# SRI LANKA STANDARD 686: 2020

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# CODE OF PRACTICE FOR STORAGE OF PADDY (First Revision)

**SRI LANKA STANDARDS INSTITUTION**

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# (First Revision)

**SLS 686: 2020**

**Gr. 11**


**SRI LANKA STANDARDS INSTITUTION**
**17, Victoria Place,**
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**Sri Lanka.**

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This Standard does not purport to include all the necessary provisions of a contract

**Sri Lanka Standard**
**CODE OF PRACTICE FOR STORAGE OF PADDY**
**(First Revision)**

## FOREWORD

This Standard was approved by the Sectoral Committee on Agriculture and was authorized for adoption and publication as a Sri Lanka Standard by the Director General as vice chairperson of council on 2020-12-21 in the absence of chairman. This was ratified by the Council of Sri Lanka Standards Institution on 2021-01-13.

The seasonal nature of paddy production, in conjunction with year-round consumer requirements had always made it necessary to store paddy for long periods. However, inherent metabolic activities of the paddy and also external agents of deterioration result in substantial qualitative and quantitative losses in storage. Storage losses are considerable, especially in Sri Lanka with a damp tropical climate favourable for paddy deterioration. The proper storage of paddy is essential for obtaining an acceptable rice produce that meets requirements of specification.

This Standard was first published in 1985. In this first revision, the title and scope has been expanded to accommodate all types of paddy storage systems. The control of pest in storage were updated and good warehouse keeping practices have been introduced to safeguard the consumers.

This code of practice is subjected to the provisions of the Food Act No. 26 of 1980, the Control of Pesticides Act No. 33 of 1980, the Employment of Women, Young Person and Children Act No. 47 of 1956 and the regulations framed thereunder, and any other regulatory and statutory requirements wherever applicable.

In the preparation of this code of practice the valuable assistance derived from the publications of the Codex Alimentarius Commission is gratefully acknowledged.

## 1 SCOPE

This code of practice prescribes the general practices in the processing of paddy from harvesting, threshing, drying, cleaning and storage of paddy in order to arrive at rice that is safe and of good quality for desired use.

## 2 REFERENCES

SLS 1528 Storage of cereals and pulses
Part 1: General recommendations for the keeping of cereals
Part 2: Practical recommendations
Part 3: Control of attack by pests

SLS ISO 712 Method of test for determination of moisture content in cereals and derived products – reference method

SLS ISO 4112 Cereals and pulses - Guidance on measurement of the temperature of grain stored in bulk

## 3 DEFINITIONS

For the purpose of this Standard the following definitions shall apply:

**3.1 bag type storage:** Storing of paddy in bags usually made of jute, polyethylene, woven polypropylene (poly sack) or other suitable packaging materials.

**3.2 bulk storage:** Storing paddy unpacked without the use of bags in large quantities.

**3.3 cleaning:** Separation of undesirable material from paddy.

**3.4 drying:** The process of removing excess water from the paddy through evaporation by the application of heat.

**3.5 dunnage (pallet):** Wooden or plastic frames used on floors for stacking bags to prevent direct contact between paddy and the floor.

**3.6 flat stores:** Structure having height equal or less than its width used for storage and handling of paddy in bulk and fitted with necessary equipment and accessories.

**3.7 fumigation:** The process of using chemicals in a form of fumes to control pests in paddy.

**3.8 harvesting:** The process of cutting and collecting the crop from the field, either by hand tools or use of machines and, bundling and piling of the crop in a dry place in preparation for threshing.

**3.9 hermetic storage:** A sealed storage system based on the generation of an oxygen and moisture depleted and carbon dioxide enriched inter granular atmosphere through the respiration of paddy and the living organisms naturally contaminated in the dried paddy.

**3.10 milling:** The process of
a) de-hulling (or de-husking) removing the hull (or husk) from the paddy, in order to get the brown rice
and
b) polishing (or whitening) removing the bran made up of pericarp, testa and aleurone layers from the brown rice

**3.11 paddy (rough rice):** Rice retaining its hull or husk after threshing.

**3.12 silo:** A tall bin having height greater than its diameter used for storage and handling of paddy in bulk and fitted with necessary equipment and accessories.

**3.13 storage:** A covered place or space to maintain and preserve the quality of paddy for future use.

**3.14 storage pests:** Organisms that are capable of causing damage and economic/ commercial loss to stored paddy. These organisms include birds, rats and mice or any other vertebrates and insects or any other invertebrates, fungi, bacteria, viruses, mycoplasma and weeds.

**3.15 threshing:** The process of removing the paddy grains from the panicles by means of rubbing, impact and stripping actions.

**3.16 warehouse**: The building used for storing paddy in bags.

## 4 PREPARATION OF PADDY FOR STORAGE

### 4.1 Harvesting

**4.1.1** Correct time of harvesting should be practiced to avoid losses incurred by harvesting too early or too late and/or under adverse weather condition.

**4.1.2** The optimum harvest time should be chosen depending on the variety planted. In general, indicators for optimum harvesting time for paddy are as follows:

a) 80 – 85 percent of the grains have changed from green to golden yellow colour;
b) the senescence of the flag leaves of the panicles;
c) the grain moisture content should be between 20 - 25 percent; and
d) 30 days after 50 per cent flowering.

**4.1.3** Harvesting should be performed after the recommended pre-harvest interval of application of any pesticide.

### 4.2 Threshing

**4.2.1** Harvested paddy should be threshed as soon as possible.

**4.2.2** Harvesting and threshing should be done separately for lodged, patches that have been attacked by pest and with contaminated grains.

**4.2.3** Threshing machine or tool and the floor should be properly cleaned and maintained to avoid contaminants.

**4.2.4** Technical adjustments of the machine should be carried out according to the manufacturer’s specification and instructions.

**4.2.5** Mechanical damages to paddy while threshing should be minimized.

### 4.3 Drying

**4.3.1** Pre-cleaning before drying should be carried out to remove large amounts of straw or any other plant materials, when necessary.

**4.3.2** Sun drying is allowed, however, drying in roads should be avoided.

**4.3.3** The thickness of paddy layer for sun drying should be maintained from 30 mm to 50 mm.

**4.3.4** Proper tempering and mixing methods should be adopted during sun drying.

**4.3.5** Drying floor should be clean and free of contaminants.

**4.3.6** Adequate attention should be given to the dried paddy to protect it from adverse weather conditions.

**4.3.7** Manufacturer's guidelines should be followed when drying machines are used.

**4.3.8** Proper hygienic and sanitary practices should be followed to avoid contamination of paddy.

**4.3.9** Paddy of different moisture contents should not be mixed when drying.

**4.3.10** Uniform drying should be ensured to avoid formation of hot and wet spots during storage.

**4.3.11** Paddy should not be subjected to excessive drying temperatures in order to preserve nutritional quality and suitability for milling or other processing operations.

**4.3.12** Fast drying and rewetting of paddy should be avoided.

### 4.4 Cleaning

**4.4.1** Paddy should be cleaned properly using appropriate techniques to remove damaged and immature kernels, other foreign matters and dead and live insects.

## 5 STORAGE

**5.1** Paddy to be stored should be clean, dry, free of foreign matters and un-infested with storage pests.

**5.2** The grain moisture content for safe storage of paddy should not be more than 14 per cent when tested by calibrated moisture meters in accordance with **SLS ISO 712**.

## 6 STORAGE IN WAREHOUSE

### 6.1 Bag Type Storage

**6.1.1** Empty bags should not be stored in close proximity to stored paddy.

**6.1.2** Bags once used should be properly cleaned before storage. They should be turned inside out and brushed well.

### 6.2 The warehouse

**6.2.1** The warehouse should be designed, constructed and maintained in keeping with the following objectives;

a) protection from adverse weather conditions;
b) provision for closing or opening of whole store as much as possible to protect the paddy from high atmospheric humidity;
c) provision with ample light and the store should not be dingy;
d) prevention of entry of pests; and
e) prevention of damage to the building during loading and unloading of paddy, especially by vehicles.

### 6.2.2 Site location and surrounding

**6.2.2.1** There should be direct access to appropriate forms of transport system with ample space to facilitate movement and maneuvering of vehicles within the location.

**6.2.2.2** The site of the warehouse should be away from surface water resources. The water table should be lying sufficiently low and it should not be a marshy land.

**6.2.2.3** The site should be located at areas that are free from flooding or water logging.

**6.2.2.4** The warehouse should be constructed away from sources of potential hazards that may affect the quality of produce and pose risk to the worker's health and safety.

**6.2.2.5** The long axis of the warehouses should be oriented to the standard direction.

**6.2.2.6** Warehouses should not be located near busy public facilities.

**6.2.2.7** The surroundings should be clear of vegetation to prevent shading and pest entrance.

**6.2.2.8** The warehouse site should be with the soil having adequate load-bearing capacity, resistance to compaction and drainage characteristics.

**6.2.2.9** Adequate space should be provided for future expansion.

**6.2.2.10** Necessary infrastructure facilities should be available.

### 6.2.3 Structural Requirements

#### 6.2.3.1 Foundation

Foundation should be constructed at least 3 m above the peak water table and should be chemically treated against termites.

#### 6.2.3.2 Floor

**6.2.3.2.1** The floor should be adequately strong and capable of withstanding heavy loads and vibrations.

**6.2.3.2.2** The floor should be 1m above the ground to permit easy loading or unloading into trucks at the sides of the warehouse.

**6.2.3.2.3** There should be provisions for wear resistance and safety (refractoriness and elimination of skidding risks).

**6.2.3.2.4** The floor should be smooth and easy to clean.

**6.2.3.2.5** Floor should be made up of durable and non-absorbent materials.

**6.2.3.2.6** Floor should be free from cracks and crevices and moisture proof.

**6.2.3.3 Walls**

**6.2.3.3.1** The walls should be adequately strong.

**6.2.3.3.2** The wall should be made up of durable, impervious, crack-resistant materials that can be cleaned easily.

**6.2.3.3.3** The internal surfaces of the walls should be smooth and free from projections to eliminate dust-laden surfaces.

**6.2.3.3.4** The walls should be painted white or any light colored material.

**6.2.3.3.5** Any openings in a store should be doors or ventilators that can be opened and closed well.

**6.2.3.3.6** A waterproof barrier should be incorporated into the base of the walls.

**6.2.3.3.7** A concrete strip about 1 m wide should be laid around the warehouse to prevent rain from eroding the base of the walls below the damp course.

**6.2.3.3.8** Partitions should be constructed to separate the stored bagged paddy from other post-harvest facilities installed in the warehouse.

**6.2.3.4 Roof**

**6.2.3.4.1** Internal pillars supporting roof frames should be avoided because it can interfere with the pest control and other stock management procedures.

**6.2.3.4.2** Roof frames made up of wood or steel should be designed so that they transfer the weight of the roof to the supporting columns or to the walls.

**6.2.3.4.3** Roof should be provided with the necessary lateral and vertical wind brace to resist forces due to strong winds and earthquakes.

**6.2.3.4.4** The strength of the roof construction should be sufficient to handle the force of the strongest winds that can be expected.

**6.2.3.4.5** The roofing materials should be made up of galvanized iron sheets in light colors. The external surface should be reflective or light colored to minimize the amount of heat that it can absorb.

**6.2.3.4.6** The roofing materials should be fire proof and refractory.

**6.2.3.4.7** Roofing tiles should be avoided.

**6.2.3.4.8** There should be no opening between the wall and the roof to avoid entry of pests and to minimize contaminations. In the event that the existing warehouses have gaps between the roof and the wall, a mesh should be installed.

**6.2.3.4.9** The roof should be a good thermal insulator and should be resistant to attacks by pests. Further the roof should not harbor pests.

**6.2.3.4.10** Translucent roofing sheets should be used at desired places which would eliminate the need of artificial lighting.

**6.2.3.4.11** Eave should be wide enough and the pitch of the roof should be between $17^0$ and $22^0$.

**6.2.3.4.12** Roof overhang at eaves level should be sufficient to protect the walls from rain water.

**6.2.3.4.13** Rainwater drainpipes should be adequately spaced.

**6.2.3.4.14** Rainwater drainpipes should be rodent proof to keep away rodents.

**6.2.3.5 Doors and windows**

**6.2.3.5.1** There should be at least two doors at opposite sides to facilitate rotating of stocks on a first-in first-out basis.

**6.2.3.5.2** The door should be wide enough for easy access.

**6.2.3.5.3** The door should be made up of steel or at least reinforced along their lower edges with metal plates when other material are used to protect from rodents.

**6.2.3.5.4** The door frame should be tightly fitted to prevent entrance of pests and to facilitate fumigation.

**6.2.3.5.5** Sliding doors should be fitted outside and swing doors should be opened outwards not to sacrifice the storage capacity of the warehouse.

**6.2.3.5.6** A canopy should be constructed over every entrance to allow continuous loading and unloading even during rains.

**6.2.3.5.7** Mesh screen with recommended mesh size should be installed in every windows.

### 6.2.4 Functional Requirements

**6.2.4.1** The internal layout of the warehouse should be designed in accordance with the First in -First out method of managing inventories.

**6.2.4.2** Operational procedure should ensure easy identification of different varieties and easy movement of stocks.

**6.2.4.3** Operational procedure should minimize wide fluctuations of temperature and humidity of the stored paddy.

**6.2.4.4** Stacks should be inspected regularly to detect hot spots and pest infestations.

### 6.2.5 Stacking and piling system

**6.2.5.1** Bags should be stacked in such a way that the stack is of manageable size and pattern to ensure stability.

**6.2.5.2** Stacks should not be more than 16 bags high. There should be at least 900 mm space between roof frame and top of the stack.

**6.2.5.3** An alleyway between stack and wall should be wide enough (minimum 1m).

**6.2.5.4** Space between piles should be 2 m wide.

**6.2.5.5** Stacking around pillars or against walls should be avoided.

**6.2.5.6** The piles should be stacked in a tight, neat and squared off manner.

**6.2.5.7** Stack plan should be clearly demarcated on the floor as a permanent feature.

**6.2.5.8** An updated bin card should be attached to every pile. The standard information in the bin card should be as follows;

a. Date received or procured
b. Source of stock
c. Moisture content
d. Quantity of bags
e. Variety
f. Date of applied pesticide/fumigation if any

### 6.2.6 Dunnage

**6.2.6.1** Bags should be stacked on pallets. The minimum height of the pallet should be 100 mm.

**6.2.6.2** Pallets, square timbers or any local substitute should be covered with clean empty sacks or plastic sheets to prevent accumulation of spilled paddy beneath the pallets.

**6.2.6.3** Wooden pallets should be treated appropriately.

### 6.2.7 Environmental control

**6.2.7.1** Warehouse should be well ventilated and prolonged exposure to sunlight should be avoided.

**6.2.7.2** Natural ventilation openings should be provided with shutters to maintain adequate ventilation.

**6.2.7.3** Ventilation openings should be fitted with anti-bird grills from outside and insect screens (removable for cleaning) from inside.

**6.2.7.4** Mechanical ventilation and/or insulation systems should be designed and constructed to provide proper aeration and to maintain the desired temperature.

### 6.2.8 Drainage

**6.2.8.1** Proper drainage system should be constructed to prevent water stagnation.

**6.2.8.2** The drainage canals should be protected by grills.

### 6.2.9 Lightings

**6.2.9.1** Lightings should be provided to allow adequate and effective cleaning of the warehouse facility and to ensure hygienic storage operations.

**6.2.9.2** Shatterproof materials should be used to enclose the lightings fixtures inside the warehouse to ensure that the paddy are protected from contamination due to breakages.

### 6.2.10 Good Warehouse-keeping

#### 6.2.10.1 Warehouse maintenance

**6.2.10.1.1** A monthly scheduled inspection should be carried out to avoid any occurrence of holes, leakages or damages in the structure.

**6.2.10.1.2** Structural defects should be immediately and properly repaired.

#### 6.2.10.2 Warehouse hygiene and sanitation

**6.2.10.2.1** The warehouse and its immediate surroundings should be thoroughly cleaned and treated chemically or otherwise prior to storage.

**6.2.10.2.2** The surrounding areas of the warehouse should be free of weeds.

**6.2.10.2.3** The warehouse should be free from unnecessary materials like pieces of lumber and old machines.

**6.2.10.2.4** Routine cleaning should be carried out in accordance with the cleaning schedule and be recorded.

**6.2.10.2.5** The entire warehouse structure should be cleaned and brushed down regularly to prevent contamination from dirt.

**6.2.10.2.6** A weekly cleaning of the periphery of the piles should be done to remove dust and cobwebs and to eliminate the possible breeding place of rats, birds, and insects.

**6.2.10.2.7** Warehouse, as well as, pallets (used or unused) and machines should be cleaned immediately upon paddy disposal to remove accumulated grain residues, dust, and cobwebs.

**6.2.10.2.8** After cleaning, recommended pesticide should be applied to the entire storage structure, which includes walls, floors and posts.

**6.2.10.2.9** Torn bags should be immediately mended to avoid spillages, collapse of the pile, and further attack from pests.

**6.2.10.2.10** Cleaning remnants, unserviceable empty bags and totally damaged grains should be properly disposed of.

**6.2.10.2.11** A separate room should be provided for pesticides and cleaning materials.

**6.2.10.2.12** Bags and pallets should be properly stored in a physically separated section of the warehouse and stacked neatly and orderly.

**6.2.10.2.13** Pest inspection and monitoring program should be in place to prevent harborage and breeding of pests on the grounds and within the warehouse facility.

**6.2.10.2.14** Rodent control should be carried out regularly by using mechanical trap or chemical baiting.

### 6.2.10.3 Stock maintenance and preservation

**6.2.10.3.1** Representative samples should be taken randomly from a batch of bagged paddy and moisture content should be measured using calibrated moisture meters.

**6.2.10.3.2** Newly received paddy with moisture content above 14% should be temporarily stored and dried down to 14% moisture content or below.

**6.2.10.3.3** Workers should be discouraged using hooks when handling bags to avoid spillages.

**6.2.10.3.4** Spillages if any should be immediately collected. These collected grains may either be placed into bags and piled separately or cleaned and added to busted bags.

**6.2.10.3.5** At least 100 g sample of every variety of stocks stored in the warehouse should be maintained at the warehouse office for easy reference.

**6.2.10.3.6** The ambient temperature and humidity in the warehouse as well as temperature of the grains should be measured and recorded at regular interval.

**6.2.10.3.7** Damaged grains that are no longer fit for consumption should be disposed of immediately.

## 7 BULK STORAGE

**7.1** Bulk storage should follow the basic requirements of warehouse mentioned in the clauses **6.2.2, 6.2.4, 6.2.8** and **6.2.9**.

**7.2** The bulk storage should be aerated by circulating air to maintain proper and uniform temperature and to minimize development of hotspots on grains.

### 7.3 Bulk storage in "flat stores"

**7.3.1** The interior of premises, the surrounding and all handling equipment should be cleaned and treated.

**7.3.2** The walls of the building should be strong enough to withstand the lateral pressure by bulk filling.

**7.3.3** The top surface of the bulk should be levelled to improve the air movement and to maintain adequate ventilation.

### 7.4 Silo storage

**7.4.1** The silo should be strong enough to carry the intended load.

**7.4.2** Construction material should be appropriate to the size of the silo and the climatic conditions of the area.

**7.4.3** All metal materials used for construction should be corrosion resistant and tolerable to adverse weather conditions.

**7.4.4** Any part in direct contact with paddy should not be painted.

**7.4.5** Water proofing should be done to prevent entering water into silo.

**7.4.6** Openings intended for aeration and grain inlet located at the roof should be designed to prevent entering of water into silo.

**7.4.7** Roof should be constructed with access doors.

**7.4.8** Adequate hygienic precautions should be taken for handling grains in all types of conveyors.

**7.4.9** Fumigation facilities and cleaning, sampling, temperature control and monitoring, as well as ventilation systems, should be included when the installation plans are drawn up.

### 7.5 Temperature and Relative Humidity (RH) Measurement

**7.5.1** The temperature and RH should be measured and recorded at regular intervals using calibrated thermometer and RH sensors, placed at different locations inside the silo.

**7.5.2** The sensor connectors should be insulated using materials that are resistant to abrasions, moisture and chemicals.

**7.5.3** The temperature of paddy stored in silos or any other bulk store should be measured in accordance with **SLS ISO 4112**.

### 7.6 Moisture Measurement

**7.6.1** The moisture content of the stored paddy should be measured and recorded at regular time intervals.

**7.6.2** Built-in moisture meters should be installed. If moisture meters are not built-in, a calibrated portable moisture meter should be available.

### 7.7 Operation and Maintenance

**7.7.1** Silo should be appropriately designed for easy cleaning, maintenance and pest control.

**7.7.2** An operator's manual should be available and easily accessible.

**7.7.3** Training on operation and maintenance should be provided for workers.

### 7.8 Safety Requirements

**7.8.1** Adequate and appropriate fire control equipment should be available.

**7.8.2** Ladders should be installed inside and outside the wall.

**7.8.3** Harness attachments worn by operators should be available for climbing and entering silos.

**7.8.4** An emergency alarm system should be installed.

**7.8.5** Safety warnings and signs should be displayed in danger zones.

**7.8.6** Protective gears should be provided for staff and workers.

## 8 SPECIAL SYSTEMS OF STORAGE

### 8.1 Emergency storage

**8.1.1** Stacks should be stored on an elevated ground using pallets. Dunnage should be covered with polythene sheets or water proof mats.

**8.1.2** **S**torage for more than 7 days should not be practiced.

**8.1.3** Covers should be removed temporally to facilitate aeration during dry weather. Paddy should be either dried immediately or parboiled and milled in case of exposure to unexpected rain or wetting.

### 8.2 Hermetic storage

**8.2.1** Regular monitoring and recording of temperature, RH, oxygen and carbon dioxide concentration should be performed.

**8.2.2** Hermetic structures should be amicable to prevent pest infestations in dry paddy and development of mould.

**8.2.3** The walls and roof of the store should be air and moisture proofed.

**8.2.4** Complete emptying should be carried out at the end of the storage period.

## 9 STORAGE DURING TRANSPORT

**9.1** Recommended maximum transport period should be 24 hours.

**9.1.1** Transit time for movement from field to drying facility should be minimized unless the paddy is already at acceptable storage moisture level (14 %) before transport.

**9.1.2** The vehicles and the containers should be clean, dry and free from objectionable odours and infestations.

**9.1.3** Wetting by any form of precipitation should be prevented.

## 10 CONTROL OF PESTS IN STORAGE

**10.1** Prevention and control of pest in accordance with the methods as prescribed in **Part 3** of **SLS 1528**.

**10.2** Precautions should be taken to prevent the entry of insects, rodents, birds and bats to the building even at times when they are kept open for the purpose of loading and unloading or ventilation.

**10.3** The appropriate pest control methods should be employed for control of pests or microorganisms. Recommended pesticides for stored products should be used.

**10.4** Efficacy of the treatment used should be checked at least one week after the application.

**10.5** Fumigation should be carried out in sealed buildings. If the building cannot be sealed, fumigation should be carried out under gas-proof sheeting.

**10.6** Recommended dosage of the chemical should be used for fumigation.

**10.7** Notice should be displayed indicating the date of fumigation and date of de-gassing.

**10.8** The store should be aerated to get rid of any residual gas at the completion of fumigation process.

**10.9** Appropriate personal protective equipment should be used during application of fumigants or any pesticide.

NOTE: Fumigation services are regulated under the Control of Pesticides Act No 33 of 1980, and therefore services from licensed pest control service providers are indicated under such circumstances

**10.10** Fumigants should be kept under lock and key and away from children and uninformed persons.

**10.11** Expired pesticide and empty containers should be disposed of as recommended by appropriate law.

**10.12** Application of rodenticides should be carried out only by properly trained persons and be recorded.

## 11 WORKER'S HEALTH, WELFARE AND TRAINING

### 11.1 Worker health

**11.1.1** Accident prevention and emergency procedures should be documented and readily available with clear instructions to all workers.

**11.1.2** These procedures should be displayed in the appropriate language for the workforce.

**11.1.3** Instructions should be supported by warning signs and symbols where appropriate.

**11.1.4** First-aid boxes and other safety equipment should be made available at permanent sites. All workers and personnel in-charge of safety should be informed of these locations.

**11.1.5** No portion of the warehouse should be used as living quarters.

### 11.2 Welfare

All employment conditions should comply with regulations.

### 11.3 Personnel training

**11.3.1** All the warehouse personnel should be trained on good warehousing practices and basic food hygiene and food safety.

**11.3.2** Training and re-orientation of the warehouse personnel should be done at least every two (2) years.

**11.3.3** Training should be given to workers operating dangerous or sophisticated equipment and handling of chemicals.

**11.3.4** Records of training for each employee should be available.

### 11.4 Workers' hygiene

**11.4.1** There should be a strict observance of the "no smoking", "no spitting" and "no eating" policy inside the storage system.

**11.4.2** Any person who has or appears to have an infectious disease, open wound, boils, sores, or infected wounds, or any other source of infection should not be employed.

**11.4.3** Appropriate hygienic practices should be known to all staff and practiced.

## 12 DOCUMENTATION AND RECORDS

**12.1** All cleaning, pest management, operational activities should be properly documented.

**12.2** Appropriate records from all storage practices and conditions should be kept and retained until the shelf-life of the end product is over.

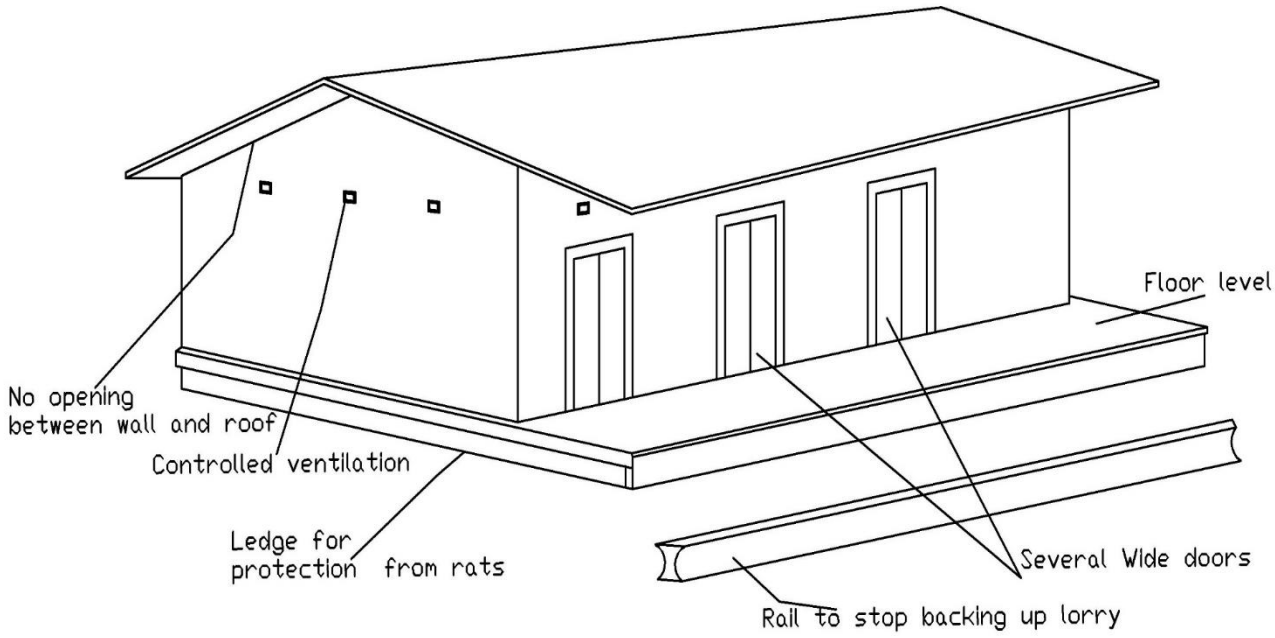
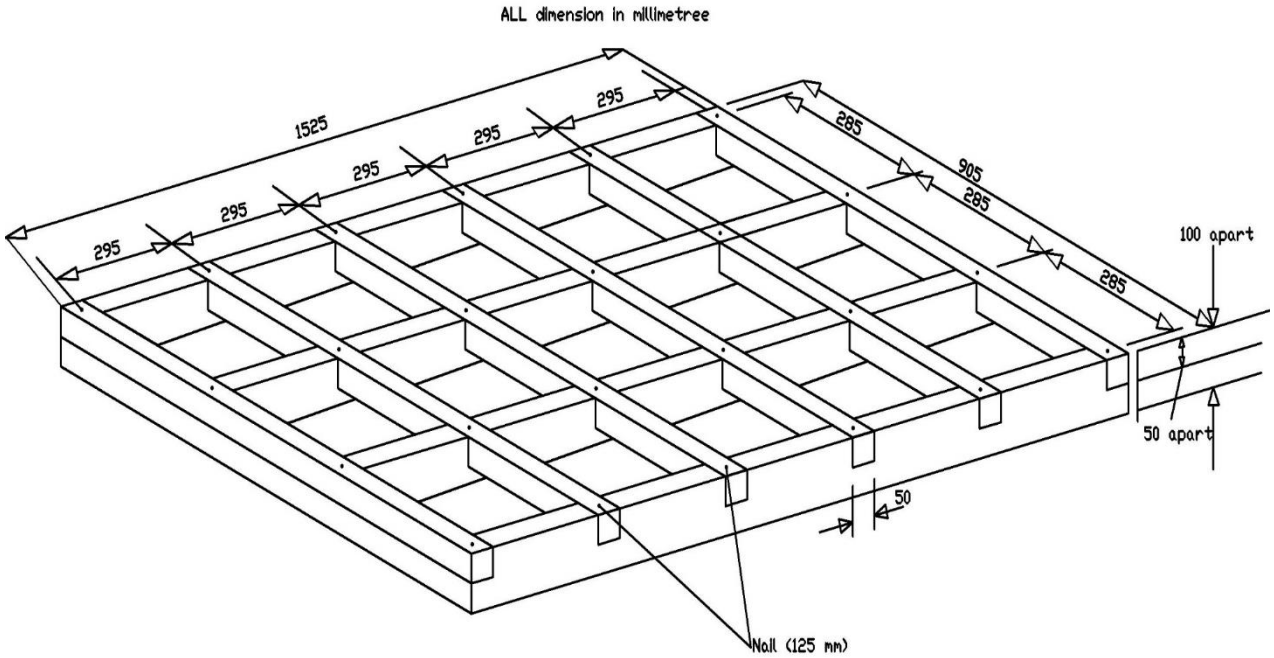



FIGURE 1 - Modern warehouse for storage




NOTE - Use hard wood for example , Hora, Dun, Wewarna etc.
Treat timber with 2 coats good wood preservative before assembly.

FIGURE 2 - Dunnage - Type 1

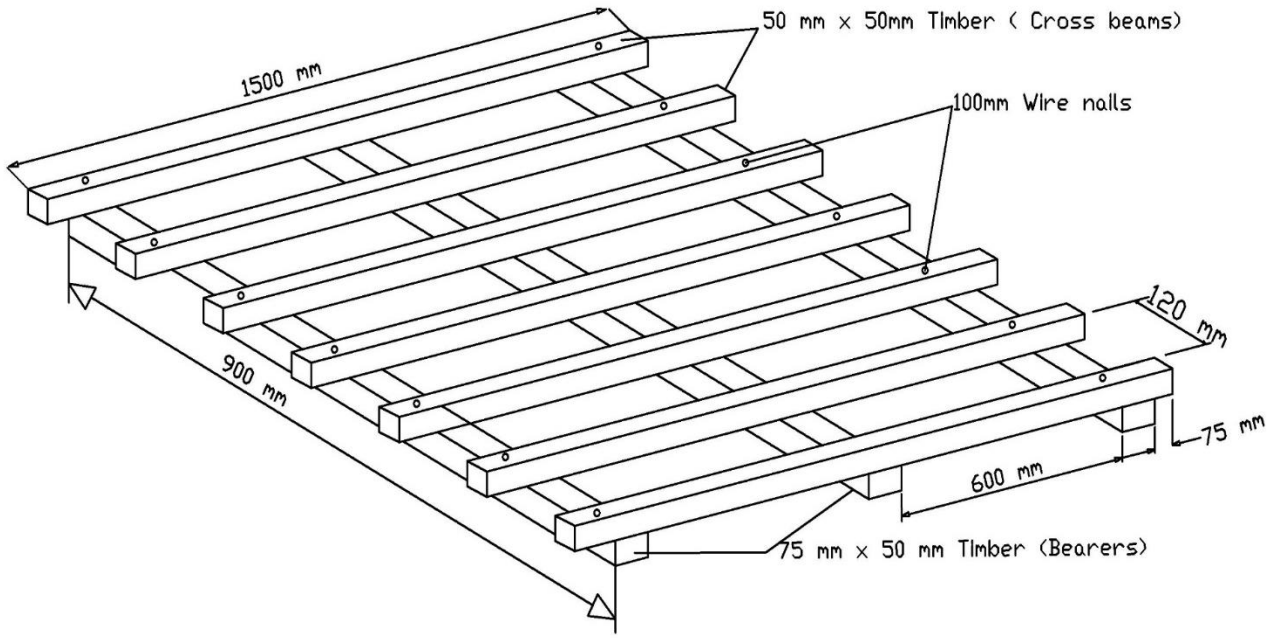



FIGURE 3 - Dunnage - Type 2

NOTES

1 Cross beams sunk in 25 mm cut on bearers.

2 100 mm nails - head sunk into cross beam and turned under.

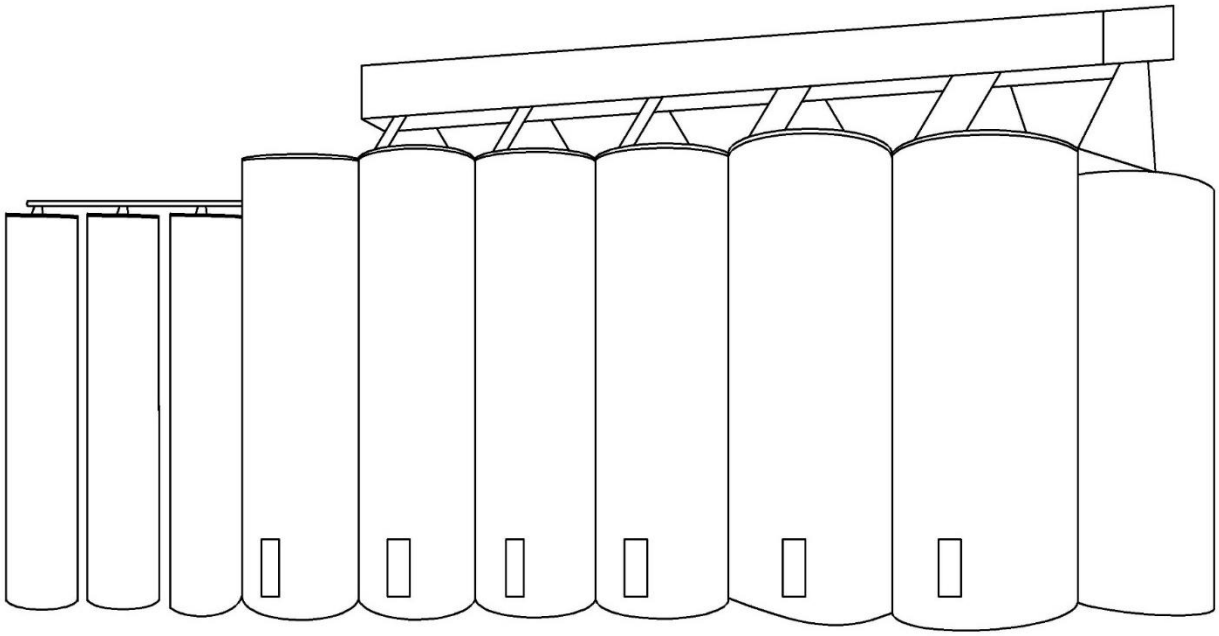


FIGURE 4 - Modern bulk storage system
dryer and cleaner on left

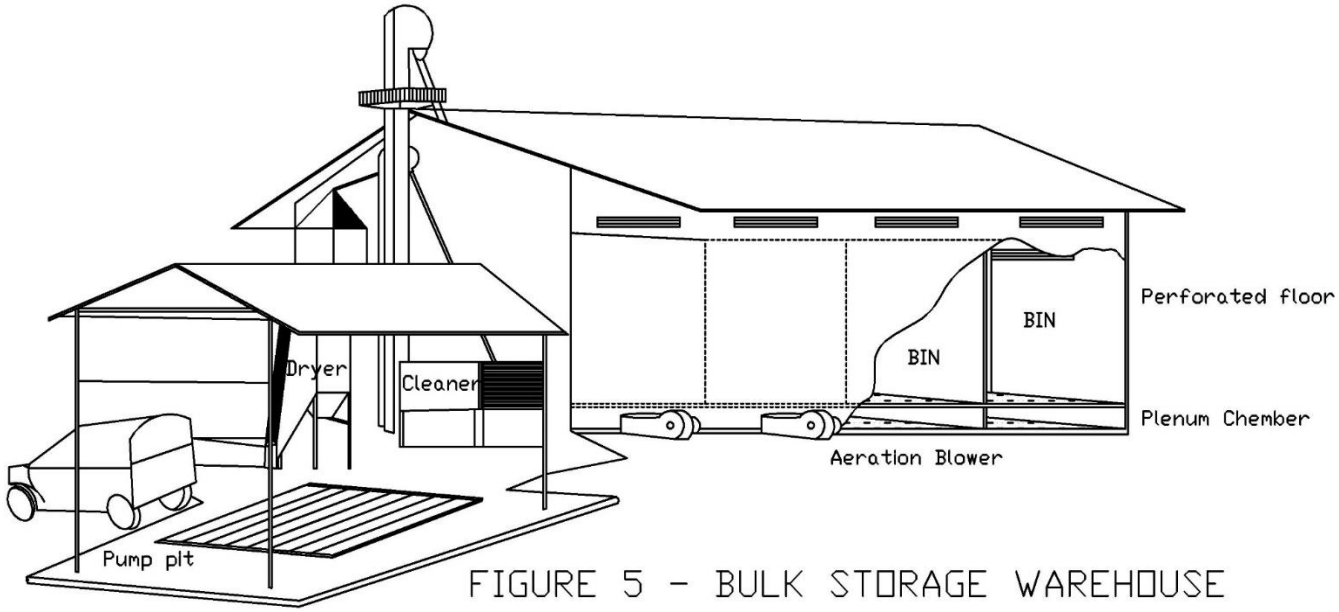



FIGURE 5 - BULK STORAGE WAREHOUSE

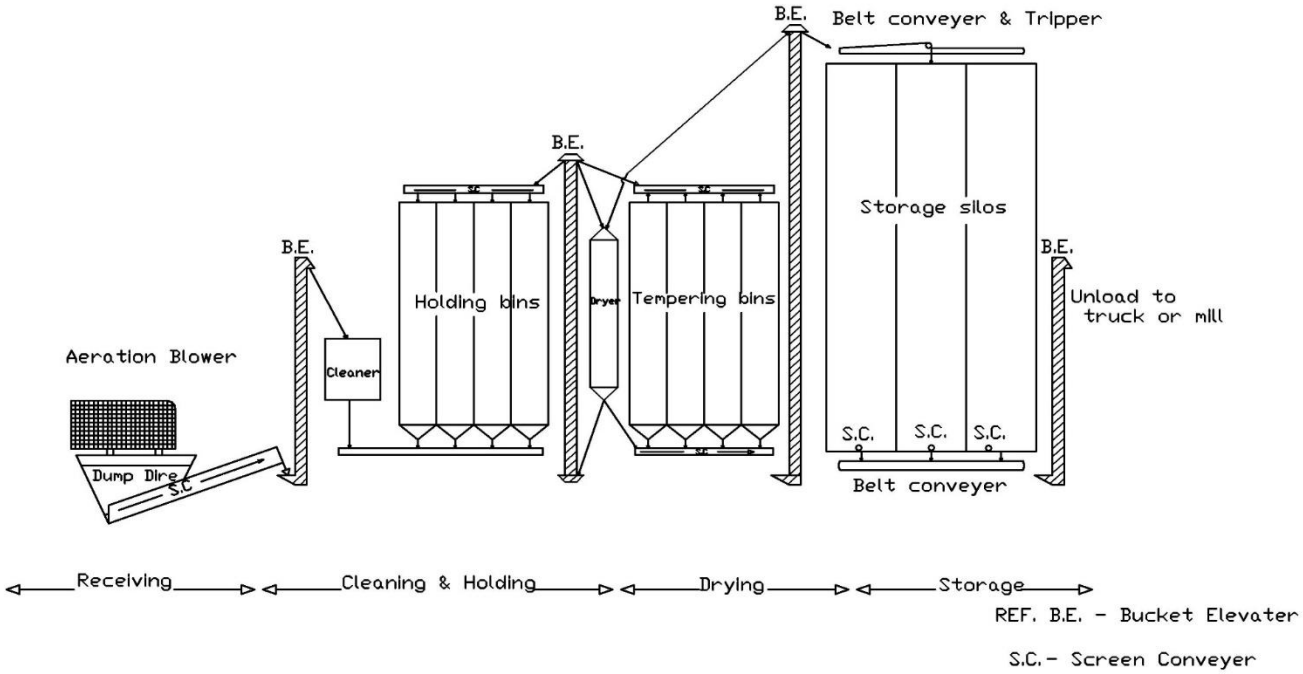



FIGURE 6 - FLOW CHART OF BULK STORAGE SYSTEM

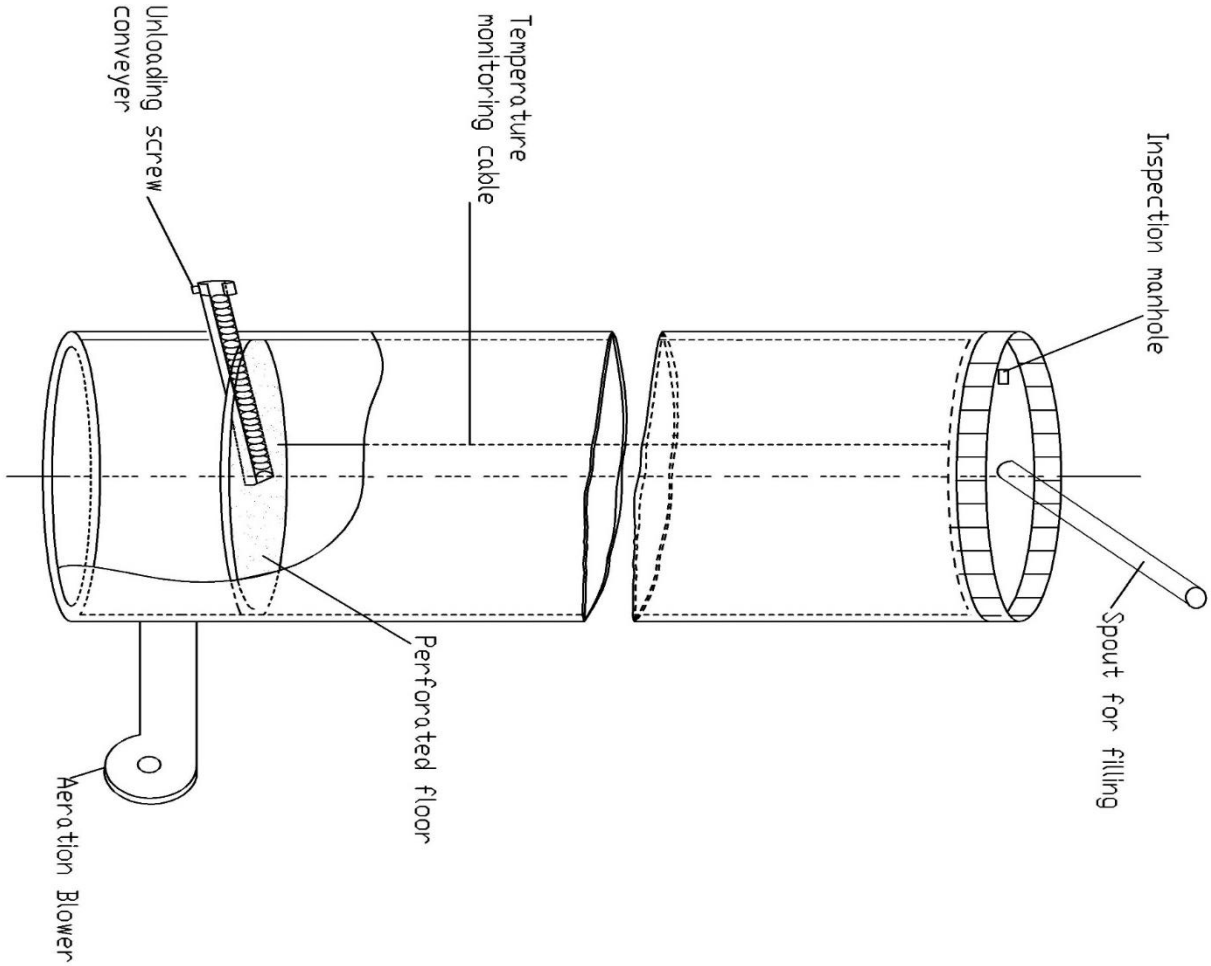



FIGURE 7 – STORAGE SILO

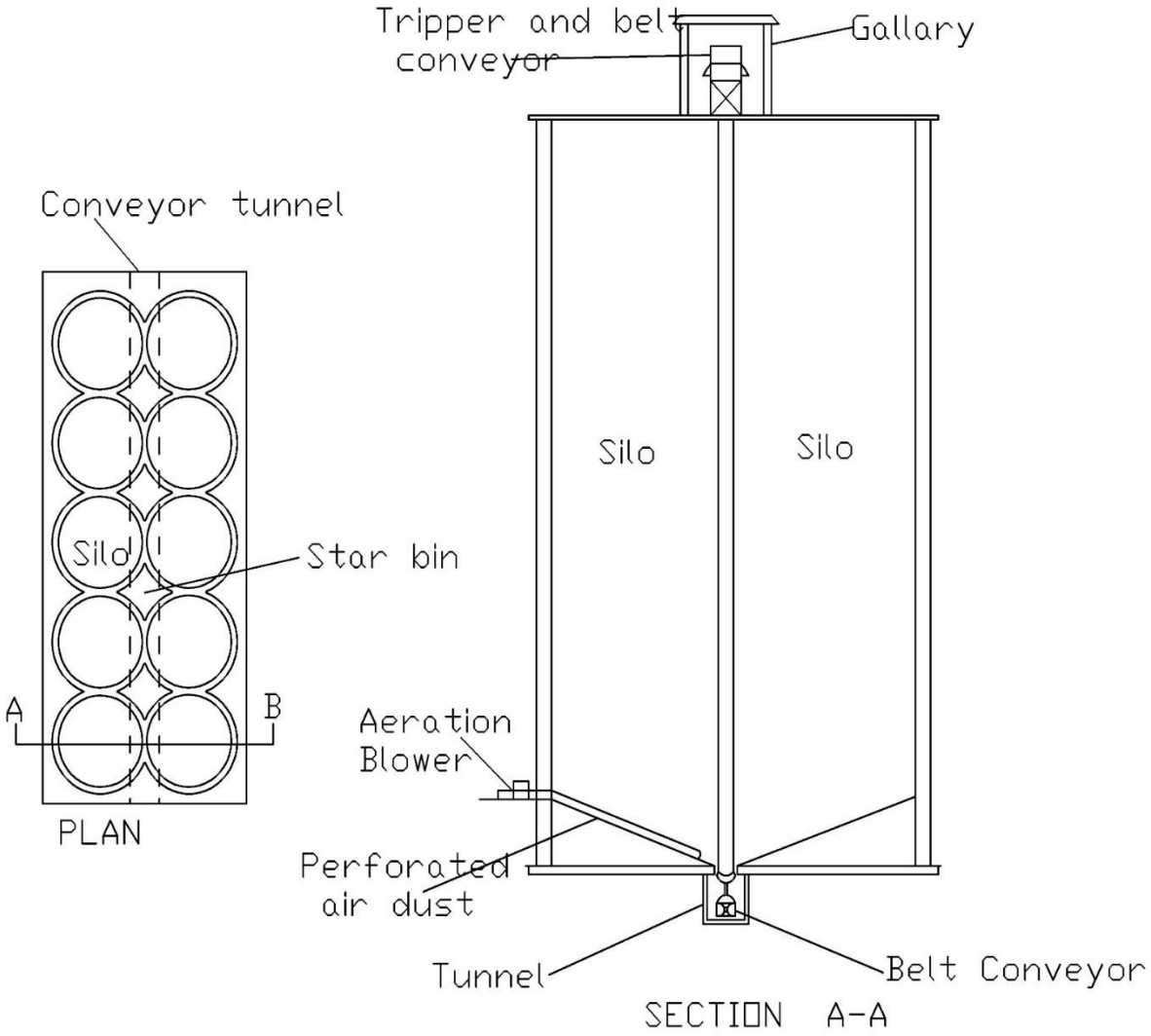



FIGURE 8 - ARRANGEMENT OF SILOS

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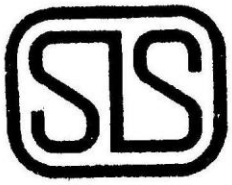


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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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