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# **AGRICULTURAL STRUCTURES AND ENVIRONMENTAL CONTROL BTAP3105**

## **PLANNING AND LAYOUT OF FARMSTEAD**



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# INTRODUCTION

Farmers in India usually live in Villages located some distance away from their farms. In the past, living in villages was favoured for mutual protection, for social life, for the services of those serving the community as a whole, and for convenience in getting water supply. The fragmentation of holdings is another reason favouring living in a village. But from an agricultural point of view, this arrangement generally puts a farmer away from his land, thus reducing the supervision and attention he can give to his crops. More time is required to go to and from the fields and the trouble of taking animals and implements back and forth is increased. Moreover, the reasons which favoured living in villages in the past are not important now, with the more secured social life



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# FARMSTEAD

## Farm Stead

A farm stead is a building and adjacent service area of a farm. Also the area occupied by dairy barns , service buildings like threshing yards roads etc. normally constitutes 3-5% of farm area.

A farmstead is satisfactory, if it is on a suitable site, if the individual buildings are properly designed for the functions they serve, and if their grouping is properly planned. The primary objectives of good planning are sanitation and well-being of the human beings and animals, economy in labour management, economy in initial cost and low cost of maintenance. The most convenient location from the management, sanitation, and other convenience point of view may be decided as indicated below.



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# LOCATION OF FARMSTEAD

From the management point of view, the farmstead should be located near the centre of the farm or in the middle of the long side. However, this arrangement is possible only in large farms where the farm labourers also live near the farmstead, as otherwise the farmstead becomes very much isolated.

Location at one side or even at a corner near a road is always helpful in procuring the farm supplies and in disposing of farm produce. This will facilitate better social life and protection, common water supply arrangement and other conveniences.

A site having high elevation and good natural drainage should be selected.

The farmstead should be located near a source of permanent water supply. Advantage of an existing well can be taken while deciding the farmstead location.

Sites which have trees around will provide protection against high wind velocities and dust storms, and will provide shade for human beings and animals.



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# SIZE AND ARRANGEMENT OF THE FARMSTEAD

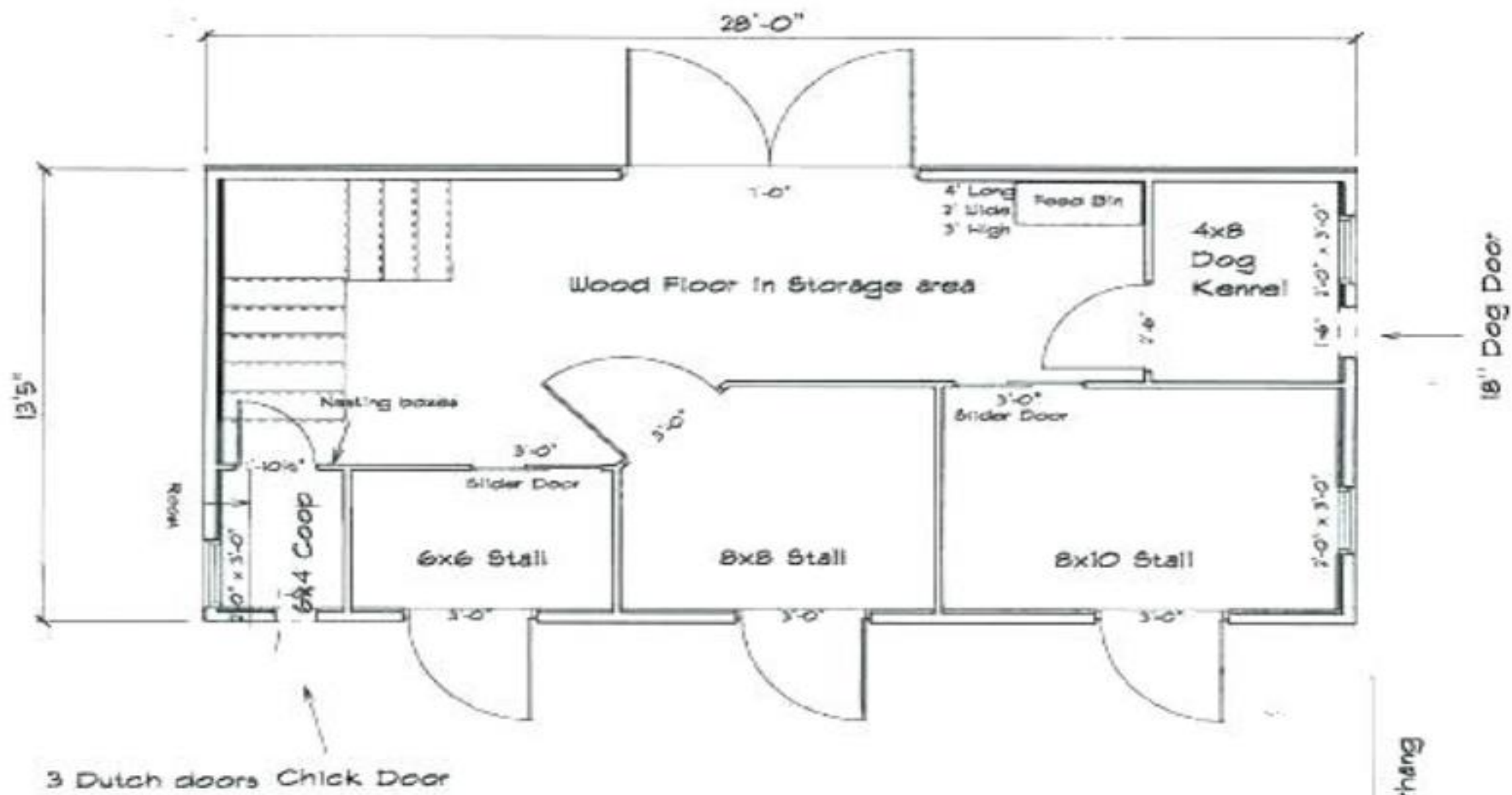
The farmstead area is occupied by residential buildings, storage buildings, dairy barn, bullock shed, poultry houses, other service buildings, threshing yard, roads, etc. and this area usually varies from 3 to 5 per cent of the farm area.

Residential buildings should be located away from the cattle shed and other buildings. This will ensure privacy and reduce the nuisance of flies and smell coming from the dairy barn.

Residences and animals houses should be so located that the prevailing wind will not blow from the animal houses to the residences. Various buildings are arranged to provide the minimum of walking from one to the other in doing the required work. The silo pits and feed storages should be located near the animal shelters. The milk room or milk house is generally placed about 6m away from the barn.

The layout of the farmstead should allow for possible future extension of buildings. Care should be given, in designing the buildings to get maximum convenience without much additional cost of construction. Unnecessary ornamentation or carving on the buildings does not add to the convenience, and on the other hand involves extra expenditure.









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# PLANNING OF FARM RESIDENCE

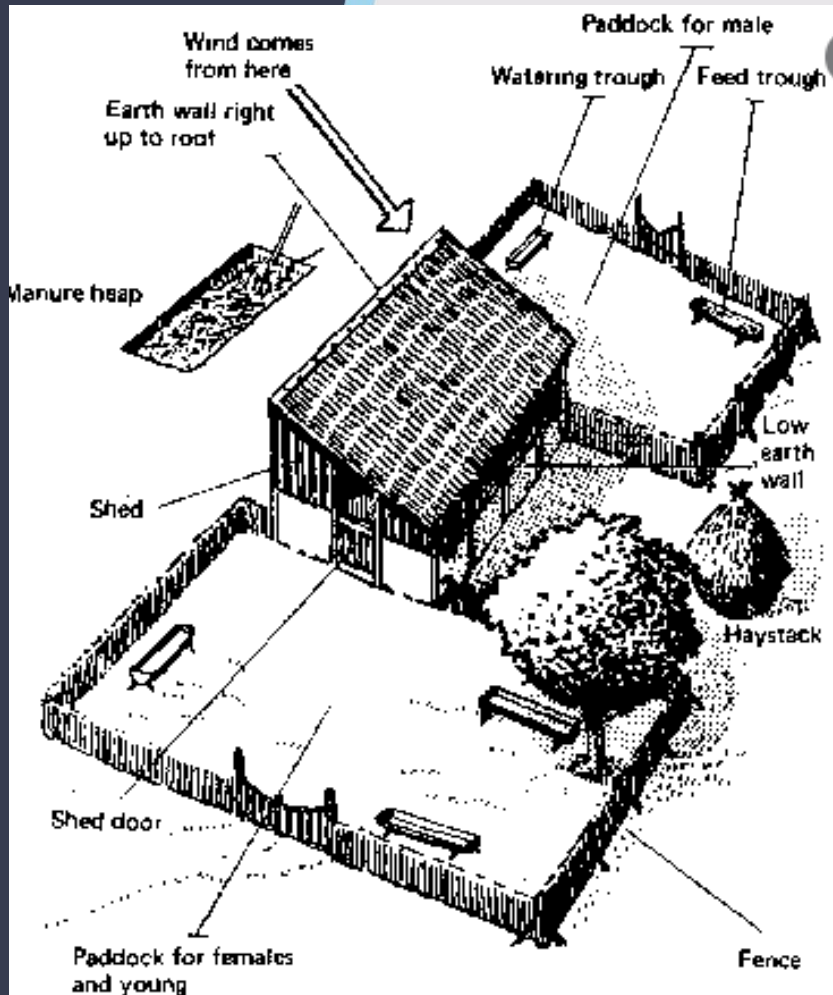
The residential building on a farm is the heart of the farmstead. It should be so designed and constructed that the owner has the satisfaction of staying in a most comfortable and attractive place. A residence is not merely a shelter alone, but is the centre of a social life, a place of health, comfort and happiness of the entire family in all stages and walks of life. It must provide conveniences for all the life activities. There must be places for cooking, dining, sleeping, study, guests, and other special requirements, to take maximum advantage of the sun light, the residence should face south or north. Facing the residence onto the main road and rivers or streams in another desirable feature.



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# TRADITIONAL HOUSING



However, the traditional designs of village houses have the following defects :

Construction is unsatisfactory and not water proof.

Windows are too small.

Rooms are too small.

Kitchen are not properly constructed to remove the smoke .

Animals are also kept in or around the house .

Surroundings are often used as a waste disposal place.



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Hence, a good house should have the following facilities:

Bedrooms-the number depends on the size of the family.

Verandahs both for sitting out and house work.

A Kitchen with good ventilation

Food grain store

Fuel wood store

Animal shelter

Animal fodder store

Latrine cum urinal and a bathing place

Sitting room cum DALAN

Open space inside or outside the house well enclosed for social gatherings.

Space for biogas plant and slurry dump

Space for kitchen garden

Space for washing purposes

Space for farm tools and machinery storage



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# IMPROVED FARM HOUSE DESIGN

A farm house should be designed to provide maximum utility and comfort. The various rooms should be so located as to provide adequate comfort and minimum time and energy wastage in going from one to the other.

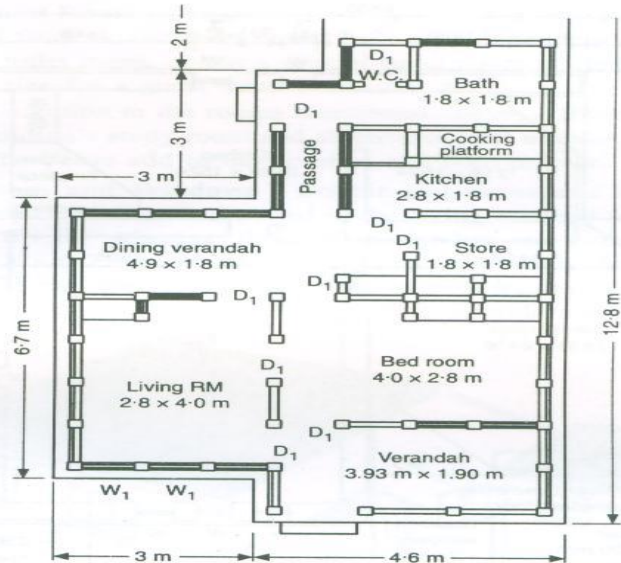


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# LAYOUTS

Planning of Farmstead and Farm Residence



**PLINTH AREA**

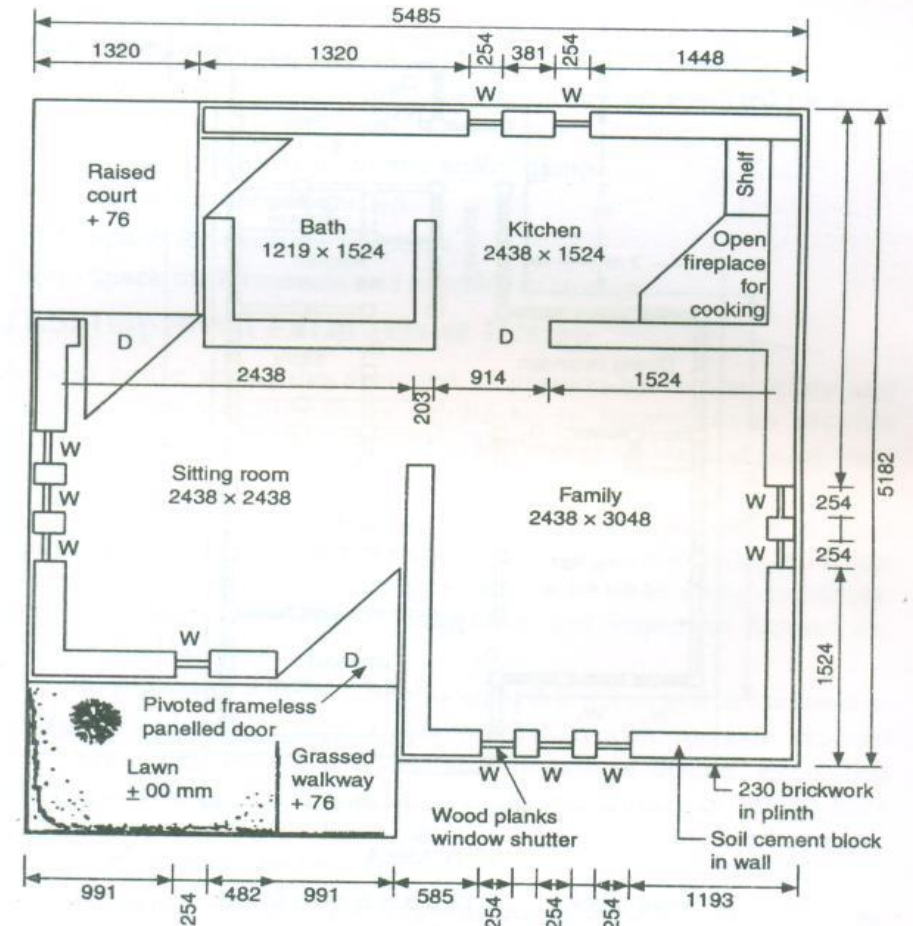
|              |                           |
|--------------|---------------------------|
| Main block   | : 12.8 × 4.6 m = 59 sq. m |
| Side         | : 6.7 × 3 m = 20 sq. m    |
| <b>Total</b> | <b>: 79 sq. m</b>         |
| Deduct       | : 1 × 2.1 m = 2 sq. m     |
| <b>Total</b> | <b>: 77 sq. m</b>         |

Fig.11.1. Floor plan of a farm house

light Availabilities of LPG in rural areas have made considerab

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Agricultural Engineering



(All Dimensions in mm)

Fig. 11.2 Floor plan of a farm house



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**Bed Room :** A typical bedroom of 3.6 x 3m will accommodate two single beds of 1 x 2 m. Cross ventilation with one side exposed to the prevailing breeze is a desirable feature in design. Every bedroom should be provided with attached toilet facilities or should have an independent access to the common toilet room. Some storage space is essential in every bedroom.

**Drawing Room :** The drawing room generally serves as the room for recreation and social gathering. The minimum size of the drawing room is 4.5 x 3.6 m but some people prefer to have one large room of about 6 x 4.5 m to serve as a drawing room cum dining room. The drawing room is best suited to be on one side of the house, and should generally open into the front porch, kitchen, and bedroom. Wall space in the drawing room should have plenty of provision for natural light and ventilation.



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**Kitchen :** The kitchen is preferably place near the living room but away from the bed rooms. It should be equipped with a sink and many built-in-racks for storage of utensils and supplies. Floor space of kitchens usually varies form 9.3 to 14 sq. m. Store rooms and fuel storage space should be attached to the kitchen. Besides a large size chimney to carry out the smoke from the built-in-cook stove, the kitchen should have cross ventilation. One of the windows and a door must directly open to the kitchen garden. The kitchen must have an eastern location if possible, so that the rays of morning sun can provide adequate light. Availabilities of LPG in rural areas have made considerable difference in the design and layout of kitchen in villages. Where gas stoves are not being used, improved fire wood CHULHAS are being introduced.

**Toilet Rooms :** For Indian families, bath room and lavatory should usually be separated. In the bath room, provision should be made for both a shower and a direct tap bath. If the water supply is not maintained throughout the day and night, a small water reservoir may be a part of the bath room. A hanger fro towels and a rack for soap, etc., are very useful. For the lavatory, a flush arrangement is essential.



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## Store room:

The store room should be situated near the kitchen. For a small family, store room of about  $3 \times 1.8$  m is adequate. It should be provided with rows of shelves on all sides.

## Guest room:

The guest room should open only to the drawing room and front verandah and must have an independent access to the common toilet room, unless a special toilet room is attached to it. A common size of a guest room is  $3.6 \times 3$  m





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## Doors and Windows:

Double leaf doors and windows are usually preferred.

The doors used in the living and bed rooms should be 2.1 x 0.9 m, where as those of the kitchen and bath rooms may be about 2 x 0.75 m.

Wooden door frames with only three pieces of 10.5 x 0.75 cm size each are preferred to steel frames.

The window dimensions generally preferred is 1.2 x 0.9 m with double pans on it. The bottom of the window is at 0.75 m above the floor surface so that the tops of all windows are at the same height as that of the doors.

The wooden frame is made of 10 x 7.5 cm cross-section.

Doors and windows in many places in India are provided with wire mesh to keep the flies out of the room.