IS : 11942 - 1986

[Superseding IS : 4466 (Part 3)-1968,
IS : 5605 (Part 3)-1970 and
IS : 8845 (Part 3)-1978]

Indian Standard

RECOMMENDATIONS FOR *GAUSHALA* AND OTHER ORGANIZED MILK PRODUCERS

UDC 631·223·24 : 725·42

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 5 *July* 1987

IS : 11942 - 1986

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Indian Standard

RECOMMENDATIONS FOR *GAUSHALA* AND OTHER ORGANIZED MILK PRODUCERS

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AMENDMENT NO. 1 DECEMBER 2005
TO
IS 11942 : 1986 RECOMMENDATIONS FOR *GAUSHALA* AND OTHER ORGANIZED MILK PRODUCERS

(*Page* 16, *clause* **10.8**) — Substitute the following for the existing text:

'Provision must be made for a suitable foot bath at the entrance gate. Also at the main entrance of the gate, a concrete floor should be constructed. This is to ensure that any vehicle entering the farm will be allowed to pass through the shallow floor which contains medicated solution.'

(FAD 5)

Reprography Unit, BIS, New Delhi, India

Indian Standard

RECOMMENDATIONS FOR *GAUSHALA* AND OTHER ORGANIZED MILK PRODUCERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 December 1986, after the draft finalized by the Animal Structures and Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Proper housing is an important feature in raising the production capabilities of animals, in addition to good breeding, feeding, selection and disease control. It is conducive to good health, comfort and protection from inclement weather and the animals are capable of utilizing their genetic abilities and feed for optimum production.

0.3 Cattle raising and dairying is practised in the country by various interests. Generally these interests are: (a) an Average Farmer who has not more than a pair of bullocks and two or three milch animals with their calves; (b) rural Milk Producers normally having a total of about 20 animals including about 12 milch animals, their followers and a pair of bullocks; (c) *gaushalas* and other organized milk producers; and (d) Large Dairy Farms.

0.4 This standard covers recommendations for shed for *GAUSHALA* and other organized milk producers. It supersedes IS : 4466 (Part 3)-1968*, IS : 5605 (Part 3)-1970†, and IS : 8845 (Part 3)-1978‡. Since India's climatic conditions, unlike most of the principal dairy countries of the world, are very varied, hence shed of cattle would also vary according to the climatic conditions prevailing in a particular region. In order to meet these varied requirements, wherever necessary specific recommendation has been made for (a) plain areas with medium rainfall, (b) arid area, (c) high altitute areas, and (d) heavy rainfall and high humidity areas.

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*Recommendations for farm cattle housing for plain areas with medium rainfall: Part 3 Farm cattle sheds for *GAUSHALAS* and other organized milk producers.

†Recommendations for farm cattle housing for heavy rainfall and high humidity areas: Part 3 Farm cattle sheds for *GAUSHALAS* and other organized milk producers.

‡Recommendations for farm cattle housing for arid areas: Part 3 Farm cattle sheds for *GAUSHALAS* and other organized milk producers.

1. SCOPE

1.1 This standard recommends layout and constructional details of a cattle shed meant for *GAUSHALA* and other organized milk producer.

2. TERMINOLOGY

2.1 For the purpose of this standard, the following definitions shall apply.

2.1 Paddock or Yard — An open area surrounded by walls, fences or rails for accommodating cattle. This area is meant to provide open air exercise to the animals. It generally contains manager(s) or trough(s) with or without ties to control animals for different purposes.

2.2 Standing (Stall) — The floor space provided within a shed for an individual animal to stand or lie.

3. SELECTION OF SITE

3.1 The shed shall be located on dry, elevated and well-drained area with consideration for future expansion.

3.2 The shed shall preferably be located at a place where three are enough suitably placed trees to serve as wind-breaks and to provide shade. In order to break the wind it is recommended that a row of trees be also planted across the direction of wind at the boundary of the farm.

NOTE — In case there are no shaded trees on the site, these should be planted immediately keeping a minimum distance of 4 m from the shed.

3.3 The site shall be away from public road but easily accessible throughout the year.

3.4 The site shall be such that arrangement could be made for adequate and good water supply.

3.5 The site shall be such that the long axis of the shed could be oriented east to west in all areas except temperate Himalayan and hilly regions. In desert areas, the shed shall be oriented across the prevailing direction of the wind in order to protect the roof from being blown off by high wind.

3.5.1 In coastal areas the shed shall be oriented along the prevailing wind direction in order to protect the roof from being blown off by high wind and at the same time to provide sufficient air movement in the shed. In sub-mountainous region, the buildings should be so sited as to avail of the natural aeration and drying.

4. HERD SIZE

4.1 It is assumed that producers in this interest shall normally maintain a herd of about 130 animals consisting of 40 milch animals, 40 dry animals, two bulls, and the rest comprising followers, as also about three pairs of bullocks.

5. BUILDING UNITS

5.1 The units should comprise sheds (*see* **5.1.1**) for housing different categories of animals and the necessary ancillary structures (*see* **5.1.2**) required for this interest.

5.1.1 *Sheds* — Various types of sheds (*see* **7**) that are required under this interest are as follows:

a) Milch animals shed,
b) Dry animal shed,
c) Down-calver shed,
d) Sick-animal shed,
e) Young stock shed,
f) Calf shed, and
g) Bull shed.

5.1.1.1 There shall be a paddock attached to each of the sheds.

5.1.2 The ancillary structures (*see* **10**) required under this interest shall be as follows:

a) Milk collection, recording and testing room;
b) Utensils room;
c) Ration room;
d) Store;
e) Office room;
f) Fodder processing and storage room;
g) Trevis; and
h) Foot bath.

6. LAYOUT

6.1 A typical layout comprising the various units is given in Fig. 1.

NOTE — The layout with these units could be modified depending upon local conditions like shape, size and topography of available land, size of enterprises, finances, etc.

7. DESCRIPTION OF SHEDS

7.1 Milch Animal Shed — The standings of the milch animal shed shall be of a tail-to-tail system with a central passage. The length and width of the standing shall be decided according to the size of the animal and may vary from 1·5 to 1·7 m in length and 1·0 to 1·2 m in width. In coastal region, sometimes buffaloes with spreading horns are found in that case width per animal may vary from 1·2 to 1·3 m.

7.1.1 The width of the central passage may be 1·8 m. The central passage shall be sloped from the centre outwards towards drains. There shall be a drain on either side of the central passage.

7.1.2 There shall be two continuous manger (*see* **8.2**), one on each side in front of the standings with a cross passage of one metre width at the end of every 8 standings for easy movement.

7.1.3 There shall be pillars (*see* **8.4**) along with length of the sheds to support the beam of the roof. The roof of the shed shall be gabled (*see* **8.6**).

7.1.4 The shed may, if necessary, be extended to accommodate calving (*see* **7.3**) as also calves (*see* **7.6**).

7.2 Dry Animal Shed — The standings of the shed shall be constructed on the head-to-head system with a central manger and if in a single line, facing the wall (*see* Fig. 1). The length and width of each standing shall be in the same range as specified for the milch animals (*see* **7.1**). There shall be a drain behind each line of animals. There shall be pillars along the length of the sheds to support the beam of the roof and walls at each end. The roof of the shed shall be gabled. The dry animal shed may be extended to accommodate the young stock as well (*see* **7.5**).

7.2.1 The bullocks may be accommodated with dry animals or a separate provisions for bullock shed may be made. If a separate provision for bullock shed is made, a cart shed may also be attached to it.

7.3 Calving Animal Shed — The shed shall have two calving boxes for housing animals very close to calving and standings adjacent to the boxes for accommodating heavy-in-calf. Provision for this should generally be made at the rate of 5 percent of the adult females. A calving attendant room may also be provided in the shed.

7.3.1 *Calving Boxes* — The calving boxes shall be adjacent to each other and shall be at the end of the shed separated by a wall from the standings. The wall partition between the two calving boxes may be 1·25 m high. The dimension of each calving box shall be 3 × 4 m. A manger and a water trough, each 0·5 m wide inside, shall be constructed

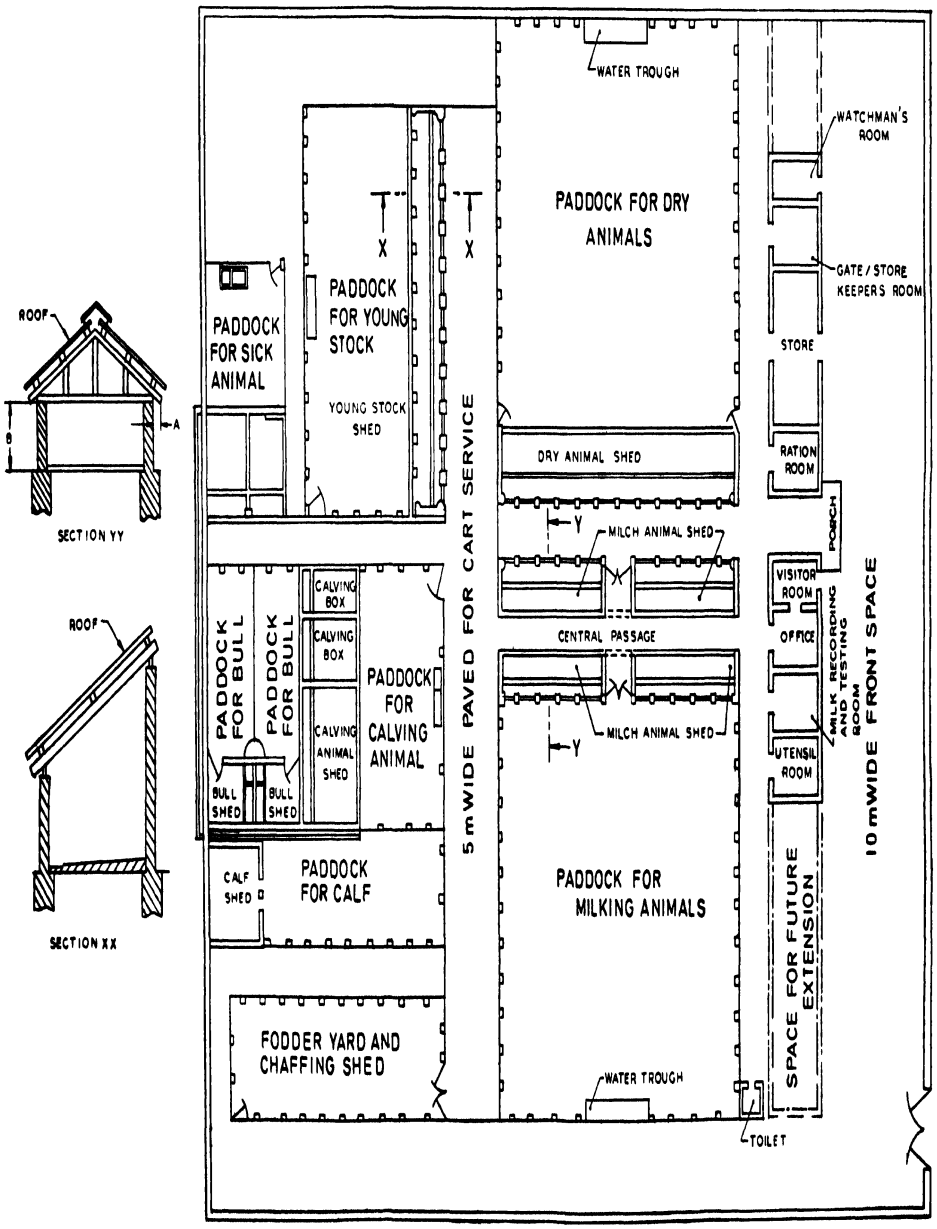


FIG. 1 TYPICAL LAYOUT OF FARM CATTLE SHED FOR GAUSHALAS' AND OTHER ORGANISED MILK PRODUCERS (*Continued*)

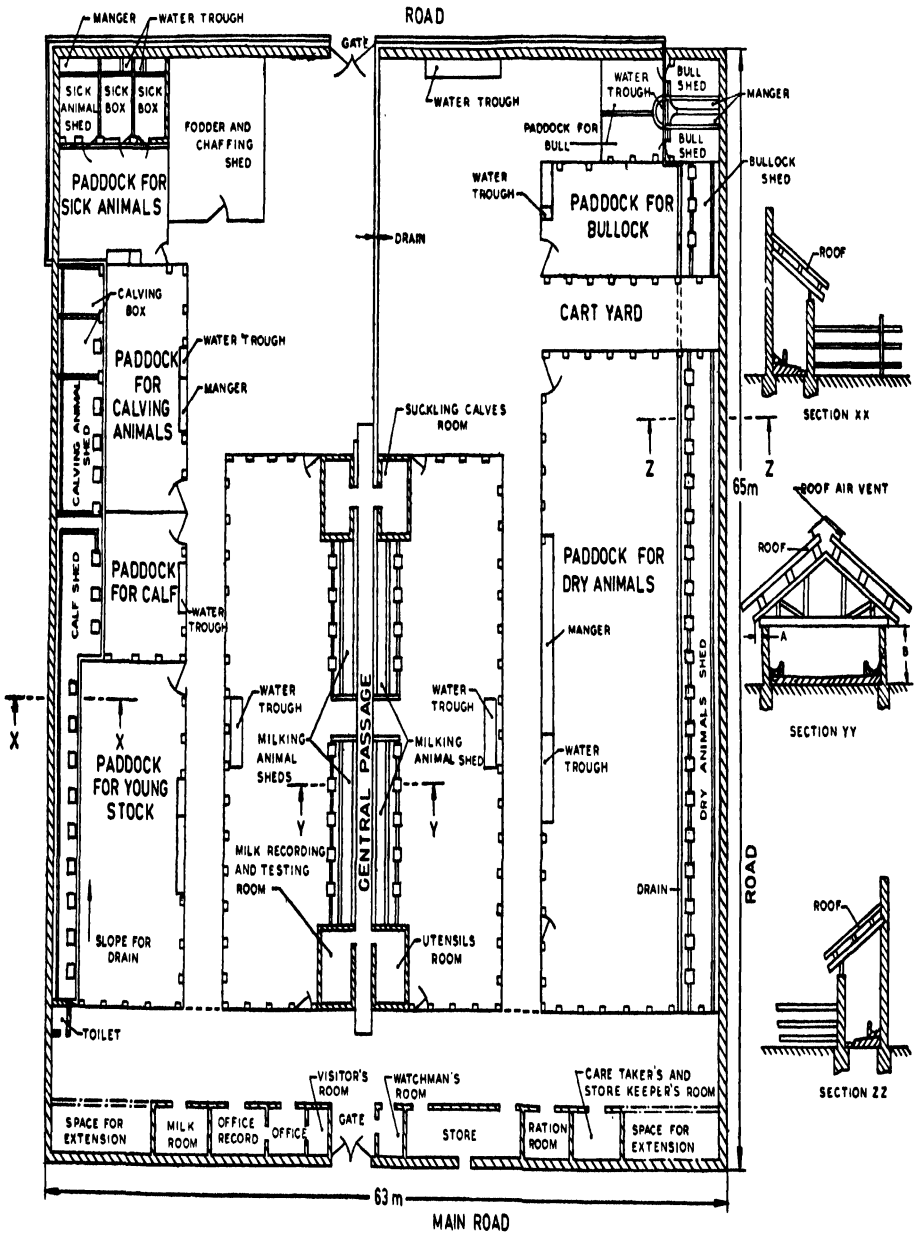


FIG. 1 TYPICAL LAYOUT OF FARM CATTLE SHED FOR GAUSHALAS AND OTHER ORGANISED MILK PRODUCERS

at the two separate corners of each of the calving boxes or a trough throughout the width of the box. A single-leaf door 2 m high and 1·2 m wide shall be provided for each of the calving boxes. The flooring of the calving boxes and standings shall be sloped towards the wall and into a drain running outside the shed.

7.3.2 *Standings* — The standings of the down-calver shed shall be constructed in such a way that animals are kept tethered facing the wall. There shall be a continuous manger along the wall. The length and width of each standing shall be 2·0 m and 1·6 m respectively.

7.4 Sick Animal Shed — The sick animal shed shall be located well away from the other sheds inaccessible to other animals. The dimensions and arrangements for sick animal shed shall be the same as in **7.3.1** and **7.3.2.**

7.5 Young Stock Shed — The young stock shed may be an extension of the dry animals shed or a separate unit. In case the young stock shed is a separate unit to economize cost and space, the shed shall be constructed in such a way that young animals are tethered in two rows facing each other with a central manger. The length and width of each standing shall be 1·4 and 1·0 m respectively. The two drains of the shed shall be laid on either side of the standings. The roof of the shed shall be gabled and shall be supported on the length of the shed by a series of pillars and walls at each end. The young stock standings may alternatively be in a single line against a wall and the drains located suitably.

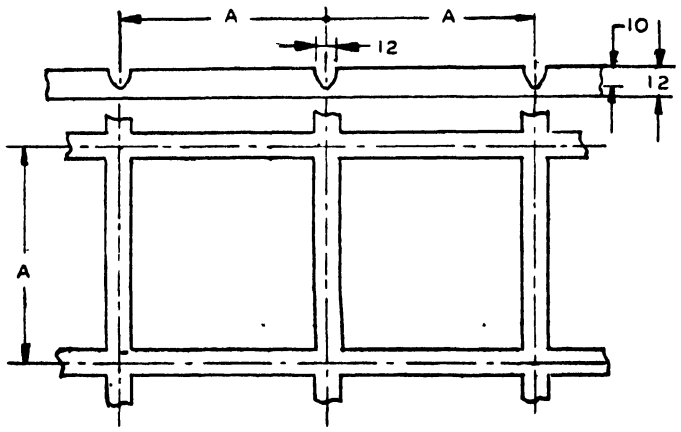
7.6 Calf Shed — The calf shed may be annexed either at the end or on the side to the milch animal shed and the calves may be separated from the milch animals by a suitable partition. If there is a large number of calves, the calf shed may form a separate unit. The dimensions of the calf shed shall depend upon the number of calves. The floor space provided per calf shall be not less than 1 m^2. The calves may be kept loose. The manger shall be constructed along the walls of the three sides of the shed. There shall be a central shallow saucer-shaped drain. The roof may be either lean-to-type or gabled. A water trough shall be provided at one corner of the shed.

7.7 Bull Shed — The bull shed shall have two boxes each measuring 4 × 3 m. The walls may be 1·5 m high. A 0·5 m wide raised manger with feed and water sections shall be provided in each box. The two boxes shall lead to separate paddocks.

8. CONSTRUCTIONAL DETAILS OF SHEDS

8.1 Floor — The floor may be either of *MOORUM, KANKAR,* cement concrete, brick-on-edge or stone slabs. The details of laying of flooring

are given in Appendix A of IS : 11786-1986*. In case of cement concrete flooring, the surface shall be properly grooved in order to avoid slipping of the animals. For larger animals, the grooves shall be formed in square of 15 × 15 cm and for calves 10 × 10 cm (*see A* in Fig. 2). The width of the groove shall be 12 mm and depth 10 mm. The groove shall be of U shape. A plinth of at least 15 cm shall be provided for the floor. A slope of 1 in 60 towards the drains shall be provided in order to keep floor properly drained after washing.



All dimensions in millimetres.

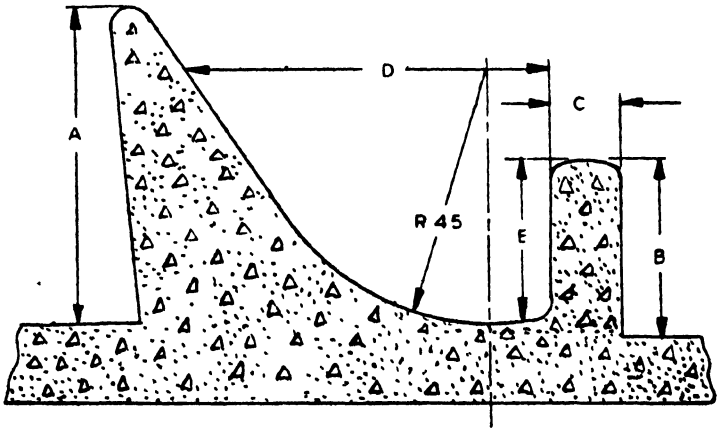
FIG. 2 CROSS-SECTION OF STANDING

8.2 Manger — The manger shall be of continuous type. The manger shall be made of reinforced cement concrete, stone slabs, or brick-in-lime or cement mortar. The flooring material of the manger shall be the same as for the floor but the surface shall be finished smooth. All the corners of the manger shall be rounded off and finished smooth. The dimensions of the manger (*see* Fig. 3) shall be as given in Table 1. In case the mangers are of brick, the fore curb should be topped with angle iron.

8.2.1 *Water Supply* — There shall be an adequate supply of potable water in the shed. One of the ways of supplying water in the shed may be that water trough of 20 cm diameter may be constructed on the manger wall. Water shall be allowed to flow through these troughs so that fresh water may be made available to the animals, calculated at the rate of 50 litres per livestock unit per day. These troughs may be placed between the two standings. The water troughs should be provided with railing on its sides so that the animals may not try to step in the water

*Recommendations of cattle housing for an average farmer.

trough and contaminate it. When a piped water supply is available, a shallow water trough having its slope towards one end, and having a balancing float tank at the other end, ensures fresh water supply.



All dimensions in millimetres.

FIG. 3 CROSS-SECTION OF MANGER

TABLE 1 DIMENSIONS OF MANGER

(*Clause* 8 2)

(All dimensions in cm)

SL No.	PARTICULARS	REINFORCED CEMENT CONCRETE	BRICK LAID IN CEMENT	STONE SLAB	REF TO FIG. 3
(1)	(2)	(3)	(4)	(5)	(6)
i)	Height of manger wall, *Min*	75	75	75	A
ii)	Height of fore curb *Max*				
	a) For adults	50	50	50	B
	b) For calves	30	30	30	
iii)	Thickness of fore curb, *Min*	10	10	4	C
iv)	Inner width of manger, *Min*				
	a) For adults	60	60	60	D
	b) For calves	40	40	40	
v)	Depth of manger, *Min*				
	a) For adults	40	40	40	E
	b) For calves	15	15	15	

8.3 Drains — The drains shall be made of brick in cement mortar or of stone and shall be of shallow U type with a depth of 6 cm at the bottom. The slope of the drain shall be 1 in 100 to 1 in 120. The width of the drains may vary between 30 and 40 cm. Where a long running shed is constructed, connecting drains at right angles should be provided after every 15 standings. The main drain may be led to a common urine pit having a depth not exceeding 40 cm or to the field if slope permits. The urine pit may be circular or rectangular.

8.4 Pillars — One pillar shall be placed at intervals of every two or three standings depending upon the width of each standing. Pillars may be made from any of the following materials and their minimum dimensions shall be as indicated against each:

a) Brick	45 × 35 cm (*see* Note 1), or 40 × 30 cm (*see* Note 2)
b) Mild steel I Section	10 × 10 cm
c) Stone	10 × 10 cm or 8 × 15 cm
d) Iron pipes dia	10 cm
e) Timber (include palmira palm, coconut and bamboo):	
1) Rectangular pillars	10 × 10 cm
2) Round pole, dia	15 cm

NOTE 1 — In case of 22·5 × 11·25 cm brick, 2 lengths and 3 widths shall be used.

NOTE 2 — In case of 20 × 10 cm (modular) bricks, 2 lengths and 3 widths shall be used.

NOTE 3 — All iron structures shall be suitably painted for protection against corrosion.

8.4.1 All edges in rectangular pillars shall be rounded off and finished smooth.

8.5 Walls — The wall shall be of brick or stone slab laid in cement mortar. The wall may be cement-plastered from inside. The thickness of the wall shall be at least 20 cm, however in case of bull shed it shall be at least 30 cm. All walls shall be solid up to 1·25 m height from the floor level and shall be constructed in honey comb pattern above that height in order to provide sufficient air movement in the shed. The rest of the portion of the wall may be left open by a series of wire-netted windows. In desert areas, the solid portion may extend up to 1·8 m in height. In case of lean-to-type system, the end walls above the solid portion may be left open or provided with a series of wire-netted windows.

8.6 Roof — The roof may be gabled, flat or lean-to-type. The roof may be constructed either of corrugated asbestos sheets or galvanized steel sheets or tiles (Country tiles are not recommended). The roof shall be supported by steel or wooden trusses or by a series of central pillars. The pitch of the roof may range between 22 to 30 degrees depending upon the materials used. Wooden purlins may be spaced up to 1·3 m apart. Generally, the eaves of the roof (*see A* in Fig. 1) shall project out at least 50 cm away from the pillars/walls and in regions where extreme climatic conditions prevail, the eaves of the roof may project up to 75 cm from the pillars/walls in order to afford protection to the animals from direct sun and rain. The eaves should be 2·2 m high from the ground level (*see B* in Fig. 1).

9. PADDOCKS OR YARD

9.1 A paddock shall be attached to every shed for animals to move about freely. There may be trees in the paddock to provide enough shade. A part of the paddock may be paved with bricks laid on edge. The paddock shall have the following minimum space per animal for various categories of animals:

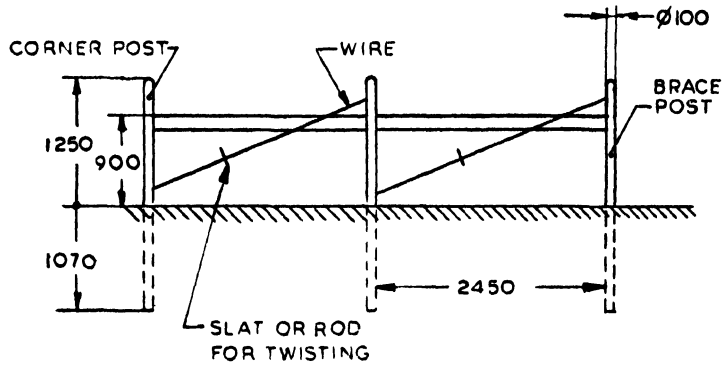
a) Buffaloes	8 m^2
b) Cow	7 m^2
c) Young stock	4 m^2
d) Calf	2 m^2
e) Calving	12 m^2
f) Bull	25 m^2

9.2 Fences

9.2.1 The wall of bricks or stone slabs or a railing or wires may constitute fence. The railings may be of 35 mm galvanized iron pipe or 5 mm galvanized iron wire and posts to support railings. The posts may be of 5 cm steel pipe, 6 × 4 cm angle iron, 8 × 5 cm stone slabs or 10 × 10 cm timber placed 2 m apart. The posts shall be holed to pass the railings through or it may be riveted or 'U' bolted to the place. The railings for different categories of the animals shall be fixed with the posts as given below:

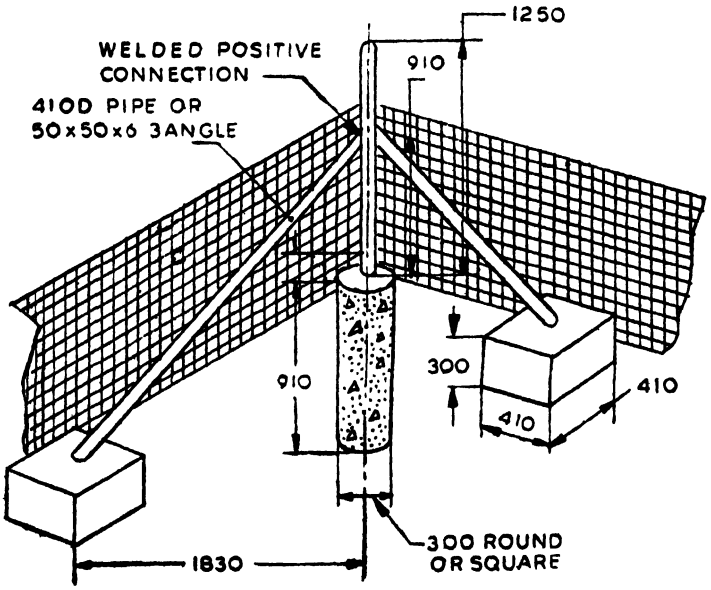
Height from Ground to Centre of Each Rail	*Calves*	*Cows, Young Stock and Buffaloes,*	*Bull*
	cm	cm	cm
First rail	30	40	40
Second rail	60	80	80
Third rail	90	120	120
Fourth rail	120	—	150

9.2.2 The wooden horizontal braces or steel horizontal braces shall be placed as given in Fig. 4. Braced steel end or corner posts shall be embedded as given in Fig. 5.



All dimensions in millimetres.

FIG. 4 WOOD OR STEEL HORIZONTAL BRACES



All dimensions in millimetres.

FIG. 5 BRACED STEEL END OR CORNER POST

9.3 Gate — A gate of suitable type and size may be provided taking care that they are hinged firmly and raised well above the ground. Braces shall be positioned vertically.

9.4 Manger and Water Trough — Manger and water trough may be constructed with reinforced cement concrete, brick with cement mortar or stone slabs with cement joining. A 2-m wide paved platform shall be provided away from trough to with stand the heavy treading of animals and permit easy washing and cleanliness.

10. ANCILLARY STRUCTURES

10.1 Milk Collection, Recording and Testing Room — There shall be a room of 4 × 3 m in or near the milch animal shed for collecting, recording and testing of milk. The door and the windows shall be made fly-proof. The flooring of the room shall be of cement concrete impervious and reinforced with iron strips at suitable distances to make it hard wearing. A suitable platform or a slab shall be provided for testing apparatus. A separate milk room may also be provided for handling milk.

10.2 Utensils Room — There shall be a room of 4 × 3 m for washing and storing milk cans. The flooring of the room shall be of hard-wearing type to withstand the frequent handling of heavy milk cans. The door and windows shall be made fly-proof. The room may be located as near as possible to the milk recording and testing room.

10.3 Ration Room — There shall be a room of at least 4 × 3 m near to the milch animal shed to store feed concentrates temporarily to meet the requirements of the animals for the day. The ration room shall be damp- and rodent proof.

10.4 Store — The store shall be adequate to accommodate feed concentrate required for a period of about 2 months. The space required for storage shall be 0·2 m^2 per livestock unit. The store shall be made damp- and rodent-proof. A store keeper's room may also be attached to the store.

10.5 Office Room — Provision of an office accommodation is generally desirable in *GAUSHALAS* and similar organizations. The office room may also be used for keeping medicines and instruments required for treating sick animals. The dimensions of the office room shall depend upon the space available and the size of the enterprise. A toilet may also be provided. A visitor's room may also be attached to the office room.

10.6 Trevis or Cattle Crutch — A cattle trevis may be provided to secure the animals for rendering first-aid and artificial insemination.

10.7 Adequate provision shall be made for storage of roughages.

10.8 A provision shall be made for a suitable foot bath at the entrance gate.

10.9 Provision may be made for a segregation room for keeping new animals introduced in the herd for some initial days before their mixing up with the herd.

10.10 Lighting — Provision of lighting shall be made in case electricity is available, a 25 W bulb for each 10 m^2 space or 60 W bulb for each 20 m^2 space or equivalent fluorescent tube light may be provided.

10.11 Waste Handling System — Bio-gas plant of suitable size should be installed. The animal waste (dung, urine and other biomass) should be fed to the plant.

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