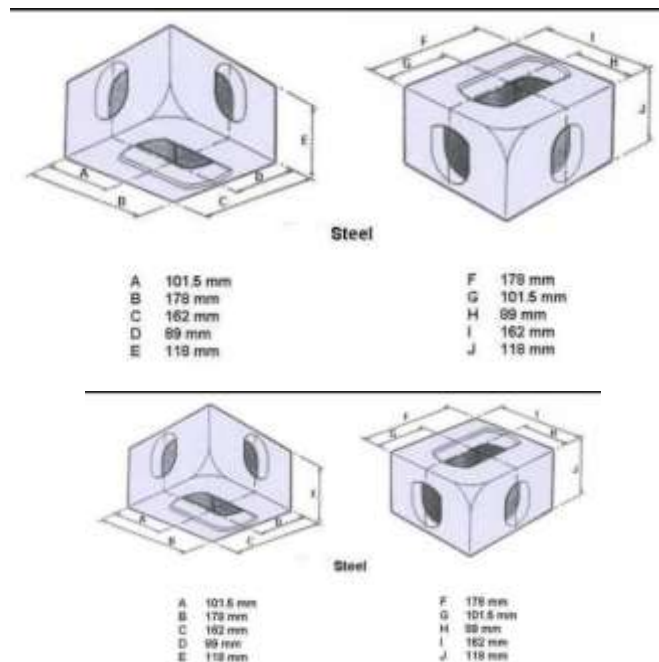


Fig 2 – corner fitting

III) STEEL

- Grade= SPA-H.
- Standard= JIS G3125
- Yielding point = 35 kg/mm²
- Tensile strength = 49 Kg/mm²
- Atmospheric corrosion resistant steel
- Available in Plates and sheets
- Thickness = 6-12mm

IV) PLYWOOD

- Floor to be constructed with 28mm thick plywood boards.
- Size = 28mm x 1160mm x 2400mm
- Weight = 50 – 70 kg
- Glue : phenol formaldehyde resin
- Hardwood plywood has an excellent surface hardness and damage and wear resistance.
- Vinly Floor Covering is comprised of a single sheet.
- It is available in a variety of different colors, thickness and textures.

V) COATING

- All steel surfaces coated with polyamide zinc rich epoxy primer.
- Dried up in room
- interior surface: epoxy zinc rich primer
 - epoxy high build coating
- Exterior surface: epoxy zinc rich primer
 - acrylic top coating

VI) DISPOSAL OF SEWAGE

- For the disposal of sewage from the Dormitory we can use Bore hole latrines.
- Borehole latrines have an augered hole and may be sunk to a depth of 10 m or more.
- The diameter of latrines varies from 0.3m to 0.5m.
- A 0.5m hole 10 m deep will serve a 12 to 15 people for about two to three years.
- sewage can carry away to the latrine through the drainage system.



VII) SOLAR PANEL

- Solar panels absorb the sunlight as a source of energy to generate electricity or heat.
- Solar energy is cheaper than other energy sources.
- Solar energy is the most promising source of energy in nearby future.
- Requirement for Dormitory is 3 LED lights (3W each) and 3 DC Fans (75W).
- As per the inside lightening system, 250W of solar panel will require.
- The dimension of solar panel for the dormitory is 4.30ft*3.50ft.
- Battery of 150AH will attach to the solar panel for the storage an electricity.
- Life span - 25 years.

VIII) ADVANTAGES

- It will enhance the comfort and living standard of the worker who are being treated as second class citizens.
- It will reduce anxiety of workers or labourers.
- It will be affordable, economical for contractor as well as worker.
- Living on site will reduce the transportation cost and time.
- Providing comfortable living will increase work efficiency.
- It is eco friendly

IX) DISADVANTAGES

- High initial cost
- maintenance require

V. CONCLUDING REMARK / SCOPE OF STUDY

Our innovative and economical technological mobile dormitory is helpful to fast changing demand of work environment. Mobile dormitory is not only useful for working labor but also in near future it can be use as portable office cabins, portable site cabins, portable bunk house, portable toll booths, portable security cabins. As far as India's living lands property rates are to be considered these gives solution to that problem as you move to another city the mobile dormitory gives us ease to do as you can shift it to another place easily. Mobile dormitory gives a wide scope in India near future not only for working labor at site but also many other

purposes as it is more economical and it is easy to handle and movable to another place which permanent structure property on land fails to do that.

In short mobile dormitory in near future may be capable to play the key role in changing the working and living environment.

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