

# ENGINEERING SPECIFICATIONS

## SCHEDULE –I

### General details of standard conventional godown of 5000 Metric tonne capacity(MTC)

#### (A) Details for 21.80 m C/C span godown (capacity = 5000MT, compartment = 3 Nos.):

- Godown size (Centre to Centre) = 125.55m x 21.80m
- Godown size (Outer to Outer) = 126.01m x 22.26m
- Godown size excluding Verandah: 126.01m x 22.26m
- Godown size including one Verandah (1.83m): 126.01m x 24.09m

#### (B) Details of 28.7 m C/C span godown (capacity = 5000MT, compartment = 2 Nos.):

- Godown size (Centre to Centre) = 92.80m x 28.70m
- Godown size (Outer to Outer) = 93.26m x 29.16m
- Godown size excluding Verandah: 93.26m x 29.16m
- Godown size including one Verandah (1.83m): 93.26m x 30.99m

#### General details for both the spans

1. Rail side Verandah Width: 2.44m
2. Road side Verandah Width: 1.83m
3. Plinth level: 0.60m to 0.91m for roadfed depending upon the topography of plot and 1.06m from top of the rail for railfed.
4. 5000 MT godowns = 3 Compartments for 21.80 m span  
5000 MTC godowns = 2 compartments for 28.70 m span
5. Each Compartment C/C length (9 panels) = 41.85m for 21.80 m span  
Ist compartment C/C length (9 panels) = 52.20 m for 28.70 m span and 2<sup>nd</sup> compartment C/C length (7 panels) = 40.60 m for 28.70 m span
6. No. of Stacks (size = 6.10m x 9.14m) in each standard Compartment of 9 panels = 12 Nos. for 21.80 m span  
No. of stacks (size = 6.10m x 9.14m) in each standard compartment of 9 panels = 20 Nos. for 28.70 m span
7. Godown height on each side in respect of road-fed =5.48m & Rail-fed = 5.60 m (minimum)
8. Verandah Truss height on road side=3.48m, Verandah Truss height from floor level on Rail fed side=4.09m. The height (minimum) of gutter pipe from top of rail=4.6m
9. (a) No. of Rolling shutters/steel garage doors = 12 Nos. in 5000 MT for 21.80 m span  
(b) No. of rolling shutters/steel garage doors = 14 nos. in 5000 MT for 28.70 m span
10. Size of rolling shutters (Clear opening) = (1.83m x 2.44m)
11. (a) Bottom Ventilators (V6) size 0.60m x 0.60 m =42 Nos. (Both long walls) for 21.80 m span  
(b) Bottom Ventilators (V6) size 0.60m x 0.60 m =18 Nos. (Both long walls) for 28.70m span
12. (a) Top Ventilators size 1.50m x 0.60m = 54 Nos. (Both long walls) for 21.80m span (one in each panel)  
(b) Top Ventilators size 1.50m x 0.60m = 64 Nos. (Both long walls) for 27.80m span (two in each panel)

**Note:** For road fed godowns, continuous platform of 1.83 metre width shall be provided on front side of the godowns . On the back side, 0.23mt. projected RCC nosing is provided only in front of garage doors / rolling shutters or 0.90 meter wide platform is provided in front of garage shutters/ rolling shutters' openings only as per site requirement. For rail fed godowns 2.44 metres wide continuous platform on rail side and 1.83 metres wide continuous platform on road side shall be provided.

Any details not mentioned above will be as per the CWC existing specifications for conventional godowns. In case CWC does not have any specifications, then relevant IS code 607 of 1971 for construction of godowns will be followed.

Tubular Trusses: As per the wind speed zone (33m/sec to 55m/sec) classified in the relevant latest BIS code.

Carpet area of each compartment =  $41.39\text{m} \times 21.34\text{ m} = 883.26\text{ Sqm}$  for 21.80 m span

Ancillaries Required: Compound wall, office block alongwith sanitary, electrification & water supply work.

Weigh Bridge is generally provided above 10000MT capacity or otherwise as per requirement.

## SCHEDULE-II

### SPECIFICATIONS FOR THE CONSTRUCTION OF CONVENTIONAL TYPE GODOWNS

#### GODOWN

1. Normal Size of Godown of 5,000 MT capacity.

Internal dimensions of the 3 compartments of godown:

$$2 \times 41.45 \text{ m} \times 21.34 \text{ mt} = 1769.09 \text{ sq.mt}$$

$$1 \times 41.39 \text{ m} \times 21.34 \text{ mt} = 883.26 \text{ sq.mt}$$

1. **FOUNDATION:** The depth of foundation is proposed for Ordinary Soils at 1.30 M for columns and 1.20 M for panel walls (foundation design is based on for soil capacity of 10 tonnes per sq.mt). For expensive soils/black cotton soils, foundation should be suitably designed alongwith requirement of pile foundations as per site requirement .

PCC 1:5:10 (1 cement: 5 coarse sand: 10 stone aggregate of 40 mm nominal size) is provided under columns and panel walls respectively. R.R. Masonry/Brick Masonry in cement mortar 1:6 (1 cement : 6 coarse sand) is proposed for the foundation and superstructure. The excavated good quality of earth shall be reused to fill in the wall- trenches and remaining earth is used for filling under floors. Blanket course of sand/moorum under bed concrete are provided for black cotton soils/poor soils to increase soil bearing capacity. Design of footings of structure should be in accordance with the bearing capacity of soil at site.

2. **PLINTH BEAM, TIE BEAM & COLUMNS:** All RCC works shall be executed in design mix of M 25 or nominal mix of 1:1½:3 (1 cement: 1½ coarse sand: 3 stone aggregate of 20 mm nominal size). 0.15m thick RCC tie beam is provided on all the walls at a height of 5.18m from floor level in the godown. Grade beam at ground level & an additional beam at door level are to be provided in earthquake Zone iii & iv as per design to withstand the bearing loads & earthquake forces.

3. **SUPER STRUCTURE:** All the walls are to be provided with 34 cm thick brick masonry or 38 cm thick RR masonry in cement mortar 1:6 (1 cement: 6 coarse sand).

4. **FINISHINGS:** 12mm thick cement plaster in cement mortar 1:6 (1 cement: 6 fine sand) on both sides of walls, 6mm thick plaster in cement mortar 1:3 (1cement:3 fine sand) on exposed surface of columns is provided. 3 or more coats of white wash on inner side of walls & colour wash/ snowcem on external side of walls are to be provided.

5. **PLATFORM:** Covered verandah of 1.83 m wide with cantilever Truss on road side and 2.44 m wide on rail fed side with AC/GI/Galvalume sheet roofing with necessary accessories like valley gutters, downtake pipes etc. is to be provided. For disposal of rain water, a continuous RCC hume pipe drainage system with intermediate chambers/manholes is provided throughout the length of railway side platform and disposal of rain water is planned in such a way so that rain water is released away from the railway track.

#### 6. FLOORING:

##### (A) In Ordinary soils:

(a) Rammed Earth filing as per requirement. (b) 150 mm thick sand filling (c) WBM with 150 mm thick stone aggregate of grade II in two layers and 75mm thick layer of stone aggregate of grade III (d) 50mm thick C.C flooring 1:2:4 (1 cement: 2 coarse sand: 4 coarse aggregate 20 mm nominal size) with a floating coat of neat cement. Total crust thickness of flooring is 27.5 cm.

##### (B) In Expansive soils/Black cotton soils:

(a) WBM with 150 mm thick stone aggregate of grade I, 100 mm thick layer of stone aggregate grade II and 75 mm thick layer of stone aggregate grade III (b) 50 mm thick CC flooring 1:2:4 (1 cement: 2 coarse sand: 4 coarse aggregate 20 mm nominal size) with a floating coat of neat cement.

Total crust thickness of the flooring is 37.5 cm.

An additional 235 mm thick blanket course of moorum underneath the WBM grade-I is provided in such soils.

7. **ROOFING:** Tubular trusses on RCC columns to support A.C./GI/Galvalume sheeting shall be provided. Fibre glass (Translucent) sheets are provided for about 2% of the roofing area for natural light. Inside height of godown from Plinth level to Bottom of Trusses is 5.48 m for road-fed & minimum 5.60 m for rail-fed godown. Pre-engineered steel structures with pre-painted polyester coated sheets with turbo ventilators, translucent sheets etc. are also used in the warehouses.

Specifications for Self-Supported Trussless roofing system with Galvalume coated steel sheets of required thickness are also being framed and likely to be uploaded on our website.

8. **WINDOWS, VENTILATORS, ROLLING SHUTTERS AND STEEL DOORS:** Previously we were providing Rolling shutters (clear opening) of size 1.83m x 2.44m in the godowns. Now 1.83x2.44m size steel garage doors are provided in place of rolling shutters and these doors are to be fixed on outer edge of the walls for easy and full opening of the doors. Windows of size 0.60m X 0.60m and ventilators of size 1.50m X 0.60 m with angle iron frame as shown in the relevant drawing fixed on inner edge of the walls. Top ventilators are also covered with semi barrel type expanded metal grill for checking the entry of birds.

#### 9. **ROADS:**

##### **(A) In ordinary soils:**

(a) WBM with 200 mm thick layer of stone aggregate grade I, 75 mm thick layer of stone aggregate grade II and 75 mm thick layer of stone aggregate grade III (b) 40 mm thick premix carpeting. Total crust thickness of road is 39 cm.

##### **(B) In Expansive soils/Black cotton soils:**

(a) WBM with 230 mm thick layer of stone aggregate grade I, 100 mm thick layer of stone aggregate grade II and 75 mm thick layer of stone aggregate grade III (b) 40 mm thick premix carpeting. Total crust thickness of road is 44.5 cm.

An additional 300 mm thick blanket course of moorum beneath the WBM of grade-I is provided in such soils.

Note: 6.70 m to 9.14 m wide roads are provided if there is one row of godowns. 9.14 m to 15 m wide roads are provided in between two rows of godowns. Crust thickness may be more alongwith provision of a blanket course of moorum in case of poor soils having less CBR value as per design requirement.

10. **WEIGHBRIDGE & CABIN ROOM:** Electronic Lorry weigh Bridge of 40/60 MT capacity (as per CWC requirement) with platform size 9 m x 3 m or more of reputed make shall be installed with suitable cabin room.

#### 11. **LAND REQUIREMENT FOR CONVENTIONAL TYPE STORAGE GODOWNS:**

a) First 5000 MT capacity = 1.75 Acres (approx) b) 10000 MT capacity = 3.35 Acres. c) 15,000 MT capacity = 4.95 Acres. d) 20,000 MT capacity = 6.55 Acres for roadfed godowns under ideal conditions of dimensions of plot.

e) 25,000 MT railway siding godown (one BG line) = 8.50 Acres. f) 50,000 MT railway siding godown (two BG lines) = 18 Acres.

**NOTE:** The plot of land shall be as far as possible in rectangular shape. In case of railway siding godowns should be placed such that they accommodate full length of rake (minimum 640 meter) in single placement. The above land requirements are approximate and may vary depending upon the shape and topography of the land.

12. **COMPOUND WALL:** 1.83 m high boundary wall in brick/RR masonry above Ground level with 0.6m high, 6 rows of barbed wire/concertina coils with angle iron posts 1.02m C/C on top of wall is to be provided. 15mm thick plastering in cement mortar 1:6 on rough side of the wall and 12mm thick plastering with cement mortar 1:6 on plain side of the wall is to be provided.

13. **BOUNDARY WALL GATE & WICKET GATE:** 4.90 m wide main steel gate and 0.91m wide wicket gate are provided as per drawing.

14. **ELECTRICAL INSTALLATION:** For Street light we use tube lights on the back side of the godown and sodium vapour flood lights in the front side of the godown. Tube light fittings are used on all the doors on the verandah sides. On outside of godowns one 3 pin power / power plug point is provided in each compartment. Suitable tube lighting to be provided inside the godowns with tube lights.

15. **WATER SUPPLY:** Water supply connection is taken from the local municipality for drinking water purpose if available otherwise provision of submersible pump is taken in the complex to meet out the demand of the water.

16. **OFFICE BUILDING:** Office space is provided as per the requirement of the staff/external customers alongwith all allied facilities of toilets, drinking water etc.

The above specifications are general specifications and these are not exhaustive. These specifications would vary as per need of the site and as per the design requirement at a particular site.

## **SPECIFICATIONS FOR ANCILLARY BUILDINGS:**

**1. FOUNDATIONS:** The depth of foundations in ordinary soils is taken as 0.90 m. 230 mm thick PCC in 1:5:10 (1 cement: 5 coarse sand: 10 stone aggregate of 40 mm nominal size) is provided under the walls. Brick masonry / Random rubble stone masonry in cement mortar (1:6) (1 cement: 6 coarse sand) is proposed for foundations. Sand cushion is to be provided depending on type of soils under bed concrete to increase bearing Capacity of soils.

**2. PLINTH BEAM. SUNSHADES. ROOF SLAB & LINTELS:** R.C.C. work is executed in design mix of M 25 or in nominal mix of 1:1½:3 (1 cement: 1½ coarse sand: 3 stone aggregate of 20 mm nominal size). Lintels are provided over openings of doors and windows. Slabs are provided of suitable thickness as per length of the span and as per design requirement. In earthquake zone IV & V, plinth beam of suitable thickness is provided additionally to withstand the bearing loads and seismic forces.

**3. SUPER STRUCTURE:** 0.23 m thick walls are provided in brick masonry in cement mortar 1:6 (1 cement: 6 coarse sand).

**4. FINISHINGS:** 12 mm thick cement plaster with cement mortar 1:6 (1 cement: 6 fine sand) on finished side of brick work and 15mm thick cement plaster with cement mortar 1:6 on rough side of brick work is provided.

**5. PAINTING:** Two coats of oil bound distemper over one coat of primer are applied for internal surfaces of walls and two coats of snowcem over one coat of primer are applied on external surfaces of walls.

**6. FLOORING:** 40 mm thick flooring in C.C. 1:2:4 with neat cement punning is laid over 100 mm thick PCC 1:5:10. Glass / stone/asbestos strips are used in expansion joints.

**7. DOORS & WINDOWS:** Flush doors are provided in the rooms/toilets. Panel shutters are provided in the windows/ventilators.

**8. SANITARY:** Water closets, urinals, washbasin, shaft are provided in the toilet.

**9. Electrification:** Internal & external electrification are provided with tube lights fittings and fans.