CHAPTER 17: STORAGE- GRAIN STORAGE – TYPES OF STORAGE STRUCTURES

Storage structures

Storage – to maintain the quality of grain after harvest for

- ✓ Maintaining the supply of grain
- ✓ Taking advantage of higher prices

Two methods of grain storage

- ✓ Bag storage
- ✓ Loose in bulk storage

The choice based on the local factors

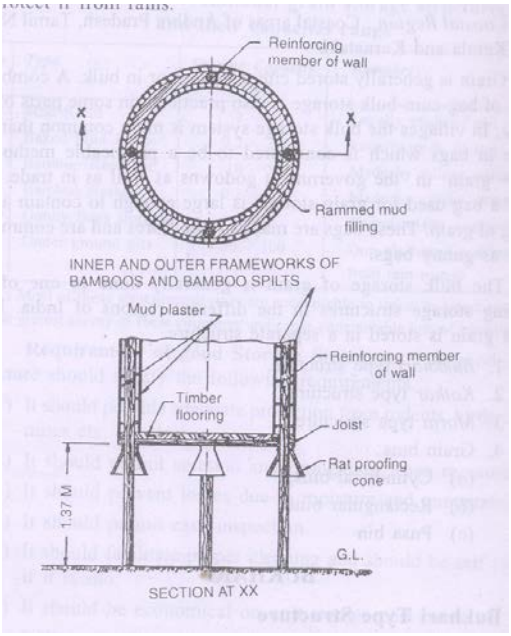
- Type of grain
- Duration of storage
- Value of grain
- Climate
- Transport system
- Cost and availability of labour
- Cost and availability of bags
- Incidents of rodents and certain types of insects

Bag and bulk storages

Bag storage	Bulk storage
Flexibility of storage	Inflexible storage
Partly mechanical	mechanical
slow handling	Rapid handling
Considerable spillage	Little spillage
Low capital cost	High capital cost
High operating cost	Low operating cost
High rodent loss potential	Low rodent loss potential
Reinfestation occurs	Little protection against reinfestation

Traditional storage structures- (Bulk type)

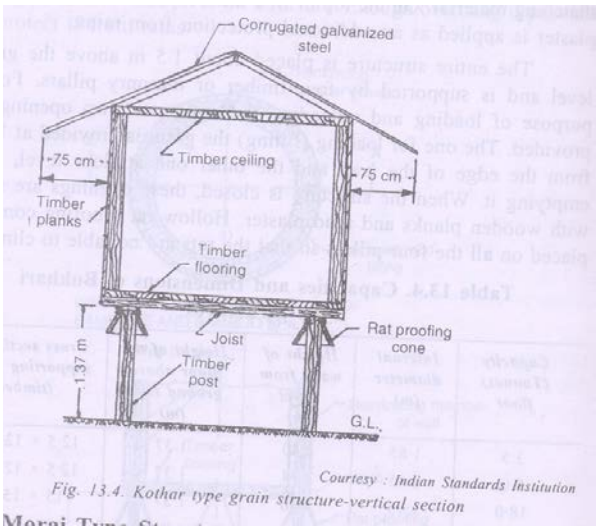
Bukkhari type



- Cylindrical in shape
- Made of mud or combination of mud and split bamboo
- Raised above the ground by wooden or masonry platform
- Floor
- Walls
- Roof
- Improved type – same structure
- Rat proofing cones
- Grains – wheat, gram, paddy, maize and sorghum
- Capacity – 3.5 – 18 t

Kothar type

- Store – paddy, maize, sorghum, wheat
- Capacity – 9-35 t
- Structure – box
- Improved Kothar – 5cm thick wooden planks and beams
- No gap between the planks

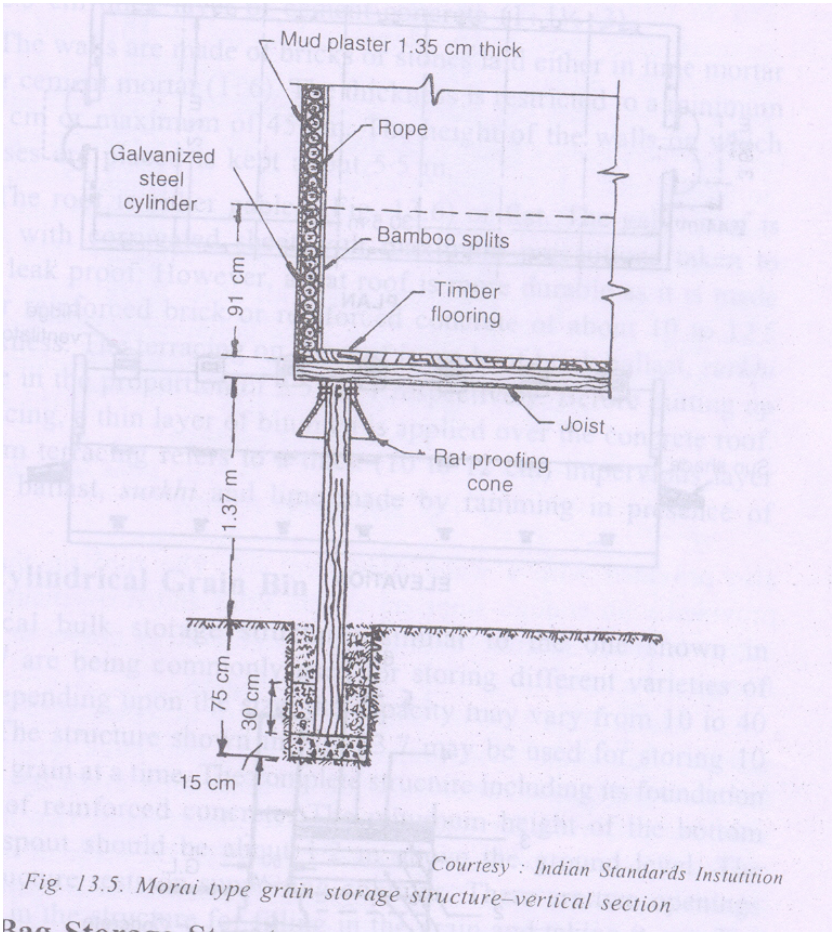


Courtesy : Indian Standards Institution

Fig. 13.4. Kothar type grain structure-vertical section

Morai type

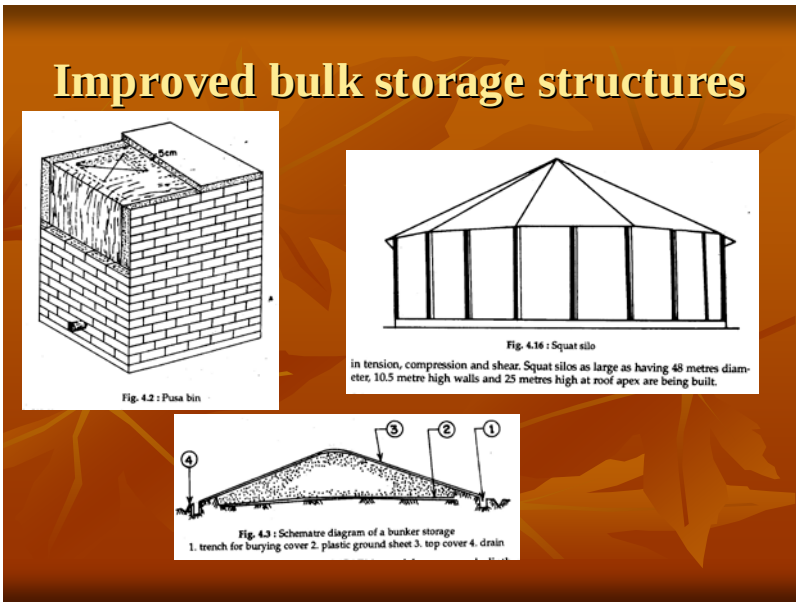
- Grains – paddy, maize, sorghum
- Capacity – 3.5 – 18 t
- Shape- inverted truncated cone



Courtesy : Indian Standards Instutition

Fig. 13.5. Morai type grain storage structure–vertical section

Fig. 4.1 : Mud bin

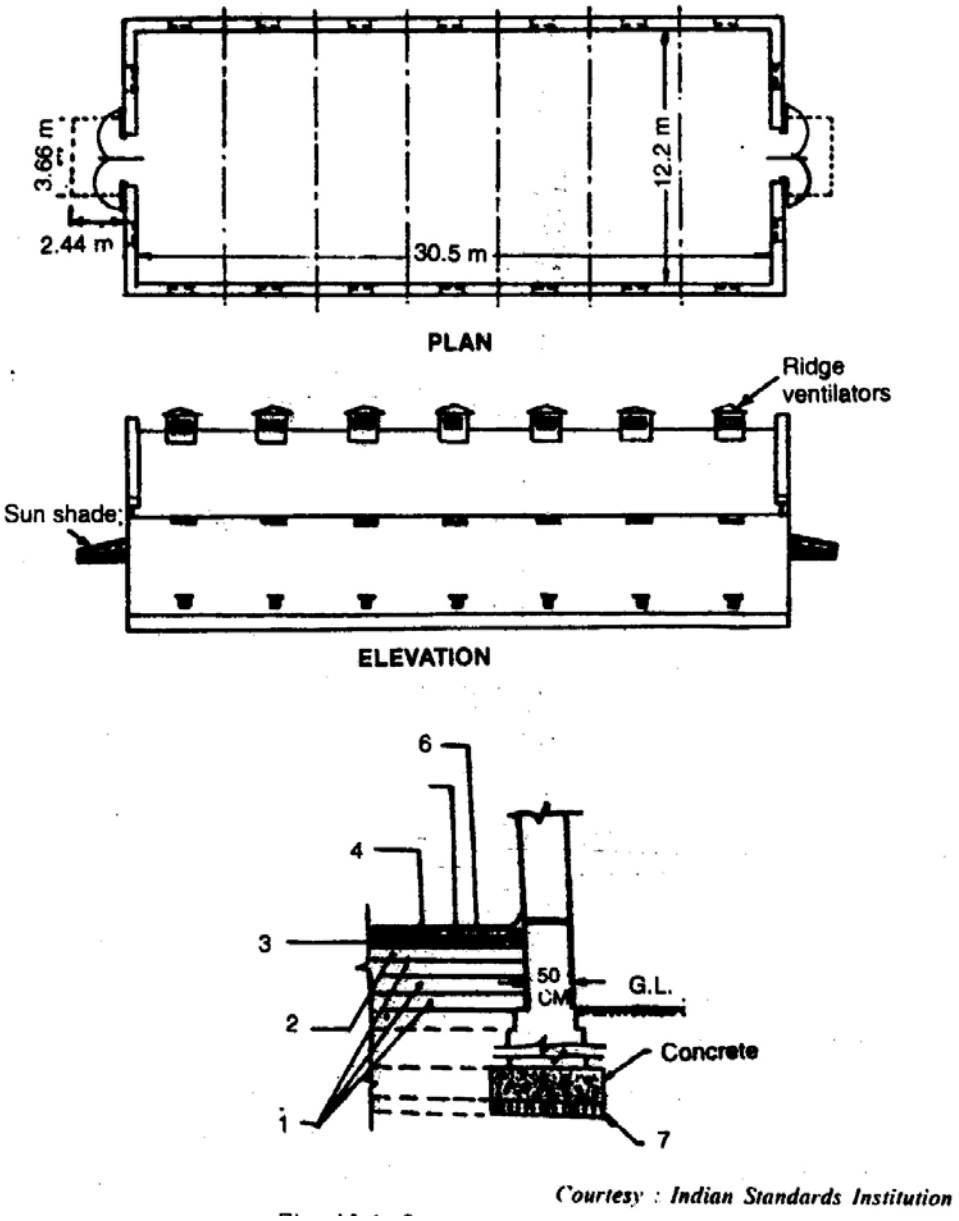


Modern storage structures

- Bagged storage system
- Silo storage system
- Air tight storage system
- Aerated storage system
- Low temperature storage system
- Controlled atmosphere storage system
- Damp grain storage system with chemicals

Bagged storage system

- Storage capacity is from 25 tonnes
- Generally the length is about twice the width or greater
- The entire structure should be moisture proof
- Large size doors of 2.4 x 2.4 m and top ventilators
- Each door is provided with a light overhanging hood
- It should be provide with ventilators – having wire netting and shutter



Bag Storage structure

Damp proof floor

1) 15 cm thick layer of gravel and sand well rammed at the bottom
2) 12.5 cm thick layer of stone or brick ballast or double layer of brick
3) 10 cm thick layer of cement concrete (1:4:8)
4) 1.25 cm thick bitumen mixed with sand
5) 4 cm thick layer of cement concrete (1:2:4)
6) 2.5 cm thick layer of cement concrete (1: 1 1/2: 3)

The walls are made of bricks or stone laid either in lime mortar (1:2), cement mortar (1:6)

Thickness of the wall is either 37.5 or 45 cm

The height of the walls on which trusses are kept: 5.5 m

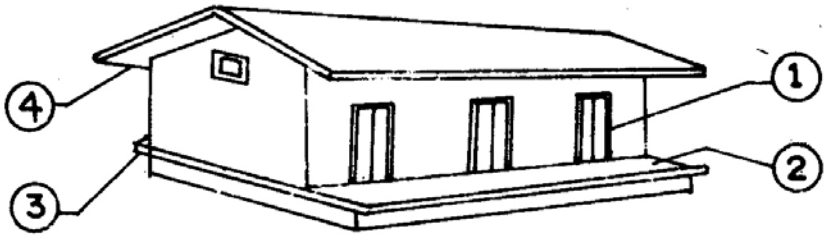
Roof

Either gabled or flat roof

Gabled roof is covered with corrugated sheet

Flat roof is more durable – either reinforced brick or concrete – 10 to 12.5 cm thick

The terracing on the roof is made of brick ballast, surkhi, and lime (3.5: 1:1)



1. Sealed door 2. Floor 3. Rat proof slab 4. Air proof roof

Modern Storage Godown