KASIREDDY NARAYAN REDDY COLLEGE OF ENGINEERING & RESEARCH

DEPARTMENT OF CIVIL ENGINEERING
MINI PROJECT

CONSTRUCTION OF LOW COST BUILDINGS

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Introduction :

- **Low-cost housing construction can be achieved by using cost-effective materials and techniques, and by managing resources properly. Here are some tips and techniques for low-cost construction:**
- **Choose the right materials: Use local materials, non-toxic materials, or recycled materials. Some examples of low-cost materials include:**
  - **Stabilized mud blocks: Made with a manual or mechanical press, and stabilized with cement or lime**
  - **Ferrocement: A low-cost solution for walls, roofs, and doors, made with mesh and cement mortar**
  - **Precast concrete: A durable and economical option, but it can be heavy and may require skilled labor**
  - **Bamboo: A widely available, affordable, and durable structural material**
- **Use modern techniques: Use modern geotechnical technology to improve the strength and durability of low-cost materials.**
- **Keep the plan simple: Prefer a load-bearing structure over a frame one.**
- **Manage resources: Postpone finishing works or implement them in phases.**
- **Use low-cost materials: Use materials that are available cheaply or require no cost, such as empty boxes, buttons, bottle caps, old newspaper, and magazines.**

Abstract :

- **Abstarct of Low Cost Housing is a different concept which deals with effective costing and following of techniques which help in reducing the cost construction thriugh the use of faraway available materials beside with and technology improved skills without losing the power, performance and life of the structure.**
- **It is anticipated or the prbable cost of an item or work which is prepared before construction starts.It is the accurate estimate of all costs that consists of two parts -Quantity Take Off (OTO) and Abstract of Estimate Form (ASF).**

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- **Use Load-Bearing Structure:**

- **A Bearing Structure is preferred over a frame structure.Compared to a typical low-rise building,the load-bearing structure is less expensive.As less concrete and steel rods are required,the building costs are lower.**
- **Low-Cost Housing refers to affordable residential structures that are often of poor quality and lack resilienceaganist hazards,leading to high risks for urban citizens,especially in Asian Cities.**
- **A low cost structure is a pricing strategy in which a company offers a relatively low price to stimulate demand and gain market share.**
- **Lowest cost of plan means the lowest cost qualified health care plan selected by a member small employer and offered to the employer's employee enrollees.**
- **Low-Cost/no-cost materials are material which require no cost or are available cheaply.**

Definition :

It is considerd a concept of reduction in the cost of construction without sacrificing the strength required for the performance of the building.

Concept :

It is said that it is a misconception that low cost housing is based on interior specifications,low quality and produces sub standard work.

It is said that it is a misconception that low cost housing is only for the poor.

Low Cost Housing

For low height structures.

For low income group.

For public, and government housing

- **Value Engineering :**
  Value engineering also adopts methods of adopting design, materials and labour just suitable for the structures and achieving economy in overall construction.
  Acceptance of low cost housing concept
  Low housing concept has still not been accepted by majority of architects and engineers.
  Possible reasons:
  Simple (architectural features make it costly)
  Low specifications (rich specifications make it costly)
  Low acceptability among middle income group and high income group people.

  Discussion on Low Cost Housing
  Deliberated only during financial recession.
  Budget is the main constraint

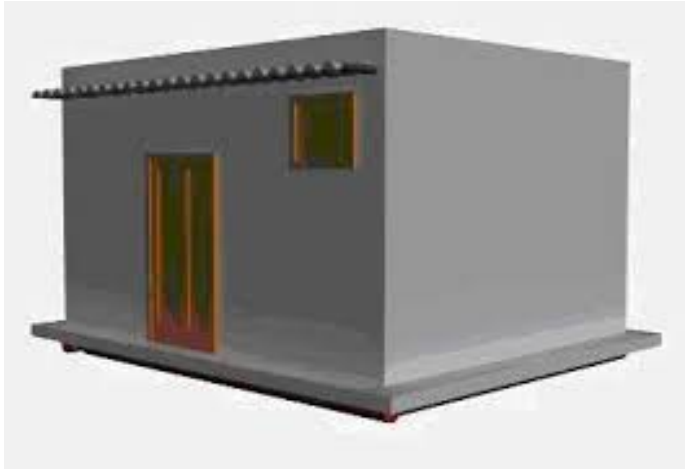
Commonalities :

Common in all above situations is financial constraint

For poor / lower middle class people.

(may not be acceptable to many engineers who are believers of low cost housing but is a reality.)

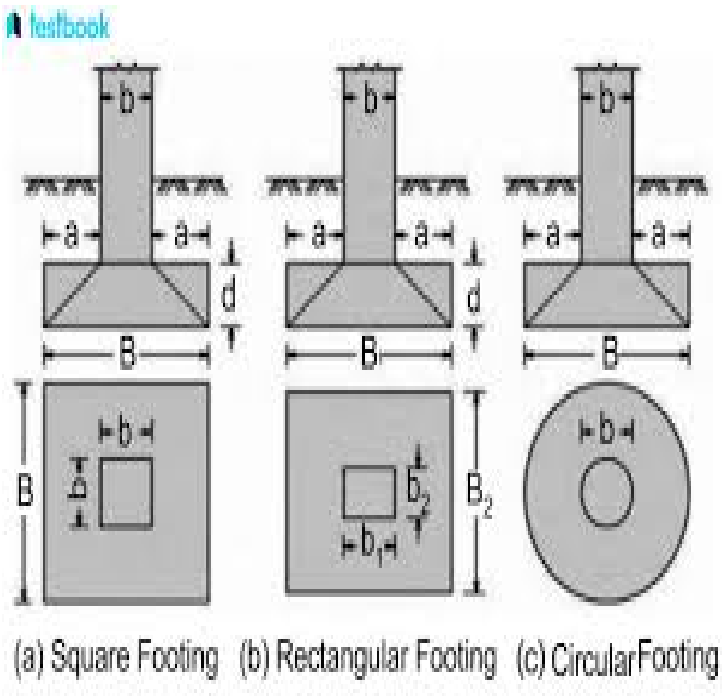
Why don’t we talk about low cost Metro, low cost flyovers, low cost bridges, low cost airports, etc…



Inference :

Low cost housing reflects that it is the housing of low cost and though it may have nothing to do for whom the housing is made but general concept is that low cost housing is for poor and it is very difficult to change the existing concept. Some of the engineers and administartors have started calling it as affordable housing which is again for them who cannot afford a good house at a higher cost.

- So, one way is let us accept it that low cost housing is for poor masses and develop design and specifications accordingly and for general housing deliberate on economic housing.
  Go on calling low cost housing as a misconcept that is for poor masses only.
  Reduce the type and depth of foundation
  Depth anywhere from 50 to 60 cms for isolated footings.
  Provide isolated footings in place of raft foundation.
  Provide raft foundation in place of pile foundation.
  Highly non-technical ideas.
  Please do not try without proper evaluation.



(a) Square Footing (b) Rectangular Footing (c) Circular Footing

Reduce Wall Thickness :

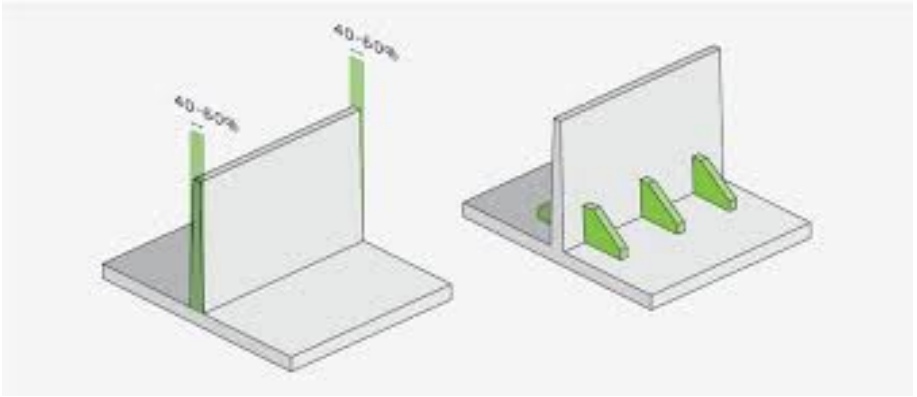
From 230 mm to 150 mm

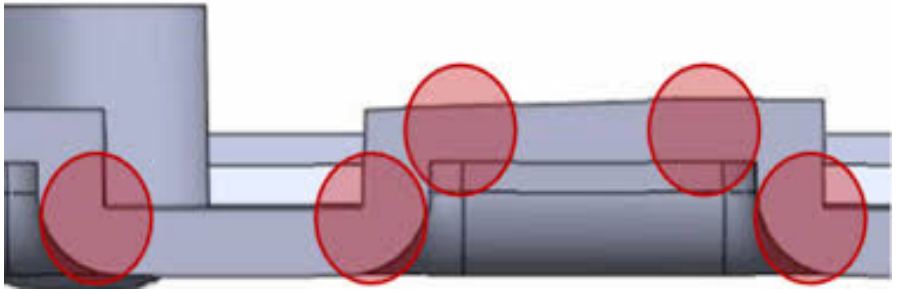
Adopted in unauthorised and non engineered construction for load bearing construction for load bearing construction.

Adopted by some private builders in framed constrction for all internal and external walls .

Non technical ideas.

Can not be adopted due to technical, maintenance, comfort considerations.



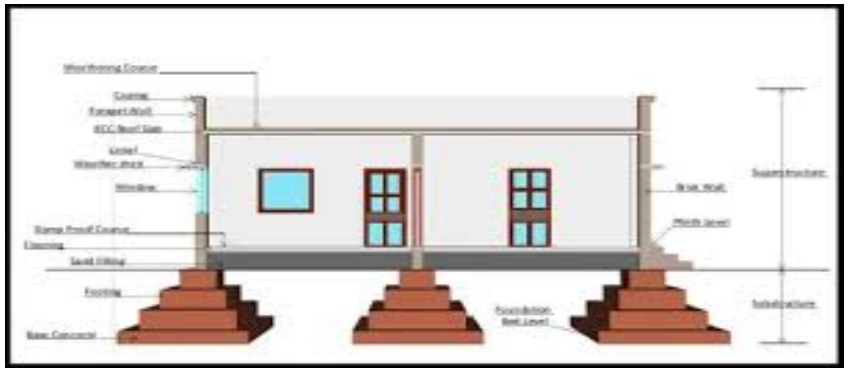


Reduce the Plinth Height :

In few years the road level comes at par with plinth level and plinth disappears.

Non-technical ideas.

Has many functional problems.



Use of Some other Materials :

Mud

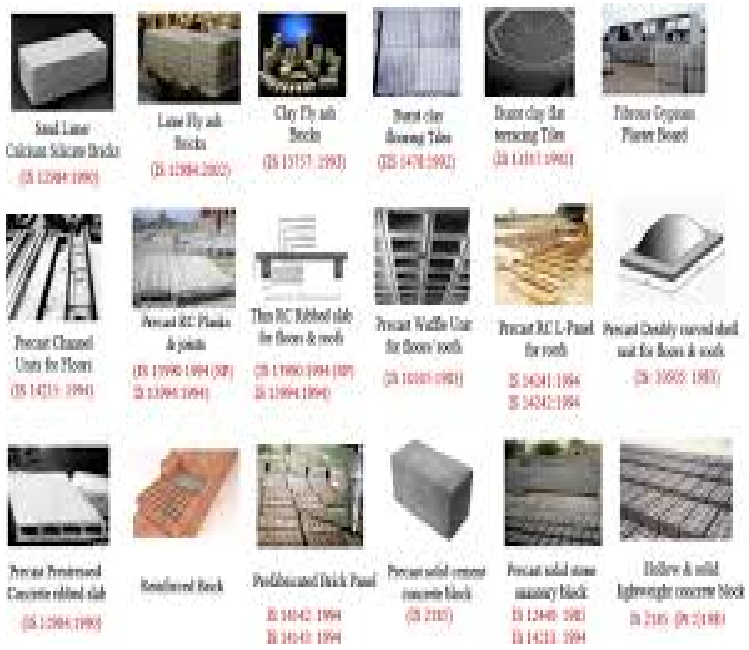
Thatch

Stone

Frameless doors

Mud plaster

Low cost housing in such case will need to be divided further in rural and urban low cost housing.



Specifications :

Specifications paly an important role in deciding the cost of housing, Interior and finishing works many have a large variation in cost depending upon the specifications adopted.

For example, if in Chennai, Sand stone cladding, marble flooring, are provided and in Delhi, granite flooring and textured coating are provided.

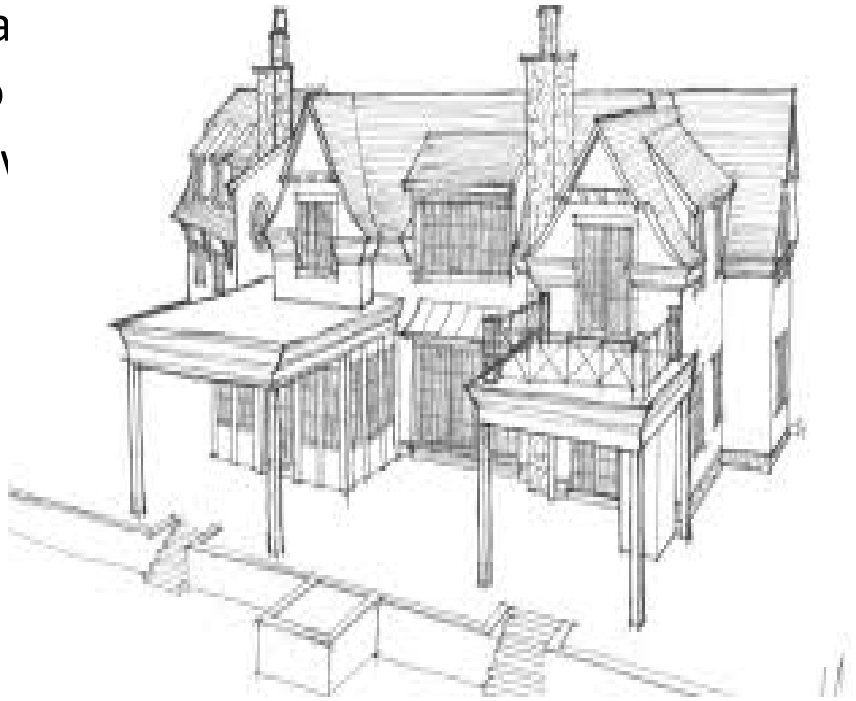
- Some of the occupants tend to alerts specifications even before they occupy the house on their own and some after looking to their neighbours.
- Reduction in Cost
- Reduction in cost is possible by sacrificing something.
- Aestehtic
- Uniquenes
- Durability
- Function

Maintainability

Architectural Features and Design :

Architectural features added ina building ma not be required from any other consideratio but will add to the cost and may not fit to lo cost housing concept.

Design of various components may not be optimum as per the requirements



Design :

Economic design.

Future considerations

Life Cycle Costs :

It is a mistake to define a low cost house based on intial cost of construction without giving any consideration of maintenance or life cycle of the structure

Use Of Locally Available Materials :

Base price low.

Transportation cost in low.

Local workers know their use and fixing / installation hence economic

Make use Of Traditional Methods :

Traditional methods are time tested

Traditional methods are economic

Traditional methods are based on local materials

Local workers have the knowledge of using traditional methods

Use Of Free Natural Resources :

Air

Light

To minimize cost of initial construction and thereafter maintenance cost

Reduction in Labour Cost :

Through use of local materials

Through use of local techniques

Through use of more skilled labour

Through use of small tools

Through mechanization

- **Reduction in time of Construction :**

  Better planning

  Through use of small tools

  Through mechanization

  Quality construction

  Reduction in wastage Reduction in transport, handling and storage cost

  Use of local materials :

  By fallowing “Just in time “ approach for

  Materials

  Void storage, multiple handling, storage, wastage, theft, dead stock.

  Close co-ordination

  Use of prefabricated /precast members

- **Reduction in wastage :**
  Adoption of Total Quality management policy
  Better planning
  Better execution
  Better management of resources by fallowing just in time approach.
  Plan for reduction in Maintenance cost
  Reduce life cycle costs
  Plan for natural lighting
  Plan for use of other natural benefits
  Management of Men, Materials, Machinery and Money
  Management of money, machinery and materials
  Management of workers
  Management of managers

- **Basis Of Economics :**
  Use of economics of scale
  Reduce fixed costs
  Converts some of the Fixed Costs to semi variable costs
  Horizontal expansion of the associated activities with marketing strategies

  Low quality Concept :
  Cost of low quality of work and low quality architects, structural designers, and contractors including skilled workers will also lead to cost reduction. In fact, these cost reduction are misconcepts of economy particularly to the house considering its life cycle, to the society and the nation but adopted widely.

Fair way :

Economy in construction can be achieved by management of men, materials, money and machinery and adopting locally available materials and techniques with the concepts of economics and total quality management.

CONCLUSION :

- Low cost housing is considered housing constructed with low budget. The definition should have been the housing with minimum cost even if budget Is available. Thus concept should then be valid for small or big, single or multistored and EWS or bungalow construction and all type of construction.
- Advantages of low cost building materials are pollution prevention, Reducing Energy Consumption and use of Natural materials, Use of Local materials, energy efficiency , Use of non-toxic building materials, Longitivity, durability and maintenance of building material, Recyclability and reusability of building material.
- Low cost Construction can be a viable solution to provide affordable housing for people with financial constraints.It can also be beneficial for non-profit organizations and philanthropists who want to provide shelter for deprived


Thank you