

**Name of Work: Construction of Anganwadi at Asalgam-1 & Ghoda-2 Ta.**

**Viramgam. PKG No. AHD/ Anganwadi/ 10/ 2026-27**

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**ITEM NO: 01 Excavation for foundation up to 1.5 mt. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50meter lead (B) Dense or Hard soil (S.O.R. 2024-25 P No. 46 item code 04001B)**

Dense or Hard Soil: Any soil which generally require close application of picks or jumpers or scarifiers to loosen it stiff clay, gravel and rubble stone etc. fall-under this category.

1.0 Workmanship :

General: . Any soil which generally yields to the application of and shovels, phawaras, rakes or any such ordinary excavating implement or organic soil, gravel, silt, sand turfloam, clay, peat etc., fall under this category.

2.0 Clearing the site : 2.1 The site on which the structure is to be built shall be cleared and all obstructions, loose stone, materials and rubbish of all kind, bush, wood and trees shall be removed as directed: The materials so obtained shall be property of the Government and be conveyed and stacked as directed within 50 M. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt.

2.2 The rate of site clearance is deemed to be included in the rate of earth work for which no extra will be paid.

3.0 Setting out: After clearing the site, the center lines will be given by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all parts of the tractor shall assume fu; responsibility for alignment elevation and dimension of each and all parts of the work. Contractor shall supply labourers, materials, etc. required for setting out the reference marks and bench marks and shall maintain them a long as required and directed.

4.0 Excavation : The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for sue precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be evelled both longitudinally and transferely as directed by removing and watering as required. No earth filling will be allowed for bringing it t o level, if by mistake or any; other reason excavation is made deeper or wider that shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.5 m. depth shall be measured under this item.

5.0 Disposal of the excavated stuff : 5.1. The excavated stuff of the selected type shall be used in filling the trenches and plinth or levelling the ground in layers including ramming and watering etc.

5.2. The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to 50 M. and all lift.

6.0. Mode of measurement and payment:

2.0. The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer-in-charge. No payment shall be made for surplus excavation made in excess of above requirements or due to slopping and sloping back as found necessary on account of conditions of soil and requirements of safety.

2.1. The rate shall be for a unit of one cubic metre.

**ITEM NO: 02 Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour and material consistent with I.S.I specification. Using Chlordene and Chiorpurfiles 20 EC. As per 6131\_ part- II Concentration Weight one percent is recommended i.e. one litre 20 EC chemical emulsion dilute with 19 liter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqmt. of surface is recommended as per I.S. (SOR 2024-25 P.No. 167 Code No. 22007)**

#### Materials

1.0. The specifications of the item 22.00.7. shall be followed. 1.1.

#### Workmanship

1.2. After masonry foundations and retaining walls of basement come up, the backfill immediate in contact with foundation shall be treated with the chemical emulsion at the rate of 7.5 liters per sq. m. of the vertical surface of the sub structure for each side. The filling of earth is usually carried out in layers and the treatment shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth contact with these surfaces is well treated with chemical.

1.3. In case of R.C.C. framed structure with columns and plinth beams and R.C.C. basements the treatments shall start at the depth of 50 cms. below ground level from this depth backfill around the columns, beams, and R.C.C. basement walls shall be treated at 7.5 lit/sq. m. of vertical surface. The relevant specifications shall be followed same as item 22.00.7.

1.4. Mode of measurements and payment

1.5. The area of substructure in contact with backfill to be measured. The length and breadth shall be measured correct to a cm. dimension of sanctioned plans for the surfaces in contact with backfill.

3.0. No deduction shall be made nor extra paid for any opening for pipes, etc. up to 0.1 sq. m. 3.1. The rate includes cost of all labour, materials required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One sq. meter.,

**ITEM NO: 03 Providing and laying cement concrete 1:4:8 (1 Cement: 4 coarse sand: 8 Machine crushed stone aggregates 40mm nominal size) and curing complete excluding cost of form work in (A) Foundation and plinth (R A No -01)**

#### 1.0 Materials:-

Water, shall conform to M-I. Sand shall conform to M-6. Cement shall conform to M-3. Stone aggregate 40 mm. nominal size shall conform to M-12.

#### Workmanship:

##### 1.1. General:

2.1.1. Before starting concrete bed of foundation trenches shall be cleared of all loose materials, levelled, watered and rammed as directed.

##### 1.2. Proportion of Mix :

2.2.1. The Proportion of cement, sand and coarse aggregate shall be one part of cement, 3 parts of sand, 6 parts of stone aggregates and shall so measured by volume.

#### Mixing :

2.3.1. The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in-charge in case of break-down of machineries and in

the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However such cases 10% more cement than otherwise required shall have to be used without any extra cost. The mixing in mechanical mixer shall be done for a period 1 to 2 minutes. The quantity of water shall be sufficient to produce a dense concrete of required workability for the purpose.

Transporting & Placing the concrete :

1.2.1. The concrete shall be handled from the place of mixing to the final position in not more than 15 minutes by the method s directed and shall be placed into its final position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

1.4.2. The concrete shall be laid in layers of 15 cms. to 20 cms.

2.5.1. The concrete shall be rammed with heavy iron rammers and rapidly to get the required compaction and allow all the interestices to be filled with mortar.

Curing :

2.6.1. After the final set, the concrete shall be kept continuously wet, if required by ponding for a period of not less than 7 days from the dale of placement.

Mode of measurement and payment:

The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plans or directed.

The rate shall be for a unit of one cubic metre.

**ITEM NO: 04 Providing and laying cement concrete 1:3:6 (1- Cement : 3- Coarse sand : 6- crushed stone aggregate 40mm normal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth (RA No. 02)**

1.0. Materials 1.1. Water shall conform to M-1. Cement shall conform to M-3 Sand shall conform to M-6. Stones aggregate 40 mm. nominal size shall conform to M-12.

2.0. Workmanship

2.1. General

2.1.1. Before stating concrete the bed of foundation trenches shall be cleared of all loose materials, leveled, watered and rammed as directed

2.2. Proportion of Mix:

2.2.1. The proportion of cement, sand and coarse aggregate shall be one part of cement. 3 parts of sand and 6 parts of stone aggregates and shall be measured by volume.

2.3. Mixing:

2.3.1. The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing may however be allowed for smaller quantity of work if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer-in- charge in case "of break-down of machineries and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency, However in such case 10% more cement than otherwise period 1 1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

2.4. Transporting & Placing the Concrete:

2.4.1. The concrete shall be handed from the place, of mixing to the final position in not more than 15 minutes by the method as directed and shall be placed into its final-position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

2.4.2. The concrete shall be laid in layers of 15 cms. to 20 cms.

2.5.1. The concrete shall be rammed with heavy iron rammers and rapidly to get the required

compaction and to allow all the interstices to be filled with mortar.

#### 2.6. Curing:

2.6.1. After the final set, the concrete shall be kept continuously wet if required by pounding for a period of not less than 7 days from the date of placement.

#### 2.7. Mode of Measurement & Payment:

2.7.1. The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plan or as directed.

2.7.2. The rate shall be for a unit of one cubic meter.

### **ITEM NO: 05 Filling in plinth with sand under floors incl. watering ramming consolidating and dressing etc. comp. (S.O.R. 2024-25 P No. 48 item code 04007A)**

#### 1.0. Materials

1.1. Sand shall conform to M 6

#### 2.0. Workmanship

The relevant specifications of item No. 4.12 shall be followed except that sand shall be filled in under floors, including watering, ramming, consolidating and dressing etc. complete.

#### 3.0. Mode of Measurements & Payment

3.1. The relevant specifications of item No. 4.12 shall be followed.

3.2. The rate includes cost of collecting, carting sand with all lead and labour for filling the same in plinth under floors.

3.3. The rate shall be for a unit of one cubic meter.

### **ITEM NO: 06 Filling foundation and plinth with murrum or selected soil in layer of 20 cm in thickness including ramming watering and consolidating etc. complete {S.O.R. P No. 49 It. Code. 4008A }**

1.0 Materials : 1.1. Murrum shall be clean of good binding quality, and of approved quality obtained from approved pits/quarries of disintegrated rocks which contain siliceous materials and natural mixture of clay of calcareous origin. The size of murrum shall not be more than 20 mm.

2.0 Workmanship : 2.1. The relevant specifications of item No. 4.12 shall be followed except that the murrum or selected soil shall be filled in foundation and plinth in 20 cms. layers including consolidating, ramming, watering, dressing etc. complete.

Mode of measurement and payment:

The relevant specifications of item No. 4.12 shall be followed.

The rate includes cost of collecting and carting murrum/or selected earth of approved quality with all lead and labour required for filling in trenches and plinth.

The rate shall be for a unit of one cubic metre.

### **ITEM NO: 07 Filling available excavated Earth (Excluding Rock) in trench plinth side of foundation . in layer not exceeding 20 cm in depth consolidation each deposited layer by ramming and watering etc. complete (SOR P. No.48 It. No 4006)**

#### **Workmanship**

1.0. The earth to be used for filling shall be free from salts, organic or other foreign matter. All clods of earth shall be broken.

1.1. As soon as the work in foundation has been completed and measured the site of foundation shall be cleared of all debris, brick bats: mortar dropping etc., and filled with earth in layers not exceeding 20 cms. Each layer shall be adequately watered, rammed and consolidated before the succeeding layer is laid. The earth shall be rammed with iron rammers where feasible and with the but ends of crow-bars, where rammer cannot be used.

1.2. The plinth shall be similarly filled with earth in layers not exceeding 20 cms. adequately watered and consolidated by ramming with iron or wooden rammers. When filling reaches finished level the surface shall be flooded with water for at least 24 hours and allowed to dry and then rammed and consolidated.

1.3. The finished level of filling shall be kept to shape intended to be given to floor.

1.4. In case of large heavy duty flooring like factory flooring, the consolidation may be done by power rollers, where so specified. The extent of consolidation required, shall also be as specified.

1.5. The excavated stuff of the selected type shall be allowed to be used in filling the trenches and plinth. Under no circumstances black cotton soil be used for filling the plinth.

1.6. Mode of Measurements & Payment

1.7. The payment shall be made for filling in plinth and trenches. No deduction shall be made for shrinkage or voids, if consolidated as instructed above.

1.8. The rate shall be for a unit of one cubic meter.

**ITEM NO: 08 Providing and laying cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 crushed stone aggregates 20 mm nominal size) and curing complete including cost of form work in (A) Wall caps/copings. {S.O.R. P No. 52 It. Code. 5005A}**

1.0. Material & Workmanship

1.1. The relevant specification of item No. 5.3.2. (A) shall be followed except that the work shall be carried out for coping and wall caps, except the stone aggregate 20 mm. nominal size shall be used. The concrete work of wall caps/coping.

2.0. Mode of measurements and payment

2.1. The relevant specification of item No. 5.3.2. (A) shall be followed except that the rate includes cost of necessary form work. 39 39

2.2. The rate shall be for a unit of one cubic meter.

**ITEM NO: 09 Providing and laying ordinary cement concrete 1:1.5:3 (1 Cement : 1.5 coarse sand : 3 graded stone aggregates 20mm nominal size) and finishing smooth with curing etc. complete including the cost of formwork but excluding the cost of reinforcement of R.C.C. work in (A) BEAMS :(ii) Having cross-sectional area more than 0.05 Sq.m. and up to 0.08 Sq.m. (RA No 03)**

Beams : (I) Having cross sectional area 0.05 to 0.08 Sq. metre (II) Having cross sectional area more than 0.08 Sq. mt. up to 0.12 Sq. mt. (III) Having cross sectional area more than 0.12 Sq. mt. up to 0.18 Sq. mt.

(A) Columns : (I) Having cross sectional area 0.05 to 0.08 Sq. Mt. (II) Having cross sectional area more than 0.08 Sq. mt. and up to 0.12 Sq. mt. (III) Having cross sectional area more than 0.12 Sq.mt. and up to 0.18 Sq. int.

1.0. Materials & Workmanship:

1.1. The relevant specification of item No 5.3.13. shall be followed except that the work shall be carried out for reinforced concrete work for work as specified in item 1.2. In

addition, the following stipulations shall be followed for:

(a) The bars shall be kept in position by the following methods:

(i) In case of beam and slab construction, sufficient number of precast cover blocks in cement mortar 1:2

(1 cement: 2 coarse sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement.

In case of cantilevered or doubly reinforced beams of slabs, the main reinforcing bars shall be held in position by introducing chain spacers or support bars at 1.0 to 1.2 metres centres

(ii) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them. The templates shall be removed after concreting has been done below it. The bars may also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.

1.2. All bars projecting from pillars, columns, beams, slabs, etc., to which other bars and concrete are to be attached or bonded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

2.0. Mode of measurements and payment:

The relevant specifications of item No. 5.4.1. shall be followed but the form work and centering work shall be included in the item.

2.0. The rate shall be for a unit of one cubic metre.

**ITEM NO: 10 Providing and laying ordinary cement concrete 1:1.5:3 (1 Cement : 1.5 coarse sand : 3 graded stone aggregates 20mm nominal size) for R.C.C. Lintel including finishing smooth with curing etc. complete including the cost of formwork but excluding the cost of reinforcement. ( RA No 04)**

1.3. Materials & Workmanship:

(a) The relevant specification of item No 5.3.13. shall be followed except that the work shall be carried out for reinforced concrete work for work as specified in item 1.2. In addition, the following stipulations shall be followed for:

(b) The bars shall be kept in position by the following methods:

(i) In case of beam and slab construction, sufficient number of precast cover blocks in cement mortar 1:2 (1 cement: 2 coarse

sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement.

In case of cantilevered or doubly reinforced beams of slabs, the main reinforcing bars shall be held in position by introducing chain spacers or support bars at 1.0 to 1.2 metres centres

(ii) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them. The templates shall be removed after concreting has been done below it. The bars may also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.

1.4. All bars projecting from pillars, columns, beams, slabs, etc., to which other bars and concrete are to be attached or bonded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

2.0. Mode of measurements and payment:

2.1 The relevant specifications of item No. 5.4.1. shall be followed but the form work and centering work shall be included in the item.

2.1. The rate shall be for a unit of one cubic metre.

**ITEM NO: 11 Providing & laying Ordinary cement concrete 1:1.5:3 (1cement : 1.5 coarse sand 3 graded stone aggregate 20 mm nominal size) and finishing the smooth with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (II) slabs having more than 10 cm and upto 13 cm thickness.(RA No 05)**

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications for item No. 5.4.1. shall be followed for concrete work and relevant specifications of item No. 9.1. shall be followed for form work and centering. The concrete surface shall be smooth finished with cement mortar 1:3 (1 cement: 3 fine sand) as per item No. 17.59 (I) The thickness shall be as specified in the item.

**2.0. Mode of measurement & payment**

**2.1.** The relevant specification for item No. 5.4.1 shall be followed except that item shall include the item providing from work and centering work as directed.

**2.2.** The rate shall be for a unit of one cubic meter.

**ITEM NO: 12 Providing TMT bar FE 500D reinforcement for R.C.C. work including bending, binding, and placing in position complete up to floor two level. (S.O.R 2024-25 P NO. 54 item No.05014C)**

**1.0 GENERAL**

This work shall consist of furnishing and placing coated, or uncoated or high strength deformed reinforcement, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

**2.0 MATERIAL**

**2.1. H.Y.S.D. Bars**

Reinforcements may be either H.Y.S.D 500D. tensile steel, high strength deformed bars. They may be uncoated or coated with epoxy or with approved protective coatings.

**2.2.** H.Y.S.D. bars reinforcement for R.C.C. work shall conform IS 432 (Part II) 1966 and shall be of tested quality. It shall also comply with relevant part of IS 456-1966.

**2.3.** All reinforcement shall be clean and free from dirt, paint, grease or oil, all scale or loose or thick rust at the time of placing.

**2.4.** All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work.

**2.5.** Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded.

**3.0 Pitch**

**3.1.** Distance between bars shall be as specified in drawings and as directed by the Engineer in Charge all bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position.

**4.0 Binding wire**

4.1. Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-1972.

4.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from dirt, paint, grease or oil, oil scale or loose or thick rust and any other undesirable coating which may prevent adhesion of cement mortar at the time of binding

4.3. Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded

#### 5.0 PROTECTION OF REINFORCEMENT

5.1. Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.

5.2. Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

#### 6.0 Workmanship

6.1. The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.

6.2. Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawing

#### 7.0 BENDING OF REINFORCEMENT

7.1. Bar bend g schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.

7.2. Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

7.3. Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape.

Bars shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

#### 8.0 PLACING OF REINFORCEMENT



8.1. The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.

8.2. Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS:280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.

8.3. Bars shall be kept in position usually by the following methods:

In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to Satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.

8.4. In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the Reinforcement Timber templates shall be removed after the concreting has progressed up to a level just below their location.

8.5. Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or: equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.

8.6. Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.

8.7. Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.

8.8. Bars coated with epoxy or any other approved protective coating shall be placed on supports that do not damage the coating. Supports shall be installed in a manner such that planes of weakness are not created in hardened concrete. The coated reinforcing steel shall be held in place by use of plastic or plastic coated binding wires especially manufactured for the purpose.

8.9. Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

## 9.0 Lapping

9.1. All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer. Where practicable, overlapping bars shall not touch each other, and shall be kept apart by 25 mm or  $1 \frac{1}{4}$  times the maximum size of coarse aggregate, whichever is greater, If

this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

#### 10.0. Welding

10.1 Splicing by welding of reinforcement will be permitted only if detailed on the drawing or approved by the Engineer. Weld shall develop an ultimate strength equal to or greater than that of the bars connected. While welding may be permitted for H.Y.S.D. reinforcing bars conforming to IS:432, welding of deformed bars conforming to IS: 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 415 grade bars conforming to IS:1786, for which necessary chemical analysis has been secured and the carbon equivalent (CE) calculated from the chemical composition using the formula:

$$CE = \frac{C + Mn + Cr + Mg + V + Ni + Cu}{60} \quad \text{is 0.4 or less.}$$

10.2. The method of welding shall conform to IS:2751 and IS:9417 and to any supplemental specifications to the satisfaction of the Engineer

10.3. Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending.

10.4. Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less than twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times of the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any spalling of the concrete.

10.5. All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocks shall not be used. Layers of bars shall be separated by spacer bars pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be lapped and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.

10.6. Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over at the time of fixing and concreting.

As far possible bars of full length shall be used in case this is not possible, overlapping of bars shall be done as directed by the Engineer in charge When practicable overlapping bars shall not touch each other, but be kept apart by 25 mm Where no feasible overlapping bars shall be bound with annealed wires not less than 1 mm thick twisted tight The overlaps shall be staggered for different bars and located at points along the span where neither sheer not bending moments is maximum.

10.7. Whenever indicated on drawing or desired the Engineer in charge bars shall be jointed by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are jointed by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross section of the bar. Threads shall be standards threads Steel for coupling shall conform to IS 226.

10.8. When permitted or specified on the drawings joints of reinforcement bars shall butt-welded so as to transmit their full stresses Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded Only electric are welding using a process which excludes air form the molten metal and conforms to any or other special provisions for the work shall be accepted Suitable means shall be provided for holding bars securely in position during welding It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly Ends of bars shall be cleaned of all loose scale rust stages paint and other foreign matter before welding Only competent welders shall be employed on the work. The M S electrodes used for welding shall conform IS 814 Welded pieces of reinforcement shall be tested. Specimen shall be taken form the actual site and their number shall frequency to test shall be as directed by the Engineer in charge.

#### 11.0 MODE OF MEASUREMENTS & PAYMENT

11.1. For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below

Sr. No	Diameter of Steel	Weight of steel Per running meter	Sr. No	Diameter of Steel	Weight of steel Per running meter
1	6 mm	0.22 Kg / Rmt	8	20 mm	2.47 Kg / Rmt
2	8 mm	0.39 Kg / Rmt	9	22 mm	2.98 Kg / Rmt
3	10 mm	0.62 Kg / Rmt	10	25 mm	3.85 Kg / Rmt
4	12 mm	0.89 Kg / Rmt	11	28 mm	4.83 Kg / Rmt
5	14 mm	1.21 Kg / Rmt	12	32 mm	6.31 Kg / Rmt
6	16 mm	1.58 Kg / Rmt	13	36 mm	7.99 Kg / Rmt
7	18 mm	2.00 Kg / Rmt	14	40mm	9.86 Kg / Rmt

11.1. Excess consumption over 5% will be charged at penal rate.

11.2. Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated in tonnes on the basis of IS: 1732. Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement..

11.3. The contract unit rate for coated/uncoated reinforcement shall cover the cost of material, fabricating, transporting, storing, bending, placing, binding and fixing in position as shown on the drawings as per these specifications and as directed by the Engineer, including all labour, equipment, supplies, incidentals, sampling, testing and supervision.

The unit Rate for coated reinforcement shall be deemed to also include cost of all material, labour, tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work.

11.4. The rate shall be for a unit of per Kg

**ITEM NO: 13 Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./ Sq. Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand) (B) Conventional (S.O.R 2024-25 P.No.71 Item No. 06001BA)**

1.0 Materials:

2.0 Water shall conform to M-I, Cement mortar shall conform to M-I1. Bricks shall conform to M-15.

3.0 Workmanship:

3.1. Proportion:

3.1.1. The proportion of the cement mortar shall be 1 : 5 (1 cement: 5 fine sand) by volume.

3.2. Wetting of bricks : 2.2.1. The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is an indication of through wetting of bricks.

3.3. Laying:

2.0. .I. Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond; closers in such case shall be cut to required size and used near the ends of walls.

2.3.2. A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.

2.3.3. The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.

2.3.4. The brick shall be laid with frog upwards. A set of tools comprising of wooden straight edges, mason's spirit level, square half metre rule, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.

2.3.5. Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one metre over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.

2.3.6. All fixtures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar.

2.1. Joints:

2.1.1. Bricks shall be so laid that all joints are quite flush with mortar. Thickness of

joins shall not exceed 12 mm. The face joints shall be raked out as directed by taking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to done.

2.1.2. The face of brick shall be cleaned the very day on which the brick work is laid and all mortar dropping removed,

2.2. Curing.

2.5.1. Green work shall be protected from rain suitably. Masonry work shall be kept moist on all the faces for a period of seven days. The top of masonry work shall be kept well wetted at the close of the day.

2.3. Preparation of foundation bed : 2.6.1. If the foundation is to be laid directly on the excavated bed, the bed shall be levelled, cleared of all loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing, the top of concrete shall be cleaned and moistened. The contractor shall obtain the Engineer's approval for the foundation bed, before foundation masonry is started. When puccas flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

3.0 Mode of measurements and payment:

3.1. The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered, tapered and curved portions shall be measured net.

3.2. No deduction shall be made from the quantity of brick work, nor any extra payment made for embedding in masonry or making holes in respect of following items :

- (1) Ends of joints, beams, posts, girders, rafters, purlins, trusses, corbel steps etc. where cross sectional area does not exceed 500 Sq.Cm.
- (2) Openings not exceeding 1000 Sq. Cm.
- (3) Wall plates and bed plates, bearing of slabs, chhajjas and the like whose thickness does not exceed 10 Cms. and the bearing does not extend to the full thickness of wall.
- (4) Drainage holes, and recesses for cement concrete blocks to embed hold fasts for doors, windows etc.
- (5) Iron fixtures, pipes upto 300 mm. dia; hold fasts and doors and windows built into masonry and pipes etc. for concealed wiring.
- (6) Forming chases of section not exceeding 350 Sq. Cm. in masonry.

3.3. Apertures for fire places shall not be deducted nor shall extra labour required to make splaying of jambs, throating and making Arches over the aperture be paid for separately.

3.4 The rate shall be for a unit of one cubic metre.

**ITEM NO: 14 Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./ Sq. Cm. in super structure in Cement Mortar 1:5. (1- Cement : 5 -fine sand) (B) Conventional (S.O.R 2024-25 P NO. 71,72 Item No. 06001BA+06006B)**

### **Materials**

Bricks shall conform to M-15. Cement mortar shall conform to M-11.

#### **1.0 Workmanship**

1.1. The relevant specification of item No. 40 shall be followed except that the masonry work shall be carried out above plinth level to floor two level i.e. for ground floor.

1.2. The frames of doors, windows, cupboards etc. shall be housed into the brick work at the correct location and level as directed. The heavy steel doors, window frames etc. shall be built in with work, but for ordinary steel doors and windows required opening for frames, hold-fast, etc., shall be in the wall and frame embedded later on in order to avoid damage to the frames.

1.3. Necessary scaffolding shall be provided. The supports of the scaffolding shall be sound and strong tied, together with horizontal pieces over which the scaffolding plunks shall be fixed. Simple scaffolding shall be allowed normally. In this case scaffolding hole shall rest in hole header horizontal coarse only. Minimum number of holes be left in brick work for supporting horizontal scaffolding poles. The contractor is responsible for providing and maintaining

sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

**1.4.** For the face of brick work, where plastering is to be done, joints shall be racked out to a depth not less than thickness of joints. The face of brick work shall be cleaned and mortar dropping removed on very same day that brick work is laid.

## **2.0 Mode of measurements & payment**

**2.1.** The masonry work of G.F. i.e. above plinth level to floor two level shall be measured and paid under this item.

**2.2.** Brick work in parapet shall be included in the corresponding masonry item of store immediately below the floor above which the parapet is built.

**2.3.** No deduction shall be made from quantity of brick work nor any extra payment made for embedding in masonry of marking holes in respect of following item.

(1) Ends of joints, beams, posts, girders, rafters, purlins trusses corbel, steps, etc. where cross sectional area does not exceed 500 sq.cm.

(2) Opening not exceed in 1000 sq.cm.

(3) Wall plate sand bed plates bearing of slab, chhajjas, and like whose thickness does not exceed 10 cms. and the bearing does not extend the full thickness of wall.

(4) Drainage holes and recesses for cement concrete blocks to embed hold fasts for doors, window etc.

(5) Iron fixtures, pipes up to 300 mm. dia. hold fasts of doors, and window built into masonry and pipes etc. for concealed wiring.

(6) Forming charges of section not exceeding 350 sq.cm. in masonry.

(7) Apparatuses for fire places, shall not be deducted nor shall extra labour required to make splaying of jumps, throating and making trenches over the aperture be paid for separately.

**2.4.** The rate shall be for a unit of one cubic meter

**ITEM NO: 15 Half brick masonry in common brunt clay building bricks having crushing strength not less than 35 Kg/ Sq.Cm. in Cement mortar 1:4 (1- Cement : 4 -coarse sand) in superstructure above plinth level up to floor two level(B) Conventional (R & B SOR 2024-25 P. No 73+75, It. Code-06008A2A+06010B)**

### **1.0. Materials and Workmanship**

**1.1.** The relevant specifications of Item No. 6.30.1 (A) shall be followed for bricks, wetting, laying of bricks, joints, curing, curing, except that the bricks to be used shall be conventional bricks instead of modular bricks.

### **2.0. Mode of measurement and payment**

**2.1.** The limiting dimensions shall not exceed those shown in the plan or as directed. Any work done extra over specified dimensions shall be ignored.

**2.2** The relevant specifications of item no. 6.12. shall be followed. The length shall be measured nearest to one cm.

**2.3.** The rate shall be for a unit of one sq. meter

**ITEM NO: 16 Providing and fixing alluminium anodised glazed door rectangular frame 60mm x 40mm x 2mm @ 1.037 Kg./ Rmt. weight, flush door shutters, solid core construction with frame of first class hardwood with cross board and face veneer or plywood face panels , including anodised alluminium butt hinges with necessary screws. including Laminated sheet 1 mm thick,S.S. stoper 30cm long ASIS 304 grade,S.S. Aldrap 30cm long ASIS 304 grade,S.S. Handle 15cm long ASIS 304 grade,S.S. Handle Door stop ASIS 304 grade(2) 35 mm thick. ( R.A. No -06)1.0. Materials Wood in frames shall conform to M-29.**

### **2.0. Workmanship**

**2.1.** The item covers the requirement of frames for doors, windows, clerestory windows, their supply and fixing.

**2.2.** Frames:

2.2.1. All members of frames shall be exactly at right angles. The right angle shall be checked from inside surfaces of the-frames of the respective members.

2.2.2. All members of frames shall be straight without any warp of bow and shall have smooth surfaces well planed on the three sides exposed at right angles to each other. The surfaces touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall sizes within the tolerances as specified.

2.2.3. Frame shall have dovetail joints. When clerestory windows in included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10 cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10 mm. deep. Slight adjustment of spacing as necessary shall be done to have the hold fasts in the joints of masonry; course. The frame shall be erected in position and held plumb with strong support form north sides and built in masonry as it is being built. The transom shall be through tenoned into the mortises of the jamb post to the full width of the jamb post and the thickness of the tenon shall be not less than 15 mm.

2.3. Tolerance: Unless specially mentioned otherwise tolerance of + 1.5. mm shall be allowed for each wrought face.

2.4. The tenons shall be closely fitting into the mortises and suitably pinned with wood dowels not less than 10 mm. dia. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.

2.5. The concrete surface of tenon and mortise shall be treated before putting together with an adhesive of approved make.

2.6. Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 mm. from the top and bottom of the frames. In case of windows and ventilators frames. The size c. each hold-fast shall be 300 x 25 x 6 mm. and of mild-steel with split end. The hold fasts shall be fixed with screws to frames.

2.7. Mild steel hold fasts shall be protected with a coating of coal asphalt tar. The surface of frame abutting the masonry or concrete faces shall be properly treated by applying a coat of approved coating.

### 3.0. Mode of Measurements and payment

3.1. The linear dimensions shall be measured correct up to 1 cm. The quantity shall be worked out correct to places of decimals of cu. m.

3.2. The rate shall be for a unit of 10 cu. diameter.

### 1.0. Materials.

**1.1. Wood for shutter shall conform to M-29.** 2. Glass shall conform to M-38. 3. Anodised aluminum butt hinges shall conform to M-43.

### 2.0. Workmanship

2.1. The item covers the requirement of preparation of shutters for doors, windows, clerestory windows, their supply and fixing.

#### 2.2. Shutters:

2.2.1. Paneled shutters shall be constructed in the form of timber frame work of styles and rails with panel inserted of type as specified in the detailed drawings. Panel shall be fixed by providing grooves in the style and rails. The styles and rails shall be joined to each other by mortise and tenon joints at right angles.

2.2.2. All members of the shutters shall be straight without any warp or bow and shall have smooth, well planed faces at right angles to each other.

2.2.3. The size of styles and rails shall be as per drawings or as directed. Styles and rails of shutters shall be made of one piece only.

### 2.3. Timber paneling:

2.3.1. Thickness of the panel shall be as specified in the item as shown in the drawing or as directed. If the panel is made from more than one piece the pieces shall be finished as shown in the detailed drawings and shall be joined with continuous groove with specified size. The end pieces of the panel and the top and bottom of the panel shall be provided with continuous tongue to frame into groove of the frame shutter. An air space of 1.5 mm. shall be left in the groove of frame of shutter while framing the panels in it.

2.3.2. The faces of the panel as well as various pieces of the panel shall be- closely fitted to the sizes of the grooves.

2.3.3. Finishing of the corners of raised panel edges shall be done as shown in drawings or as directed.

2.3.4. The thickness specified shall be finished thickness and no tolerance will be permitted.

### 2.5. Fixtures and Fastenings:

2.5.1. The rate shall include anodised butt hinges including fixing with iron screws. The size and number of hinges shall be as per table given in annexure-1.

### 3.0. Mode of measurement and payment

3.1. The rate for shutter includes cost of providing block and cleat for keeping the shutter in open position if directed.

3.2. The dimension of the shutter shall be measured clear size of the shutter in close position between the grooves of the frame.

3.3. The rate shall be for a unit of one sq. meter.

**ITEM NO: 17 Providing and fixing window having extruded aluminum Colour anodized section frame main outer size 63.50 x 38.10 x 1.95 mm,@ Wt 1.094 Kg / Rmt, horizontal two track member size 61.85 mm x 31.75 mm x 1.20mm @ wt.of 0.695 Kg/mt, vertical member of size 61.85 mm x 31.75mm x 1.30 mm @ wt.of 0.659 Kg/mt with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt, vertical member of size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt, @ Wt. 0.457 Kg/mt with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window. (S.O.R 2024-25 P NO. 114 Item no.11028)**

### **Material & Workmanship:-**

Alluminium alloy used in the manufacturing of extruded section for windows shall confirm to HE9-WP of I.S 733 – 1956 and also hollow alluminium section confirm to IS designation HV9 – WP – IS – 1285 – 1958. Alluminium section of approved weight shall be procured at site. Fabrication shall be done as per I.S 1948 – 1961 & drawing or as directed.

Details of the anodized powder coating section shall be as shown in item of work and Tinted float glass shall be 5 mm thick



**Float Glass:**

5 mm thick Tinted float glass as approved by Engineer-in-charge shall be used & shall be conforming to relevant I.S code. Necessary colour anodized aluminium glazing clips shall confirm to relevant IS code. Transparent Silicon Gasket and PVC track rubber shall confirm to quality approved by engineer in charge.

**Fixtures & fastenings:**

Fixtures and fastenings shall be provided as per requirement & as directed by Engineer in charge. Section used shall be single or double type as per requirement. Window - frame without shutter shall be prepared as per drawing or as directed by the Engineer – in – Charge. Whole framework shall be finished and erected in true line and level. The section shall be fixed with necessary screws & wooden peg nails required.

Size of glass for glazing at panels shall be as per drawing and shall be fixed in such a way so as to allow a clearance of 2.50 mm between the edges of glass and aluminium glazing clips surround clearance may be increased if directed. All stains from the surfaces of glass shall be removed and cleaned with thinner or spirit without any extra payment. Working of all hinges shall be smooth and free. If any hinges or locking arrangement found faulty, shall be replaced to the satisfaction of Engineer – in – Charge without claiming any extra charges. The size of mosquitoes proof jali at panels shall be as per drawing or as directed by Engineer-in-charge. The entire work shall be executed to the satisfaction of Engineer – in - Charge. The window shall be fully sliding as per drawing or as directed by Engineer – in – Charge

**CONDITIONS FOR ALUMINUM WORKS**

- a) The glazing shall be fixed with the External finished surface (either stone cladding/external plaster) and hence all the necessary rubber strips, packing and polysulphide polymer (between the frame and concrete or other surface all around) shall be provided within the rate quoted so as to make the junctions fully water tight/air tight.
- b) Approved make selected glass of thickness as specified shall be used in doors. Wired glass louvers shall be provided wherever shown on drawings.
- c) Necessary locking arrangement of approved design (by Architect) shall be provided without any extra cost.
- d) Wherever necessary, PVC lining (silver grey or white only) etc. shall be provided for air/water tightness.
- e) Necessary operating device (as per design) for operation of louvers of windows, ventilators, sky lights, including necessary rods shall be provided without any extra cost.
- f) The rates quoted shall be inclusive of manufacture, supply and installation at Site, and inclusive of all the necessary accessories rubber strips, locks, rods, excise duty, taxes, octroi, transport, labour charges, insurance, storage and safe custody, etc. complete.
- g) The rates shall also be inclusive of providing and applying with gun as per latest I.S., of Dow Corning or equivalent and making the joints around glazing watertight, on the external periphery of the building at the junction of two different materials as directed by the Architect and site engineer.
- h) Necessary provision for rain water disposal shall be done in the bottom guides/frames as directed and approved by Architect.
- i) Work must be in accordance with detailed drawings with dimensions of aluminum sections in frames and shutters as shown in drawing. It shall be accompanied by the detailed drawing if any deviation is proposed.
- j) All the door shutters shall have double action hydraulic floor springs/hinges as per approved shop drawings, of approved make with minimum one year guarantee. The floor springs shall be of least possible thickness.

- k) Details/arrangements for after sales/maintenance services shall be furnished.
- l) Work shall be carried out in co-operation and in coordination with all other agencies working at Site.
- m) The civil work as required for fixing of floor springs, hold fast or other works required for the erection and completion of doors/windows etc. shall be done by the Contractor without any extra cost.
- n) Any damage, if caused to the existing work done by other agencies, shall be reinstated by the Contractor to its original condition without any extra cost.
- o) During the course of work, the Contractor shall pay due care to avoid any stains on the powder coating work and if required, the Contractors shall provide necessary protective arrangement as directed by the Architects for which no extra payments shall be made. After the installation is completed, if required by the Architects, the aluminum work shall be washed with mild solution of non alkali soap and water.
- p) The Contractor shall be responsible for the windows/doors/grills etc. being set straight, in plumb level and for their satisfactory operations after the fixing is completed.
- q) Wherever required and as directed strengthening of members shall be done by providing steel/M.S. concealed members without extra cost.
- r) The door shutters may have hydraulic door closer of approved make with minimum one year guarantee as and where shown in the drawings and as directed.

#### **Mode of measurement & payment:**

The rate for window shutter with frame shall include the cost of materials & labour involved to finish the work.

The dimension of the window shall be measured clear size of the frame in closed position of shutter between the two outer edges of the frame.

The payment shall be made on completion of work.

The unit rate for the item shall be for a unit of one square meter.

#### **ITEM NO: 18 Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm , @ Wt. 0.643 Kg/mt with colour Powder Coated aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation (S.O.R P NO. 114 Item no.11030)**

- 1.0 Materials
  - 1.1 Aluminium Section
    - Extruded aluminium section, standard grade
    - Size: 63 mm × 38.10 mm × 1.2 mm
    - Weight: 0.643 Kg/mt
    - Colour: Powder coated as per approved shade
    - ISI / approved make
  - 1.2 Glass
    - 5 mm thick frosted / etched glass
    - Tempered / standard quality as approved
  - 1.3 Accessories
    - Aluminium glazing beads
    - Screws, fasteners, brackets
    - Sealants / gaskets for fixing glass securely
  - 1.4 All materials shall be of approved make and conform to relevant IS standards.
- 2.0 Workmanship
  - 2.1 Fabrication

- 2.1.1 Aluminium sections shall be cut, mitered, and assembled to form frame as per ventilation opening dimensions.
- 2.1.2 Frames shall be joined using approved mechanical fasteners or welding (where required) to ensure rigidity.
- 2.1.3 Powder coating shall be uniform, smooth, and scratch-free.
- 2.1.4 Glass shall be cut accurately to size and fitted into frame using glazing beads and gaskets.
- 2.1.5 Edges of glass shall be properly sealed to prevent rattling or ingress of dust/water.
- 2.2 Installation
  - 2.2.1 Aluminium frame with glass shall be securely fixed to the wall / opening as per drawing.
  - 2.2.2 Level and plumb alignment shall be checked before final fixing.
  - 2.2.3 Proper anchoring with screws / fasteners shall be provided for structural stability.
  - 2.2.4 Frame and glass shall be cleaned after installation.
- 2.3 Precautions
  - (a) Handle glass carefully to prevent chipping or breakage.
  - (b) Powder coating shall not be damaged during handling or installation.
  - (c) Frame shall be installed plumb and level.
  - (d) All joints and fixing points shall be checked for tightness.
- 3.0 Mode of Measurement and Payment
  - 3.1 Measurement shall be made on per square meter (Sq.mt.) of aluminium frame with glass.
  - 3.2 The rate shall include:
    - Supply of extruded aluminium section and 5 mm frosted glass
    - Powder coating
    - Fabrication, cutting, assembling, and glazing
    - Fixing, sealing, and finishing
    - All accessories, labour, tools, and incidental charges
  - 3.3 The rate shall be inclusive of complete supply, fabrication, erection, and finishing as per detailed drawings and specifications.

**ITEM NO: 19 Providing and fixing M.S. grills of required pattern to wooden frames of windows etc. with M.S. flats at required spacings and frame around, square or round bars with round headed bolts and nuts or by screws (A) Plain Grill. including Applying priming coat and Painting two coats (excluding priming coat) etc. complete. (RA NO-07)**

- 1.0. Materials
- 2.0. The structural steel shall conform to M-22

## 2.0. Workmanship

- 2.1. The M.S. Grill shall be prepared as per the drawing or as directed for fixing to wooden frames of windows etc.
- 2.2. The grill shall be fabricated to the designs and patterns shown in the drawings and the weight shall be as directed, and the joints shall be reverted or welded as shown in the plan or as directed. The grill so formed shall be fixed into the frames of the windows etc. before they are erected in position. The outside strip frame of the grill shall be housed to its full thickness into the recess cut into the frame of the windows etc. The grill shall be fixed to the frame with number of bolts and nuts or screws viz. bolt nut/screw per 30 cm. of the length of outer strip subject to minimum of 2 Nos. on each side of the frame or as indicated in the drawing or as directed.
- 2.3. The bolts and nuts or screws shall be counter sunk and shall be fixed with the top of their heads flush with the face of the frame strips.

### 3.0. Mode of measurements & payment

3.1. No payment shall be made for weight of screws, bolts nuts etc. only weight of grill shall be paid.

3.2. The rate shall be for a unit of one kg.

**ITEM NO: 20 Providing and laying Vitrified tiles 8 to 10 mm thick, 36" x 36" in flooring treads of step sand landing laid on a bed of 12mm thick cement mortar 1:3 (1 cement : 3-coarse sand ) finishing with flush pointing in white cement. (SOR 2024-25 P.No.127 /lt. Code-14008DA)**

#### Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. 36" x 36" vitrified tiles (Kajeria, Asian, Bell ceramic, Somani or equivalent standard quality) 8 to 10 mm thick shall conform to relevant Indian standard. The size & colour of vitrified tiles shall be approved by Engineer in charge.

#### 1.0 Workmanship

##### 1.1. Bedding:

1.1.1. The sub grade shall be cleaned, wetted and mopped. The bedding shall then be laid evenly over the surface tamped and corrected to desired level and allowed to harden enough to offer a rigid cushion to tiles and to enable the mason to place wooden planks across and squat on it.

1.1.2. The vitrified flooring tiles shall be laid on cement mortar bedding of 10 mm. thick in CM. 1:3. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall be cleared and well wetted. The mortar shall then be spread in thickness not less than 8 mm. at any place and average 20 mm. thickness. The proportion of the cement mortar shall be as specified in the item.

##### 1.2. Fixing tiles :

1.2.1. The tiles before laying shall be soaked in water for at least two hours. Neat gray cement grout at 33 kg/Cement/Sq.mt. of honey like consistency shall be spread over the mortar bedding as directed. The edges of the tiles shall be smeared with neat cement slurry. The tiles shall be well pressed and gently tapped with a wooden mallet till they are properly bedded and in level with the adjoining tiles. There shall be no hollows in bed or joints. The joints between the tiles shall be as thin as possible in straight line or as per pattern.

1.2.2. The tiles shall not have staggered joints. The joints shall be true to centre line both ways. The Nahni trap coming in the flooring shall be so positioned that its grating shall replace only one tile as far as possible. Where full size tiles cannot be fixed they shall be cut (Swan) to the required size and the edges rubbed smooth to ensure straight and true joints. The joints shall be filled with grey cement grout with wire brush or trowel to a depth of 5 mm. and loose material removed. White cement shall be used for pointing the joints. After fixing the tiles finally in an even plane the flooring shall be kept wet and allowed to nature undisturbed for 7 days. The pattern shall be approved by Engineer in charge.

##### 1.3. Cleaning:

1.3.1. The surplus cement grout that may have come out of the joints shall be cleaned off before it sets. Once the floor has set, it shall be carefully washed, cleared by dilute acid and dried. Proper precautions and measures shall be taken to ensure that the tiles are not damaged in any way till the completion of the construction.

#### 2.0 Mode of measurements & payment

2.1. The work done shall be measured in sq.mt. for visible area of work done. The length and

width of the flooring shall be measured not between the faces of skirting or dados or plastered face of wall as the case may be. The paving under dado or skirting shall not be measured. No deduction shall be made not extra paid for any opening in the floor of area up to 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the same rooms.

2.2. The rate shall be for a unit of one sq. meter.

**ITEM NO: 21 Providing & Fixing 30 mm thick polished Kota-stone slabs for Shelves of Cupboard shelves including making grooves in walls and finishing with C.M. (1:1) and polishing etc. Complete. (RA NO-08)**

1.0 Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Kota stone slab 30 mm thick shall conform to M-49.

2.0. Workmanship

2.1. The relevant specifications of item No. 14.43(A) shall be followed except that the kota stone-fixed for shelves of cupboard in C.M. 1:1 and the polishing shall be done of machine polishing.

3.0. Mode of measurements and payment

3.1. The shelves of cupboard shall be measured in sq. meter Length shall be measured along the finished faces of shelves of cupboard. Width shall be measured from finished level of shelves of cupboard pillars shall be measured under this item.

3.2. The rate shall be for a unit of one sq. meter

**ITEM NO: 22 P & L 24"x24" vitrified 8mm thick tile flooring over 20mm(average) base of cement mortar 1:6 ( 1 cement:6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finised with flush pointing & cleaning the surface etc. complete for antiskit {SOR 2024-25 P NO.129 It. Code. 14021A}**

Materials

1.0. Water shall conform to M-1. Cement shall conform to M-3. Lime Mortar shall conform to M-10 cement mortar shall conform to M-1. The vitrified 8mm thick tiles shall be light shade antiskit using white cement and conform to M-47.

2.0. Workmanship

2.1. The work shall be carried out as per I.S. 1443-1972.

2.2. Bedding :

2.2.1. Before spreading the mortar, the sub-base of the floor shall be cleaned of all dirt, scum and loose materials and then well wetted without forming any pools of water on the surface.

2.2.2. In case; of R.C.C. floors, the top shall be left a little rough, all points of level for the finished surface shall be marked out. The lime mortar of proportion 1:1.5 (1 lime putty: 15 fine sand) or cement mortar of proportion C.M. 1 :6 as directed shall be then evenly and smoothly spread over the base. Bedding layer of mortar shall be not less than 10 mm. and average thickness of bedding shall be 25 mm.

2.3. Laying :

2.3.1 Before laying the vitrified 8mm thick tiles, the tiles shall be thoroughly wetted with water. Neat cement grout of required-consistency at 4.4. Kg. cement/sq. mt. shall be spread on the mortar bed. The tiles shall be laid on the neat cement float and shall be evenly and firmly bedded to the required level and slope, There shall be no hollows left. The joints shall be uniform thickness and in straight line as per the pattern.

2.3.2 The surface of flooring shall be checked frequently with a straight edge at least two meters long so as to obtain a true surface with required slope.

2.3.3. The tiles which are fixed in the floor adjoining the wall shall go about 10 mm. under plaster. Skirting or dado shall be left unfinished for about 50 mm. above finished floor level and unfinished strip then left earlier shall be finished.

2.3.4. In places where full tiles cannot be fixed, the tiles shall be cut to the size and smoothened at

- edges to give straight and true joints.
- 2.3.5. After the tiles have been laid, the surplus cement slurry and the joints shall be cleaned and washed fairly deep before cement hardens.
- 2.3.6. The day after tiles have been laid, the joints shall be cleaned or gray cement grout with a wire brush to a depth of about 5 mm. and then grouted with white cement with or without pigment to match the shade of the topping of tiles. The same cement slurry shall then be spread over the whole surface in a thin coat to protect the surface from abrasive damage and to fill pin holes that may exist on the surface.
- 2.4. Curing :
- 2.4.1. The flooring shall be kept wet with damp sand or water for seven days. It shall be kept undisturbed at least for 14 days. The grinding shall normally be commenced after 14 days.
- 2.5. Polishing :
- 2.5.1. After the tiles are properly cured, first grinding shall be done with carborundum stone of 48 to 60 grade grit fitted in machine. Water shall be properly used during grinding. When the chips show up and the floor has been uniformly rubbed, it shall be cleaned with water, baring all pin holes. It shall then be covered with a thin coat of white cement mixed with or without pigments to match the colour of the topping of the tiles. Pin holes if any shall thus be filled. This grout shall be kept moist for a week. Thereafter second grinding shall be done when other works are finished. The machine shall be fitted with carborundum of grit 220 to 350 using water in abundance. The floor shall then be washed clean with water. Oxalic acid powder shall then be dusted at 33 grams per square meter on the surface and the surface rubbed with machine fitted with Hessian bobs or rubbed hard with pad of woolen rags. The floor shall then be washed clean and dried with a soft cloth or linen. The finished floor shall not sound hollow when tapped with mallet.
- 2.5.2. If any tile is disturbed or damaged it shall be refitted or replaced properly jointed and polished.
- 2.5.3. Testing of the tiles shall be carried out by the contractor at his own cost as per I.S. requirement for required test.
- 3.0. Mode of measurements & payment
- 3.1. The vitrified 8mm thick tiles flooring shall be measured in sq. meters for visible area of work done.
- 3.2. No deductions shall be made nor extra paid for any opening in the floor area up to 0.1 sq. mt. Nothing extra shall be paid for use of cut tiles or for laying the floors at different levels in the same room or court yard. Mosaic tiles laid in floor borders and bands etc.-shall be measured in the same item and nothing extra shall be payable on account of these or similar bonds formed of half or multiples of half size, standard tiles or other uncut tiles.
- 3.3. The treads of stairs and steps paved with tiles without nosing shall also be measured under this item.
- 3.4. Extra rate shall however be paid for such area where width of treads does not exceed 30 cms.
- 3.5. The rate shall include the cost of all materials, labour involved in all the operations as described above.
- 3.6. The rate shall be for a unit of one sq. meter.

**ITEM NO :23 Providing and laying Vitrified tiles 8 to 10 mm thick ,in skirting risers of steps and dedo on 10 mm thick cement plaster 1:3 (1-cement :3-coarse sand) and jointed with white cement slurry (R&B SOR 2024-25 P.No.127/lt. Code-14009DA)**  
Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Vitrified tiles 8 to 10 mm thick (Kajeria, Asian, Bell ceramic, Somani or equivalent standard quality) 6 to 8 to 10 mm thick shall conform to relevant Indian standard. The size & colour of vitrified tiles shall be approved by Engineer in charge.

1.0 Workmanship

1.1. Bedding:

- 1.1.1. The sub grade shall be cleaned, wetted and mopped. The bedding shall then be laid

evenly over the surface tamped and corrected to desired level and allowed to harden enough to offer a rigid cushion to tiles and to enable the mason to place wooden planks across and squat on it.

- 1.1.2. The vitrified flooring tiles shall be laid on cement mortar bedding of 10 mm. thick in CM. 1:3. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall be cleared and well wetted. The mortar shall then be spread in thickness not less than 8 mm. at any place and average 20 mm. thickness. The proportion of the cement mortar shall be as specified in the item.

#### 1.2. Fixing tiles :

- 1.2.1. The tiles before laying shall be soaked in water for at least two hours. Neat gray cement grout at 33 kg/Cement/Sq.mt. of honey like consistency shall be spread over the mortar bedding as directed. The edges of the tiles shall be smeared with neat cement slurry. The tiles shall be well pressed and gently tapped with a wooden mallet till they are properly bedded and in level with the adjoining tiles. There shall be no hollows in bed or joints. The joints between the tiles shall be as thin as possible in straight line or as per pattern.
- 1.2.2. The tiles shall not have staggered joints. The joints shall be true to centre line both ways. The Nahni trap coming in the flooring shall be so positioned that its grating shall replace only one tile as far as possible. Where full size tiles cannot be fixed they shall be cut (Swan) to the required size and the edges rubbed smooth to ensure straight and true joints. The joints shall be filled with grey cement grout with wire brush or trowel to a depth of 5 mm. and loose material removed. White cement shall be used for pointing the joints. After fixing the tiles finally in an even plane the flooring shall be kept wet and allowed to nature undisturbed for 7 days. The pattern shall be approved by Engineer in charge.

#### 1.3. Cleaning:

- 1.3.1. The surplus cement grout that may have come out of the joints shall be cleaned off before it sets. Once the floor has set, it shall be carefully washed, cleared by dilute acid and dried. Proper precautions and measures shall be taken to ensure that the tiles are not damaged in any way till the completion of the construction.

#### 2.0 Mode of measurements & payment

- 2.1. The work done shall be measured in sq.mt. for visible area of work done. The length and width of the flooring shall be measured not between the faces of skirting or dados or plastered face of wall as the case may be. The paving under dado or skirting shall not be measured. No deduction shall be made not extra paid for any opening in the floor of area upto 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the same rooms.
- 2.2. The rate shall be for a unit of one sq. meter.

**ITEM NO: 24 Providing and laying broken china mosaic flooring for Terrece using 12mm to 20mm of broken piece of glazed tiles to be laid over cement mortar bedding of CM (1:3) to plain or slope & to be tempered to bring Mortar cream out upto surface using white cement including rounding off junction and extending them up to 15 cm along the wall clearing water and oxalic acied etc as directed (S.O.R P NO. 130 item no. 14035)**

#### 1.0 MATERIAL –

#### 2.0 WATER

- 1.1 Water shall not be salty brackish and shall be clean, reasonably clear and free objectionable quantities of silt and traces of oil injurious alkalis salts organic matter and other deleterious

material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R.C.C. container for transport storage and huddling of water shall be clean. Water shall confirm to the Standard Specification in I.S. 455 - 1978.

1.2 If required by the Engineer in charge, it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness, time of setting and mortar strength as specified in I.S. 269 - 1976. Any indication of unsoundness charge in time of setting by 50 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing, mortar concrete or masonry should not be too acidic/ too alkaline

1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.

1.5 Hard and bitter water shall not be used for curing.

1.6 Potable water will generally found suitable for curing mortar or concrete.

## **2.0 CEMENT**

2.1 Cement shall be ordinary Portland slag cement as per I.S. 1624 - 1974 or Portland slag cement as per I.S.455-1976.

2.2 Cement shall be stored above the ground level in perfectly and dry and water tight sheds. Wherever bulk storage containers are used, there capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock piles sufficiently away from the each other to prevent inter mixing the materials.

## **3.0 SAND**

3.1 Sand shall be natural sand, clean, well graded, hared, strong, durable and gritty particular free from immures amounts of dust, clay, kankar, modules, soft or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer in charge. The sand shall not contain more than 8 percent of slit as determined by field test if necessary, the sand

COARSE SAND - The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under :

I.S. Sieve Designation	% by wt. passing
4.75 mm	100
2.36 mm	90 to 100
1.18 mm	70 to 100
600 MC	30 to 100
300 MC	85 to 70
150 MC	00 to 50

3.2 FINE SAND : The fineness modules shall not exceed 1.0 the sieve analysis of fine sand be as under:

I.S. Sieve Designation	% by wt. passing
4.75 mm	100
2.36 mm	100
1.18 mm	70 to 100
600 MC	40 to 85
300 MC	05 to 50
150 MC	00 to 10



3.3 Materials shall be stored as to prevent their deterioration of their quality and fitness for the work. Any material which has deterioration or has been damaged or is otherwise considered defective by the Engineer in charge shall not be used in the work.

#### 1.4 WATER PROOFING COMPOUND

Water proofing compound shall be of approved quality and make as approved by Engineer in charge.

1.5 BRICK BATS Brick bat aggregates shall be broken from well burnt or slightly over burnt and dense bricks it shall be homogeneous in texture roughly cubical in shape clean and free from dirt or any other foreign material brick bats shall be of 40 to 50 mm nominal size unless otherwise specified in the item the under burnt or over burnt bricks bats shall not be used.

1.6 CHINA MOSAIC TILE PIECES China mosaic tiles pieces shall be of 50 mm to 90 mm nominal size, tiles pieces shall be made from hard and good quality of tiles

1.7 WHITE CEMENT White cement shall be of approved make it shall confirm definition of I.S. 8042-E-1978 the sample of white cement shall be approved by Engineer in charge.

### **WORKMANSHIP**

First of all surface of the entire terrace shall be cleaned by thoroughly brooming and then by wire brushes. All the loose material, dust and debris shall be removed thoroughly from the entire surface of the terrace.

All joints and cracks shall be raked off and cut in trench which shall be filled by neat cement slurry admixed with water proofing compound. The joints with parapet shall be raked up to 30 cm height and shall be applied by neat cement slurry admixed with water proofing compound.

Neat cement slurry shall be prepared and a water proofing compound of approved make shall be mixed with the slurry in proportion specified by the manufacturer of the compound and shall be laid throughout the surface of the terrace by the use

of brushes mala etc. Cement slurry shall be prepared by adding adequate quantity of water so as to spread it uniformly on the surface.

Cement concrete 1:5:10 (Using 50% of cement mortar 1:5, 1 part of cement and 5 part of coarse sand by volume admixed with water proofing compound of approved make in specified proportion). Of specified thickness shall be laid (Specification of C.C. 1:5:10 shall be followed for the execution of this layer) all over the surface of the terrace in true level and required slope including rounding of junctions of walls and slabs.

After two days of proper curing applying a second coat of cement slurry on entire surface of the terrace..

The entire surface shall be finished with 20 mm thick C.M. 1:4 and China mosaic tiling in true level and slope as directed by Engineer in charge and finally finishing the surface with trowel with white cement slurry (Specification of white glazed tiles flooring shall be followed for the execution of this item)

Finishing the surface with 20 mm thick C.M. 1:4 and China mosaic tiling and finally finishing the surface with trowel with white cement slurry

After two days proper curing the terrace shall be flooded for 15 days.

### **MODE OF MEASUREMENT AND PAYMENT**

The unit rate of flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying and placing broken pieces of china mosaic tile in position, compacting, finishing, curing, providing treatment of 30 cm high all over the length of parapets and corners and sill of doors etc. and all other incidental expenses for producing flooring work to complete the structure of its components as shown on the

drawings and according to these specifications. They shall also include the cost of making, fixing of all scaffolding and forms required for the work.

The rate of plastering shall include the cost of all labour, materials, tools and plants, scaffolding and all incidental expenses as described herein above.

The plaster work shall be measured for its length and width, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one Square Meter.

The payment will be made on Square Meter basis of the finished work.

**ITEM NO: 25 Providing and fixing machine cut, free edges, mirror polished Granite stone slab 18 mm thick for vertical wall/Doors/Windows Sill,Jams for cladding as per design including full moulded round inside edge and laid on 10 mm thick cement mortar 1:3 ( 1 cement: 3 coarse sand) jointed with grey cement slurry including rubbing and polishing finishing etc. complete. (RA NO-09)**

Granite shall confirm Specification no. M-52 from specification booklet for Building works.

Cement mortar shall confirm Specification no. M-11 of specification booklet for Building works.

Other all specifications for workman ship and laying shall be same as 14.43(B) of specification booklet on page no. 99 for kotah stone flooring.

Workmanship: The work should be carried out as per drawing and as per direction of Engineer in charge. The joints shall be cleaned and flush pointed filled with white / coloured cement matching to granite stone, The surface shall be kept wet for 7 days. After curing the surface shall be washed clean.

Mode of Measurement & Payment:

The unit rate for P/F granite provided, tools and plant required mix, placing in position, finishing as per direction of the Engineer-in- charge, curing and finishing all other incidental expenses to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The granite shall be measured for its length and width of granite provided, dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on square meter basis of the finished work.

**ITEM NO: 26 Providing 15mm thick cement plaster in single coat on Rough (Similar) side of single or half brick walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement: 3 sand) and finishing with a floating coat of neat cement slurry etc. complete. (S.O.R P No136 Item No. 17002A+17004A P No 137)**

#### **Materials & workmanship**

The relevant specifications of item No. 27 shall be followed except that the thickness of cement plaster shall be 15 mm. The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:3.

##### **2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 27 shall be followed.

2.2. The rate shall be for a unit of One sq. meter.

**ITEM NO: 27 Providing 10 mm thick cement plaster in single coat on Ceiling / soffit of stair for interior plastering finished even and smooth in (ii) Cement mortar 1:3 (1-cement 3 - sand )for Ground Floor (S.O.R P No136 Item No. 17001A+ Item No 17004A P No 137+ Item No 17006 P No 137)**

**1.0. Materials**

**1.1.** Water shall conform to M-1. The cement mortar of proportion 1:3 shall conform to M-13.

**2.0. Workmanship**

**2.1. Scaffolding:**

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.

**2.2. Preparation of back-ground :**

**2.2.1.** The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

**2.2.2.** Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

**2.2.3.** The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

**2.2.4.** For external plaster, the peasting operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be-started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

**2.3. Application of plaster:**

**2.3.1.** The plaster about 15x15 cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Hounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.

**2.3.2.** Cement plaster shall be used within half an hour after addition of water. And mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

**2.3.3.** In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

**2.3.4.** Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags oh the outside of the plaster and keeping them wet.

**3.0. Mode of measurements & payment**

**3.1.** The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

**3.2.** All plastering shall be measured in square meters unless otherwise specified. Length

breadth or height shall be measured correct to a centimeter.

**3.3.** Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10 mm. at any point on this surface.

**3.4.** This item includes plastering up to floor two level.

**3.5.** The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

**3.6.** Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.

**3.7.** For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq. mt each in area and for openings exceeding 0.5 sq. mt and not exceeding 3.00 sq. mt. in each area deductions and additions shall be made in the following manners.

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, for finish to plaster around ends of joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.

**3.8.** For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

**3.9.** In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.

**3.10.** The rate shall be for a unit of One sq. meter.

**ITEM NO: 28 Applying two coats of acrylic lappy (putty) and two coats of primer & Wall painting ( two coats) with plastic emulsion paint of approved brand and manufacture on wall surfaces to give an even brushing the surface free from mortar droppings and other foreign matter and sand papered smooth. {S.O.R. P No. 143 It. Code. 18031+ It. Code. 19032 P No 148}**

## **1.0 Materials**

- **Water:** Shall conform to M-1.
- **Cement-based Putty:** White cement-based wall putty of approved brand such as Birla White, JK, or equivalent, conforming to IS 1477 (Part 1 & 2).
- **Primer:** Interior-grade acrylic primer conforming to IS 109 and suitable for plastic emulsion finish.
- **Paint:** Plastic Emulsion Paint of approved brand (e.g. Asian Paints, Nerolac, Berger, Dulux, or equivalent standard quality) conforming to IS 5411 (Part 1) for interior use.
- **Shade:** As approved by the Engineer-in-Charge.

## **2.0 Workmanship**

### **2.1 Surface Preparation:**

- The surface shall be clean, dry, and free from dust, grease, efflorescence, and loose particles.
- Old paint or mortar droppings shall be removed completely.
- Surface shall be sandpapered smooth and dusted off before applying putty.

## **2.2 Application of Putty and Primer:**

- One or more coats of white cement-based putty shall be applied evenly to fill minor undulations and hairline cracks.
- After drying, the surface shall be rubbed smooth with fine sandpaper.
- One coat of acrylic primer shall then be applied uniformly over the entire surface and allowed to dry completely as per manufacturer's recommendation.

## **2.3 Painting:**

- Three coats of approved plastic emulsion paint shall be applied by brush, roller, or spray, maintaining uniform shade and finish.
- Each coat shall be applied only after the previous coat has dried completely.
- The final surface shall have a smooth, even, and pleasing appearance free from brush marks, patches, or streaks.

## **2.4 Protection and Cleaning:**

- Surfaces such as floors, doors, windows, and fittings shall be properly covered during painting.
- After completion, paint stains on floors or fittings shall be cleaned using suitable solvents.

## **3.0 Mode of Measurement & Payment**

- The work shall be measured in **square meters** of wall surface actually painted.
- Deductions shall be made for openings exceeding 0.5 m<sup>2</sup>.
- No extra payment shall be made for scaffolding, curing, or protection of adjacent surfaces.
- The rate shall include cost of all materials, labour, primer, putty, paint, and surface preparation complete as directed by the Engineer- in-Charge.

**ITEM NO: 29 20 mm thick sand faced cement plaster on walls upto 10 mt height above ground level consisting of 12 mm. Thick backing coat of c.m. 1:3 (1 cement : 3 sand) and 8 mm. Thick finishing coat of c.m. 1:1 (1 cement : 1 sand) etc. complete as directed. {SOR P. No. 137 It. No. 17009}**

### **1.0. Materials**

- 1.1.** Water shall conform to M-1. Cement mortar shall conform to M-11.

### **2.0. Workmanship**

- 2.1.** The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M. 1:3. The relevant specifications of item No. 17.58(I) shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tapers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

- 2.2** The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

### **2.3. Curing :**

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

### **3.0. Mode of measurement & payment**

- 3.1.** The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.
- 3.2.** The rate shall be for a unit of One sq. meter.

**ITEM NO: 30 Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc. complete {SOR P. No.147 It. Code. 19031}**

**1.0 Materials**

Water shall be conform M-1. The plastic emulsion shall conform to I.S.: 5411-1969 (part-I).

**2.0 Workmanship**

**2.1. Scaffolding :** The relevant specifications of item-No. 18.11 Para 2.1 shall be followed.

**2.2. Preparation of surface :** The relevant specification of item No. 18.44 Para 2.2 shall be followed.

**2.3. Preparation of Mix :**

This shall be done as per manufacture's instructions. The thinning of emulsion is to be done with water and not with turpentine. The quantity of thinner to be added shall be as per manufacturer instructions.

**2.4. Application :**

**2.4.1.** Before pouring into small containers for use, the paint shall be stirred thoroughly in item container. When applying also, the paint shall be continuously stirred in the smaller container, so that its consistency is kept uniform.

**2.4.2.** The paint shall be laid on evenly and smoothly by means of crossing and laying off the crossing and consist of covering the area over with paint, brushing the surface hard for the first time over and then, brushing alternately in opposite direction two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush Marks shall be left after the laying off is finished. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of molding s, etc. shall be left on the work. The full process of crossing and laying off will constitute one coat.

**2.4.3.** The paint shall be applied with brush or rollers. For undecorated surfaces, the surface shall be treated with minimum two coats of cement water proofing paint. The second or subsequent coat shall not be started until the proceeding coat as become sufficiently hard to resist marking by brushing being used.

**2.4.4.** The surface on finishing shall present a flat velvety smooth finish. It shall be even and uniform in shade without patches, brush marks, paint drops etc.

**2.5. Precautions :**

(a) Old brushes if they are to be used with emulsion paints, shall be completely dried of turpentine or oil paint by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water fusing break periods to prevent the paint from hardening on the brush.

(b) In the preparation of wall for plastic emulsion painting, no oil base petals shall be sued in filling cracks, holes etc.

(c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.

(d) Washing or surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application

**2.6. Protective payment :** The relevant specifications of item No. 18.11 shall be followed.

**3.0 Mode of measurements and payment**

**3.1.** The relevant specifications of item No. 18.11 shall be followed.

**3.2.** The rate shall be for a unit of One sq. meter.

**ITEM NO: 31 Constructing a cooking platform 60 cm. width and 70 cm high resting on B.B. Masonry walls 23 cm. thick in C.M. (1:6) with (i) Fixing or precast R.C.C. 1:2:4) 8 cm. thick slab with marble chips set in C.M. (1:6) (6mm thick terrazo) with plastering on exposed faces walls in C.M. (1:4) etc. complete. including the approved quality stainless steel sink of size 600 X 400 X 150 including fixing the sink in the stone platform with waste pipe and whole work as per instruction of Engineer in charge. {SOR P No. 166 It. Code. 22004A + P No 28 Item No M729}**

**1.0. Materials**

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Burnt brick shall conform to M-15. Marble Mosaic chips shall conform to M-46. Stone aggregate 20 mm. nominal size shall conform to M-12. (a) M.S. Bars shall conform to M-18.

**2.0. Workmanship**

- 2.1. The cooking platform of size as directed shall be constructed in 60 cms. width and 70 cms. height. The brick masonry wall, in C.M. 1 :6 shall be constructed in 23 cms. thickness up to full depth. The relevant specifications of item 6.13 (B) shall be followed for masonry work.
  - 2.2. The R.C.C. slab of 8 cms. thickness and of adequate design and size shall be precast and the same shall be put up on the B.B. masonry work.
  - 2.3. The top and exposed sides of the R.C.C. slab shall be finished with marble mosaic terrazzo 8 mm. thick with required colour pigment. The work of terrazzo shall be carried out as per relevant specifications of item 14.4 (E).
  - 2.4. The whole masonry work shall be finished with cement mortar in C.M. 1 :4. The relevant specification of item 17.59 (II) shall be followed.
- 3.0. Mode of measurements and payments**
- 3.1. The work of cooking platform shall be measured for finished work.
  - 3.2. The rate includes cost of all labour and materials, etc. required for satisfactory completion of this item as described above.
  - 3.3. The rate shall be for a unit of One running meter.

**1.0. Materials**

- 1.1. approved quality stainless steel sink 600 mm. x 450 mm. x 150 mm. size shall conform to M-62. All materials shall confirm by Engineer In Charge

**2.0. Workmanship**

- 2.1. The kitchen sink shall be supported on a pair of M.S. or C.I. brackets fixed in cement mortar 1:3 (1 cement : 3 coarse sand). The M.S. or C.I. brackets shall conform to I.S. 775-1962. The wall plaster on the rear shall be cut to rest over the top edge of the sink. After fixing the sink, plaster shall be made good and the surface finished to match with the existing one.
- 2.2. The C.P. brass trap and union shall be connected to 40 mm. nominal bore galvanised mild steel waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to gully-trap or direct into the gully-trap on the ground on floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where surface drain or a floor trap is placed directly under the sink and the waste is discharged to it vertically.
- 2.3. The height of front edge of the wash basin from the floor, level shall be 80 cms.

**3.0. Mode of measurements & payment**

- 3.1. The rate includes cost of all labour, materials, tools and plant and other equipment required for satisfactory completion of this item as described in workmanship.
- 3.3. The rate shall be for a unit of One number.

**ITEM NO: 32 Providing laying and jointing in true line and level 15mm dia. U.P.V.C. Pipe ( SCH-40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be concealed as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials. {SOR P.No. 180 It. Code. 23061}**

- A) = 15 mm dia**
- B) = 25 mm dia**
- C) = 32 mm dia**
- D) = 40 mm dia**

- 1.0 Materials : 1.1. The low density polythene pipe of specified diameter with 6 Kg./F. Sq. Cm. working pressure shall conform to I.S. 3076-1968. The specials and fillings required shall be of best quality.
- 2.0 Workmanship:
  - 2.1. The P.V.C. Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P.V.C. Pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during installation or when pipe line is in service.
  - 2.2. Above ground installation of rigid P.V.C. pipe should be undertaken after precautions are observed for their protection against dirt sun rays and mechanical damage.
  - 2.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public place, railway lines, roads, road side and footpaths.
  - 2.4. P.V.C. pipes shall be supported at the followings intervals :

20 mm. dia.	500 mm.
25 mm. dia.	750 mm.
32mm. dia.	900mm.
  - 2.5. Closet support spacings shall be provided, if recommended by the manufacturer.
  - 2.6. The guide line indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view during execution.
  - 2.7. P.V.CV. pipes shall be fixed on wall with wooden plugs and suitable clamps.
  - 2.8. Jointing the pipes :
    - 2.8.1. The pipes and sockets shall be accurately cut. The ends of the pipes and filling should be absolutely free from dirt and dust The outside surface of the pipes and the inside of the fillings shall then be roughened with emery paper, and then solvent cement shall be applied to the matching surface and pushed home and joint. Since solvent cement is aggressive to P.V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, of paper unpregnated with cement should not be buried in the trenches. They should be gathered, not left scatted about, as they can prove to be a hazard to animals which may chew them.
    - 2.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from the Engineer-in-charge.
  - 2.9. Laying pipes in trenches :
    - 2.9.1. The pipes shall be laid over uniform relatively soft fine grained soil found to be free of presence of hard objects such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.
    - 2.9.2. The pipes laid underground shall not be less than one metre from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stresses due to reflection. Any deviation required shall be obtained by using proper type of rubber ring joints.
- 3.0 Mode of measurements & payment:
  - 1.1. The relevant specifications of item No. 23.2(A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item. **For 15mm dia. pipe**
  - 3.1. The rate shall be for a unit of one running metre.



**ITEM NO: 33 Providing laying and jointing in true line and level 25mm dia. U.P.V.C. Pipe ( SCH-40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be concealed as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials. {SOR P.No.180 It. Code. 23062}**

- A) = 15 mm dia**
- B) = 25 mm dia**
- C) = 32 mm dia**
- D) = 40 mm dia**

- 4.0 Materials : 1.1. The low density polythene pipe of specified diameter with 6 Kg./F. Sq. Cm. working pressure shall conform to I.S. 3076-1968. The specials and fillings required shall be of best quality.
- 5.0 Workmanship:
  - 5.1. The P.V.C. Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P.V.C. Pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during installation or when pipe line is in service.
  - 5.2. Above ground installation of rigid P.V.C. pipe should be undertaken after precautions are observed for their protection against dirt sun rays and mechanical damage.
  - 5.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public place, railway lines, roads, road side and footpaths.
  - 5.4. P.V.C. pipes shall be supported at the followings intervals :

20 mm. dia.	500 mm.
25 mm. dia.	750 mm.
32mm. dia.	900mm.
  - 5.5. Closet support spacings shall be provided, if recommended by the manufacturer.
  - 5.6. The guide line indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view during execution.
  - 5.7. P.V.CV. pipes shall be fixed on wall with wooden plugs and suitable clamps.
  - 5.8. Jointing the pipes :
    - 5.8.1. The pipes and sockets shall be accurately cut. The ends of the pipes and filling should be absolutely free from dirt and dust The outside surface of the pipes and the inside of the fillings shall then be roughened with emery paper, and then solvent cement shall be applied to the matching surface and pushed home and joint. Since solvent cement is aggreswive to P.V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, of paper unpregneted with cement should not be buried in the trenches. They should be gathered, not left scatcrred about, as they can prove to be a hazard to animals which may chew them.
    - 5.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from the Engineer-in-charge.
  - 5.9. Laying pipes in trenches :
    - 5.9.1. The pipes shall be laid over uniform relatively soft fine grained soil found to be free of presence of hard objects such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.
    - 5.9.2. The pipes laid underground shall not be less than one metre from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stresses due lo reflection. Any deviation required shall be obtained by using proper type of rubber ring joints.
- 6.0 Mode of measurements & payment:
  - 1.2. The relevant specifications of item No. 23.2(A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item. **For 25mm dia. pipe**
  - 6.1. The rate shall be for a unit of one running metre.

**ITEM NO: 34 Providing laying and jointing in true line and level 32 mm dia. U.P.V.C. Pipe (SCH-40) for cold water including fittings as approved by Engineer In Charge. Pipe shall be fixed on the wall with the help of clamp at every two metre C/C or shall be concealed as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent, including cost of all materials. {SOR P. No. 180 It. Code. 23063}**

- A) = 15 mm dia
- B) = 25 mm dia
- C) = 32 mm dia
- D) = 40 mm dia

- 7.0 Materials : 1.1. The low density polythene pipe of specified diameter with 6 Kg./F. Sq. Cm. working pressure shall conform to I.S. 3076-1968. The specials and fillings required shall be of best quality.
- 8.0 Workmanship:
- 8.1. The P.V.C. Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P.V.C. Pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during installation or when pipe line is in service.
- 8.2. Above ground installation of rigid P.V.C. pipe should be undertaken after precautions are observed for their protection against dirt sun rays and mechanical damage.
- 8.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public place, railway lines, roads, road side and footpaths.
- 8.4. P.V.C. pipes shall be supported at the followings intervals :
- |             |         |
|-------------|---------|
| 20 mm. dia. | 500 mm. |
| 25 mm. dia. | 750 mm. |
| 32mm. dia.  | 900mm.  |
- 8.5. Closet support spacings shall be provided, if recommended by the manufacturer.
- 8.6. The guide line indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view during execution.
- 8.7. P.V.CV. pipes shall be fixed on wall with wooden plugs and suitable clamps.
- 8.8. Jointing the pipes :
- 8.8.1. The pipes and sockets shall be accurately cut. The ends of the pipes and filling should be absolutely free from dirt and dust The outside surface of the pipes and the inside of the fillings shall then be roughened with emery paper, and then solvent cement shall be applied to the matching surface and pushed home and joint. Since solvent cement is aggressive to P.V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, of paper unpregnated with cement should not be buried in the trenches. They should be gathered, not left scatted about, as they can prove to be a hazard to animals which may chew them.
- 8.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from the Engineer-in-charge.
- 8.9. Laying pipes in trenches :
- 8.9.1. The pipes shall be laid over uniform relatively soft fine grained soil found to be free of presence of hard objects such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.
- 8.9.2. The pipes laid underground shall not be less than one metre from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stresses due to reflection. Any deviation required shall be obtained by using proper type of rubber ring joints.
- 9.0 Mode of measurements & payment:
- 1.3. The relevant specifications of item No. 23.2(A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item. **For 32mm dia. pipe**
- 9.1. The rate shall be for a unit of one running metre.

**ITEM NO: 35 Providing. & fixing gun metal check or nonreturn full way wheel valve.  
(C) 25 mm dia. {SOR P.No. 178 It. Code. 23031C}**

- A) = 25mm dia.**
- B) = 32mm dia.**
- C) = 40mm dia.**

- 1.0 **Materials** : The gun metal check or not return full way wheel valve or specified dial, shall conform to I.S. : 778-1964. The non-return valve shall be of tested quality.
- 2.0 **Workmanship**
- 2.1. The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leak proof.
- 3.0 **Mode of measurements and payment For 25mm dia.**
- 3.1. The rate includes all labours, materials, tools and plant etc. required for satisfactory completion of this item.
- 3.2. The rate shall be for a unit of One number.

**ITEM NO: 36 Providing and fixing to wall ceiling floor 10 Kg. F/Cm2 working pressure polythene pipes for soil waste and ventilating pipes of the following outside dia. low density, complete with necessary fittings ,wall clamps etc. including making good the wall ceiling and floor. (F) 75 mm {SOR. It. Code. 23004F P. No.174}**

- A) = 75mm**
  - B) =110mm**
- Materials

- 1.0. The low density polythene pipe of specified diameter with 6 Kg/Sq. Cm, working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.
- 2.0. **Workmanship**
- 2.1. The P.V.C. pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid ' P.V.D. pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during installation or when pipe line which may occur during installation or when pipe line is in service.
- 2.2. Above ground installation of rigid P.V.C. pipe should be under taken after preparations are observed for their protection against direct sun rays and mechanical damage.
- 2.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public places, railway lines, road side and foot paths.
- 2.4. P.V.C. pipes shall be supported at the following intervals :

-20 mm. dia	500 mm.
-25 mm. dia	750.mm.
-32 mm. dia.	900 mm.
- 2.5. Closer support spacing shall be provided if recommended by the manufacture.
- 2.6. The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing pf pipes shall be kept in view during execution.
- 2.7. P.V.C. pipes shall be fixed on wall with wooden plugs and suitable plastic clamps.
- 2.8. **Jointing the pipes :**
- 2.8.1. The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped of after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered not left scattered about, as-they can prove to be a hazard to animals, which may chew them.
- 2.8.2. If any manufacturer recommends its own methods of jointing the same shall be adopted after

necessary approval from the Engineer-in-charge.

**2.9. Laying pipes in Trenches :**

2.9.1. The pipes shall be laid over uniform relatively soft fine trained soil found to be free of presence of hard object such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.

2.9.2. The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stressed due to deflection. Any deviation required shall be obtained by using proper type of rubber ring joints.

**3.0. Mode of measurements & payment**

3.1. The relevant specifications of item 23.2. (A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item.

3.2. **The unit rate shall be for a unit of One running meter**

**ITEM NO: 37 Providing and fixing to wall ceiling floor 10 Kg. F/Cm<sup>2</sup> working pressure polythene pipes for soil waste and ventilating pipes of the following outside dia. low density, complete with necessary fittings ,wall clamps etc including making good the wall ceiling and floor. (G) 110 mm {SOR.It. Code. 23004G P. No.174}**

**A) = 75mm**

**B) =110mm**

**1.0. Materials**

The low density polythene pipe of specified diameter with 6 Kg/Sq. Cm, working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.

2.0. 2.1. Workmanship The P.V.C. pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid ' P.V.D. pipes, due allowance shall be made particularly in over ground pipe lines for any change in length of pipe line which may occur during installation or when pipe line which may occur during installation or when pipe line is in service.

2.2. Above ground installation of rigid P.V.C. pipe should be under taken after preparations are observed for their protection against direct sun rays and mechanical damage.

2.3. The rigid P.V.C. pipe lines should not be kept exposed above ground when it passes through public places, railway lines, road side and foot paths.

2.4.. P.V.C. pipes shall be supported at the following intervals : -20 mm. dia 500 mm. -25 mm. dia 750.mm. -32 mm. dia.900 mm. Closer support spacing shall be provided if recommended by the manufacture. The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing pf pipes shall be kept in view during execution.

2.5. P.V.C. pipes shall be fixed on wall with wooden plugs and suitable plastic clamps. Jointing the pipes : The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped of after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered not left scattered about, as-they can prove to be a hazard to animals, which may chew them.

2.6 If any manufacturer recommends its own methods of jointing the same shall be adopted after necessary approval from the Engineer-in-charge.

2.7 Laying pipes in Trenches : The pipes shall be laid over uniform relatively soft fine trained soil found to be free of presence of hard object such as large flints, rocky projections, large tree roots etc. The width of the trenches shall be minimum width required for working.

2.8 The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to avoid any induced stressed due to deflection. Any deviation required shall be obtained by using proper type of rubber ring joints.

**3.0. 3.1. Mode of measurements & payment**

The relevant specifications of item 23.2. (A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item.

3.3. The unit rate shall be for a unit of One running meter.

**ITEM NO: 38 Providing and fixing PVC SWR Nahni Trap IS 14735 for drain - 100 mm diameter with jali of the following nominal diameter of self cleansing design with C.I. screwed down or hinged grating including the cost of cutting and making good the walls. {SOR P. No. 182 It. Code. 23068}**

#### Materials

The cast iron (spun) Nahni trap shall conform to M-69. The C.I. hinged or screwed down cover shall be of best quality

#### Workmanship

The Nahni trap with 100 mm. dia inlet and 50 mm. dia. outlet shall be fixed as per drawing or as directed.

The Nahni trap shall be jointed with C.I. Pipe, 75 mm. dia. with lead joints. The lead joints shall be done in conformation with I.S. 782.-1976.

#### Mode of measurements and payment

The rate includes cost of all labour, materials, tools and plants etc. required for satisfactory completion of this item including lead, jointing and testing.

The rate shall be for a unit of one number

**ITEM NO: 39 Providing and fixing Screw down Quarter turn bib taps of following size (A) Brass chromium plated screw down Bib tap (li) 20 mm dia {SOR. It. Code. 23028A2 P. No.177}**

#### 16.1 SCOPE

16.1.1 The item pertains for providing chromium plated Bib Tap/ Stop cock/ Angular Stop cock/ Angle Valve type (i.e. Pressmatic or threaded) & size as specified in the schedule or as directed by Architect including all accessories & fixing, testing & commissioning.

#### 16.2 MATERIAL

16.2.1 It shall be 20 mm. dia. brass screw-down type, with chromium plating, and shall conform to I.S. 781 1977. The taps shall be quarter or full threaded. The bib cock shall be best Indian make and quality as specified in item and approved by Architect/ Engineer in Charge.

16.2.2 A bib cock (stop tap) is a draw off tap with a horizontal inlet and free outlet and stop cock (stop tap) is a valve with a suitable means of connections for insertion in a pipeline for controlling or stopping the flow. They shall be of specified size and shall be of screw down type. The closing device should work by means of shuts against water pressure on a non-metallic washer, which shuts against water pressure on a seating at right angles to the exit of the threaded spindle, which operates it. The handle shall be either crutch or butterfly type securely seated pattern. The cocks (taps) shall open in anti-clockwise direction.

16.2.3 Brass bib taps and stop cocks and angle stop cocks shall conform to IS 781, they shall be polished bright. The minimum finished weight of different sizes of bib tap weight of 15 mm size bib tap and stop cock shall be as per table given below. They shall be sound and free from taps, blow-holes and fittings. Internal & External surface shall be clean, smooth and free from sand and neatly dressed. Taps shall be nickel chromium plated and thickness of coating shall not be less than service grade No.2 of IS 4827 and plating shall be capable of taking high polish which shall not be easily tarnished.

16.2.4 Minimum finished mass of Bib Taps and Stop Valves as per IS: 781:1984 (Reaffirmed 2001).

Size		MINIMUM FINISHED MASS		
Bib Taps		Stop valves		
		Internally threaded	Externally threaded	Mixed threaded
MM	KG	KG	KG	KG
8.0	0.250	0.220	0.250	0.235
10.0	0.330	0.330	0.350	0.325
15.0	0.400	0.330	0.400	0.365
20.0	0.750	0.675	0.750	0.710
25.0	1.250	1.180	1.300	1.250
32.0	-	1.680	1.800	1.750
40.0	-	2.090	2.250	2.170
50.0	-	3.700	3.850	3.750

### 16.3 FIXING

16.3.1 The body of stop cock of 15mm diameter with adjustable flange shall be as specified above shall be fixed on water supply line keeping the arrow in the direction of flow as per drawing or as directed.

16.3.2 Transition male/ female adapter with shall be used on either side for PVC pipes.

16.3.3 The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn/ Teflon tape round the screwed end of the cock.

16.3.4 On completion the of tiling work, the outer part of stop cock shall be fixed to the brass body

16.3.5 Every tap completed with its component shall withstand an internally applied hydraulic pressure of 2 MPa (20 kg/sq.cm) maintained for a period of 2 minutes during the period it shall neither leak nor sweat. Leaky joint shall be remade to make it leak proof without any extra cost from contractor.

### 16.4 THE RATES ARE INCLUSIVE OF:

16.4.1 Bib Tap/ Angle Valve/ Stop cock as specified in Schedule of Quantities.

16.4.2 Wall flanges & Hardware.

16.4.3 Jointing & fixing material.

16.4.4 Cutting/ drilling hole– cut out in floor/ wall wherever required and making all damage good to original condition after completion of work.

16.4.5 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.

16.4.6 Testing the entire system and rectification of defects if any.

16.4.7 All necessary materials, labour and use of tools. 16.5 MODE OF MEASUREMENT

16.5.1 The measurement shall be for each unit of Bib tap/Stop Cock/Angle Valve fixed. For C.P Bib Cock 20mm 1

### 16.6 MODE OF PAYMENT

16.6.1 The contract rate shall be for each unit of Bib tap/ Stop Cock/ Angle Valve fixed.

**ITEM NO: 40 Providing and fixing wash basin with single hole for pillar tap with C.I. Or M.S. brackets painted with including cutting holes and making good the same including fittings, (fixing C.P brass waste 32 mm dia),( fixing M.I. fisher union 32 mm dia),(fixing pillar tap,cap stan head , screw down high pressure with screws, shank sand back nuts. 15mm dia), (fixing brass screw down stop tap15mm dia), (fixing Rubber plug) (A) Vitreous China (ii) Flat back wash Basin 550mm x 400mm size (i) in white colour (RA NO-10)**

**1.0. Materials**

1.1. The white glazed earthenware wash basin shall be 550 mm. x 400mm. of 1st quality and make as approved by the Engineer in-charge. The wash basin shall-conform to M-59.

**2.0. Workmanship**

2.1. The washbasin shall be fixed on the wall as and where directed. The wash basin shall be supported on a pair of M.S. or C.I. brackets fixed in C.M. 1:3 (1 cement : 3 sand). The bracket shall conform to I.S. : 775-1962. The wall plaster on the rear shall be cut to rest the top edge of the washbasin. After fixing the basing, plaster shall be made good and surface finished to match the existing one.

2.2. The brackets shall be painted white with ready-mixed paint.

2.3. The C.I. brass trap and union shall be connected to 32 mm. dia. waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to a gully trap or direct in to gully-trap on the ground floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where the surface drain or a floor trap is placed directly under the basin and the waste is discharged in to vertically.

2.4. The height of the front edge to the wash basin from the floor level shall be 80 cms.

2.5. The necessary inlet, outlet connections and fittings such as pillar cocks, CP dress waste trap waste pipe, stop cock, chain wish rubber plug etc. shall be fixed.

2.6. The payment of fittings shall be made separately under separate items.

**3.0. Mode of measurements & payment**

3.1. The rate includes cost of all labour, materials, tool3 and plant etc. required for satisfactory completion of this item as specified in workmanship.

3.2. The rate shall be for a unit of One number.

**ITEM NO: 41 Providing and fixing water closet squatting Pan (Indian type W.C. Pan) size 580mm (A) Vitreous China.(I) Long pattern, White colour including Providing and fixing (100mm size P or S trap for water closet squatting pan including jointing the trap with the pan and soil pipe in cement Mortar 1:1 (1-Cement : 1-Fine sand) (A) Vitreous China.),(G.I. inlet connection for flush pipe with W.C. Pan) (C.P. Brass 1/2 turn flush cock 25 mm dia.) (RA No-11)**

**1.0. Materials**

1.1. Water closet squatting pan ( Indian type W.C. Pan) shall conform to M-62. Cement mortar shall conform to M- 11

2.0. Workmanship 2.1. The pan shall be sunk into the floor and embedded in a cushion of average 15 cm. cement concrete 1:5:10 (1 cement : 10 graded stone aggregate or brick aggregate 40 mm. nominal size) or and its bed concrete, the floor should be left 115 mm.-below the top level of the pan so as to allow for flooring and its bed concrete. The floor should be suitably stopped so that the .waste water is drained into the pan. The shall be provided with 100 mm. 'P' or 'S'

trap as specified in the item No. 23.113 with approximately 50 mm seal-The joints between the pan and the trap shall be made leak-proof with cement mortar 1:1 (1 cement : 1 fine sand).

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labours involved in the operations described under workmanship.

3.2. The rate shall be for a unit of One number. 3.3. The 'P' or S1 trap unit of One number.

1.0. Materials : The 100 mm. size 'P' or 'S' trap for water closet shall confirm to M-62. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. The 'P' or 'S' trap shall be fixed with pan cast iron pipe with C.M. 1.1. The pan shall be provided with a 100 nun. 'P' or 'S' trap as specified in the item with an approximately 50 mm. seal The joint between the pan and the trap shall be made leak-proof with cement mortar 1:1(1 cement : 1 fine sand).

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour involved in the operations described under workmanship including testing.

3.2. The rate shall be for a unit of one number.

1.0. Materials 1.1. The G.I. inlet connection for flush pipe shall conform to M-56.

2.0. Workmanship

2.1. The flush pipe from the cistern shall be connected to the closet by means of cement or red-lead.

3.0. Mode of measurements & payment

3.1. The rate shall include the cost of all materials, fittings and labour involved in all the operations described under workmanship including testing.

3.2. The rate shall be for a unit of One number.

1.0. Materials : Chromium plated brass half turn flush cock shall conform to M-67.

2.0. Workmanship The hall turn flush cock of specified diameter shall be fixed as directed. The flush cock shall be fixed in G.I. pipe line with necessary fittings. The joints shall be made leak proof by using spun yarn and white Zink. The fixing work shall be carried out as per relevant specifications of item No. 23.2(4).

**ITEM NO: 42 Providing erecting and fixing double coated Syntex or equivalent PVC. (ISI) mark water tank of reqd capacity each with all necessary fittings & connection etc. comp on terrace. {SOR P No. 168 It. Code. 22014}**

**MATERIALS:**

1.1 Polythene water storage tanks shall be as per IS: 12701 this material should be light weight, non-toxic all fittings material shall be H.D.P.E./ brass.

1.2 The PVC tank shall be of ISI mark and approved quality and brand like Infra or Sintex or equivalent. Contractor should provide tank of different capacity as per actual requirement at each portion of building.

1.3 The thickness of PVC materials shall be as per companies' specification. The size of tank shall



be decided by engineer in- charge.

2) **WORKMANSHIP:**

Before commence of work information shall be given to EIC. Work shall be carried out as per instruction received by EIC

- 2.1 Water tank shall be installed on perfectly plained and smooth surface.
- 2.2 Outlet pipe shall be 7.5cm high than bottom surface.
- 2.3 Diameter of overflow pipe shall be bigger than inlet pipe diameter.
- 2.4 Unions shall be used in inlet and outlet pipe.
- 2.5 For connection in water tank required vicer and check nut shall be used.
- 2.6 Fitting shall be done by G.I. /PVC pipe as per instruction of engineer in-charge in each tank. All joints shall be of leak proof.
- 2.7 Fixing shall be done with suitable material suggested / instructed by EIC.

3) **.MODE OF MEASUREMENT AND PAYMENT:**

- 3.1 The rate includes for all labour, materials, tools and equipment required to complete the work in satisfactory manner.
- 3.2 The rates shall be on a unit of "Ltr" basis for completed item to the satisfaction of EIC.

**ITEM NO: 43 Providing and fixing S.W. Gully trap with C.I. Grating brick masonry chamber and water tight C.I. Cover with frame of 300 mm. X 300 size (inside) with standard weight (I) Square mouth traps (C) 100 mm. X 100 mm size P type {SOR P No. 184 It. Code. 24006AA}**

**Materials :**

- (t) **Water shall conform to M-1. (2) Cement mortar of proportion 1:5 shall conform to M-11. (3) Burnt brick shall conform to M-15. (4) The S.W. Galley trap of 150 mm. x 100 mm. size shall conform to .M-70.**

**1.0 Workmanship**

- 1.1. Excavation for gully trap shall be done true to dimensions and levels as indicated on plans or as directed. The excavation work shall generally be done as per relevant specifications of item 4.0.0. of earth work.

**1.2. Fixing:**

- 1.2.1. The gully trap shall be fixed over cement concrete 1:5:10 (1 cement : 5 sand : 10 graded brick bats aggregate 40 mm nominal size) foundation. 650 square and 100 mm. thick The depth of top of concrete below the ground level shall be 675 mm. The jointing of gully outlet to the branch drain shall be done similar to jointing of S.W. pipe as described in item No. 24.1 (A).

- 1.3. **Brick masonry chamber:** After fixing and testing gully and branch drain, a brick masonry 300 x 330 mm. inside with bricks in CM 1:5 (1 cement : 5 sand) shall be built with a 100 mm. brick work round OH; gully trap from the top of bed concrete up to ground level. The space between the chamber walls and the trap shall be filled with cement concrete 1:5:10. The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside with cement mortar 1:3 (1 cement: 3 sand) finished with floating coat of neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating.

- 1.4. C.I. cover with frame 300 mm, x 300 mm. (inside) size shall then be fixed on the top of the brick masonry with C.C. 1:2:4 ( 1 cement : 2 coarse sand : 4 graded aggregate 20 mm. nominal size) 40 mm. thick and rendered smooth. The finished top of the cover shall be left about 40 mm. above the adjoining ground level so as to exclude the surface water from entering the gully trap.

**2.0 Mode of measurements & payment**

- 2.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory

completion of this item as described above.

2.2. The rate shall be for a unit of one number basis.

**ITEM NO: 44 Constructing brick masonry chamber for under ground C.I. Inspection chamber and bends with bricks having crushing strength not less than 35 Kg/cm<sup>2</sup> in cm. 1:5 C.I. Cover with frame (light duty) 455 mm. X 610 mm. Internal dimensions, total weight of cover with frame to be not less than 38 Kgs. weight of cover 23 Kg. and wt. of frame 15 Kg) R.C.C. top slab with 1:2:4 mix(1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. size ) foundation concrete 1:5:10 inside plaster 15 mm. thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls & bed concrete etc. complete. (I) inside dimensions, 455 mm. x 610 mm. And 450 mm. Deep for single pipe line. {SOR P No. 189 It. Code. 24016AA}**

**Materials :**

**Water shall conform to M-1. Cement shall conform to M-3. Coarse sand shall conform to M-5. Brick shall conform to M-15. Stone aggregate shall conform to M-12. Brick bat shall conform to M-14 M.S. bar shall conform to M-18.**

**1.0 Workmanship**

- 1.1. C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under:
- 1.2. The excavation shall be done true to dimensions and level shown in one the plans or as directed.
- 1.3. Bed concrete shall be 15. Cms, thick C.C. 1:5:10 (1 cement : 5 coarse sand : 10 graded brick bat aggregates. The projection of bed concrete beyond the masonry walls shall be 7.5 cms.
- 1.4. Masonry walls and plaster work shall be carried out as per relevant specifications of item
- 1.0. Materials :** Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Brick shall conform to M-
15. C.I. Grating of 500 x 450 mm. size of standard make shall be of approved quality. Stone aggregate 40 mm. nominal size shall conform to M-12. coal tar shall conform to relevant M-5.

**2.0. Workmanship**

- 2.1. The chamber shall be of size 500 mm. x 450 mm. internal clear dimensions between the masonry wall faces. The height of 500 mm. shall be measured from the top of the bed concrete to the top of the C.I. frame. The size of grating indicate the clear internal dimensions of the C.I. frame of the grating.
- 2.2. The excavation shall be done to true dimensions and levels.
- 2.3. The foundation concrete shall consist of 150 Cms x 100 Cms x 15 cms thick C.C. 1:5:10(1 cement : 5 sand : 10 graded stone aggregate 40 mm. nominal size).
- 2.4. The wall of the chamber shall be constructed in brick work C.M. 1:5 and 23 Cms. thick as per relevant specifications of item 6.12(8).
- 2.5. The walls and the bed concrete of chamber shall be plastered inside with 12 mm. thick cement plaster 1 : 3 (1 cement : 3 coarse sand) finished smooth.
- 2.6. The gully grating cover shall be hinged to frame to facilitate its opening for cleaning and repairs. The frames of the gully grating shall be fixed on the top of masonry wall of the chamber in 15 cms. thick C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid over the full thickness of walls..
- 2.7. The chamber shall have connection pipe, the length of which in meter between the road gully chamber and the manhole of the drain shall not be less than 1/40 times the nominal diameter of the pipe in MM. i.e. for 150 mm\* connection
- 2.8. pipe the length shall not be cement plaster on the bed concrete.
- 2.9. **Painting :** After the completion of the work of exposed surface of the grating of the frame shall be painted with a thick coat of coal tar.

**1.0 Mode of measurements and payment**

- 1.1. The cost of connection pipes is not included in the item and shall be paid separately. However, fixing the connection pipes in the walls of gully chamber is included in the rate for gully chambers and nothing extra shall be paid for this separately.
- 1.2. The rate shall be for a unit of One number.
- 1.5. The cover slab shall be constructed as per relevant specifications of 89
- 3.0. Mode of measurements and payment**
- 3.1. The earth work in excavation, providing and laying C.I. inspection chamber and bends shall be measured and paid for separately.
- 3.2. The rate shall be for a unit of One number.

**ITEM NO: 45 Constructing brick masonry chamber for under ground C.I. Inspection chamber and bends with bricks having crushing strength not less than 35 Kg/cm<sup>2</sup> in cm. 1:5 C.I. Cover with frame (light duty) 455 mm. X 610 mm. Internal dimensions, total weight of cover with frame to be not less than 38 Kgs. weight of cover 23 Kg. and wt. of frame 15 Kg) R.C.C. top slab with 1:2:4 mix(1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. size ) foundation concrete 1:5:10 inside plaster 15 mm. thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls & bed concrete etc. complete. [II] Inside dimensions 500 mm. x 700 mm. & 450 mm. deep for pipe lines one or two. {SOR P No. 189 It. Code. 24016BA}**

**2.0 Materials :**

Water shall conform to M-1. Cement shall conform to M-3. Coarse sand shall conform to M-5. Brick shall conform to M-15. Stone aggregate shall conform to M-12. Brick bat shall conform to M-14 M.S. bar shall conform to M-18.

**3.. Workmanship**

C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under: The excavation shall be done true to dimensions and level shown in one the plans or as directed.

Bed concrete shall be 15. Cms, thick C.C. 1:5:10 (1 cement : 5 coarse sand : 10 graded brick bat aggregates. The projection of bed concrete beyond the masonry walls shall be 7.5 cms. 3.4. Masonry walls and plaster work shall be carried out as per relevant specifications of item 1.1. Materials : Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Brick shall conform to M- 15. C.I. Grating of 500 x 450 mm. size of standard make shall be of approved quality. Stone aggregate 40 mm. nominal size shall conform to M-12. coal tar shall conform to relevant M-5.

**2.10. Workmanship**

- 2.11. The chamber shall be of size 500 mm. x 450 mm. internal clear dimensions between the masonry wall faces. The height of 500 mm. shall be measured from the top of the bed concrete to the top of the C.I. frame. The size of grating indicate the clear internal dimensions of the C.I. frame of the grating.
- 2.12. The excavation shall be done to true dimensions and levels. 2.13. The foundation concrete shall consist of 150 Cms x 100 Cms x 15 cms thick C.C. 1:5:10(1 cement : 5 sand : 10 graded stone aggregate 40 mm. nominal size).
- 2.14. The wall of the chamber shall be constructed in brick work C.M. 1:5 and 23 Cms. thick as per relevant specifications of item 6.12(8).
- 2.15. The walls and the bed concrete of chamber shall be plastered inside with 12 mm. thick cement plaster 1 : 3 (1 cement : 3 coarse sand) finished smooth.
- 2.16. The gully grating cover shall be hinged to frame to facilitate its opening for cleaning and repairs. The frames of the gully grating g shall be fixed on the top of masonry wall of the chamber in 15 cms. thick C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid over the full thickness of walls..

2.17. The chamber shall have connection pipe, the length of which in meter between the road gully chamber and the manhole of the drain shall not be less than 1/40 times the nominal diameter of the pipe in MM. i.e. for 150 mm\* connection 2.18. pipe the length shall not be cement plaster on the bed concrete.

2.19. Painting : After the completion of the work of exposed surface of the grating of the frame shall be painted with a thick coat of coal tar.

## 2. Mode of measurements and payment

The cost of connection pipes is not included in the item and shall be paid separately. However, fixing the connection pipes in the walls of gully chamber is included in the rate for gully chambers and nothing extra shall be paid for this separately.

The rate shall be for a unit of One number. The cover slab shall be constructed as per relevant specifications of 89 Mode of measurements and payment The earth work in excavation, providing and laying C.I. inspection chamber and bends shall be measured and paid for separately. The rate shall be for a unit of One number.

**ITEM NO: 46 Providing and constructing soak pit of size 2.46mt. outer and 6.0mt. deep including 23cm thick brick masonry for top 0.75mt. height solid masonry in cement mortar 1:6 and remaining honey combed masonry in cement mortar 1:6 and covered with jodhpuri patti C.I. pipe 100mm dia 1.8mt. long etc. comp. as directed including 15mm plaster in C.M. 1:4 over jodhpuri patti. (RA No 12)**

### Materials :

Water shall conform to M-1. Cement shall conform to M-3. Coarse sand shall conform to M-5. Brick shall conform to M-15. Stone aggregate shall conform to M-12. Brick bat shall conform to M-14 M.S. bar shall conform to M-18.

### Workmanship

C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under: The excavation shall be done true to dimensions and level shown in one the plans or as directed. .

Bed concrete shall be 15. Cms, thick C.C. 1:5:10 (1 cement: 5 coarse sand: 10 graded brick bat aggregates. The projection of bed concrete beyond the masonry waifs shall be 7.5 cms.

Masonry walls and plaster work shall be carried out as per relevant specifications of item 1.1. Materials : Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Brick shall conform to M- 15. C.I. Grating of 500 x 450 mm. size of standard make shall be of approved quality. Stone aggregate 40 mm. nominal size shall conform to M-12. coal tar shall conform to relevant M-5.

### Workmanship

The chamber shall be of size 500 mm. x 450 mm. internal clear dimensions between the masonry wall faces. The height of 500 mm. shall be measured from the top of the bed concrete to the top of the C.I. frame. The size of grating indicate the clear internal dimensions of the C.I. frame of the grating.

The excavation shall be done to true dimensions and levels.

The foundation concrete shall consist of 150 Cms x 100 Cms x 15 cms thick C.C. 1:5:10(1 cement : 5 sand : 10 graded stone aggregate 40 mm. nominal size).

The wall of the chamber shall be constructed in brick work C.M. 1:5 and 23 Cms. thick as per

relevant specifications of item 6.12(8).

The walls and the bed concrete of chamber shall be plastered inside with 12 mm. thick cement plaster 1 : 3 (1 cement : 3 coarse sand) finished smooth.

The gully grating cover shall be hinged to frame to facilitate its opening for cleaning and repairs. The frames of the gully grating g shall be fixed on the top of masonry wall of the chamber in 15 cms. thick C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid over the full thickness of walls..

The chamber shall have connection pipe, the length of which in meter between the road gully chamber and the manhole of the drain shall not be less than 1/40 times the nominal diameter of the pipe in MM. i.e. for 150 mm\* connection pipe the length shall not be cement plaster on the bed concrete.

#### Painting :

After the completion of the work of exposed surface of the grating of the frame shall be painted with a thick coat of coal tar.

#### Mode of measurements and payment

The cost of connection pipes is not included in the item and shall be paid separately. However, fixing the connection pipes in the walls of gully chamber is included in the rate for gully chambers and nothing extra shall be paid for this separately.

The rate shall be for a unit of One number.

The cover slab shall be constructed as per relevant specifications of 89 Mode of measurements and payment The earth work in excavation, providing and laying C.I. inspection chamber and bends shall be measured and paid for separately. The rate shall be for a unit of One number.

**ITEM NO: 47 Providing and fixing 90 cm high Stainless Steel railing made from anticorrosive 304 grade S.S. pipe of 50 mm dia (16 gauge) as hand rail with S.S. 304 grade baluster of 32 mm dia (16 gauge) as a vertical support fixed in RCC slab / steps of stair at 1.2 Mt. c/c including three horizontal S.S. pipes of 16 mm dia (16 Gauge) at equal distance fixed by 16 mm dia (16 Gauge) S.S. pipe with baluster including accessories as per detailed drawing as directed etc. complete. (RA NO-13)**

#### 1. Material Specifications

All stainless steel components must be fabricated from **anticorrosive S.S. 304 grade** material.

Component	Specification	Dimensions / Details
Top Handrail	S.S. 304 Pipe	50 mm diameter, 16 Gauge
Vertical Balusters	S.S. 304 Pipe	32 mm diameter, 16 Gauge
Horizontal Pipes	S.S. 304 Pipe	16 mm diameter, 16 Gauge (3 Numbers)
Connecting Pins/Supports	S.S. 304 Pipe/Solid	16 mm diameter, 16 Gauge (fixing horizontals to balusters)
Accessories	S.S. 304 Grade	Base plates, dome covers/flanges, anchor fasteners, welding consumables.

*Note: 16 Gauge standard thickness is approximately 1.5 mm to 1.6 mm.*

## **2. Dimensional & Layout Tolerances**

- **Overall Height:** The finished height of the railing must be exactly **90 cm (900 mm)** measured from the top of the finished floor level (or stair tread) to the top edge of the handrail.
- **Baluster Spacing:** Vertical supports (balusters) must be fixed at **1.2 meters Center-to-Center (c/c)**.
- **Horizontal Alignment:** The three 16 mm dia horizontal pipes must be spaced at equal vertical distances between the floor/tread base and the top handrail.

## **3. Execution and Installation Methodology**

### **A. Surface Preparation & Marking**

- The alignment of the railing shall be marked on the RCC slab or stair treads as per the approved working drawings.
- The exact points for fixing the balusters (at 1.2 Mt. c/c) must be precisely measured and marked.

### **B. Anchoring & Fixing**

- The vertical balusters (32 mm dia) shall be rigidly fixed into the RCC slab or stair steps.
- This is typically done using heavy-duty S.S. base plates welded to the balusters, secured to the concrete using **high-quality anchor fasteners/expansion bolts**.
- Alternatively, core cutting of the RCC slab may be done to embed the balusters using non-shrink epoxy grout, depending on site direction.
- S.S. dome covers (flanges) must be provided at the base of each baluster to conceal the anchor bolts and base plates cleanly.

### **C. Fabrication & Welding**

- All joints (handrail to balusters, horizontals to connecting pins) must be securely welded using **Argon Arc Welding (TIG welding)** to prevent blackening and ensure structural integrity.
- The three horizontal pipes (16 mm dia) shall be passed through or welded to 16 mm dia S.S. connector pins/pipes attached to the main vertical balusters.

### **D. Finishing & Polishing**

- All welded joints must be ground perfectly flush and smooth. There should be no sharp edges, burrs, or visible weld marks.
- The entire railing assembly must be buffed and polished to achieve a uniform finish (usually mirror polish or satin/matt finish, as approved by the site engineer/architect).

## **4. Measurement and Payment**

- **Unit of Measurement:** The railing is typically measured in **Running Meters (R.M.)** or Running Feet (R.ft) along the top centerline of the handrail.
- **Inclusions:** The rate includes the cost of all materials (pipes, base plates, fasteners, welding rods, polishing compounds), labor, scaffolding, tools, transportation, and execution as per the exact specifications. No extra payment will be made for bends, corners, or end-caps

**ITEM NO: 48 Construction of an under ground masonry water tank of size 2.00m X 1.00m X 1.00m & 2000 litre capacity as per the approved drawing & design etc. complete. (RA No 14)**

### **1.0. Materials :**

Water shall conform to M-1. Cement shall conform to M-3. Coarse sand shall conform to M-5. Brick shall conform to M-15. Stone aggregate shall conform to M-12. Brick bat shall conform to M-14 M.S. bar shall conform to M-18.

### **2.0. Workmanship**

- 2.1.** C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under:
- 2.2.** The excavation shall be done true to dimensions and level shown in one the plans or as directed.
- 2.3.** Bed concrete shall be 15. Cms, thick C.C. 1:4:8 (1 cement : 4 coarse sand : 8 graded brick bat aggregates. The projection of bed concrete beyond the masonry waifs shall be 10 cms.

2.4. Masonry walls and plaster work shall be carried out as per relevant specifications of item 24.40.

2.5. The cover slab shall be constructed as per relevant specifications of 24.27 (I).

### 3.0. Mode of measurements and payment

3.1. The earth work in excavation, providing and laying C.I. inspection chamber and bends shall be measured and paid for separately.

2.3. The rate shall be for a unit of One Litre.

**ITEM NO: 49 Providing and fixing pre-cast Rubber Dye/steel Dye interlocking concrete block 60 mm thick with grade of concrete M300 pneumatic compressed /vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete. (S.O.R. P. 130 It. No. 14033)**

## Scope

Interlocking Concrete Block Pavement (ICBP) shall consist of a surface layer of appropriate sized concrete paving blocks paved and compacted over a thin bedding sand layer of specified grading, which is spread over a properly constructed and profiled base course and is bounded by properly installed edge restraints. The joints shall be filled by fine sand of specified grading. The work shall include supplying laying and paving of blocks including all materials, labour and equipment and performing all operations in connection with the laying of ICBP as per these Specifications.

### 2. Materials

2.1. The Concrete Paving Block shall conform to the relevant IS standard.

2.2. Bedding sand : Bedding sand shall conform to the grading given in Table 1500.6.

2.3. Joint filling sand : Joint filling sand shall conform to grading given in Table 1500.6.

TABLE : GRADINGS FOR BEDDING AND JOINT FILLING SAND  
IS Sieve Size (mm) Per cent Passing

For Bedding Sand For Joint Filling Sand.

Sr.No. IS Sieve Size (mm ) Per cent Passing

		For Bedding Sand	For Joint Filling Sand
1	10.00	100	100
2	4.75	90 – 100	90 – 100
3	2.36	60 - 95	75 – 100
4	1.18	15 -34	55 -90
5	0.60	25 -60	35 – 59
6	0.30	5 -20	8 – 30
7	0.15	0 -10	0 -10
8	0.075	0 -5	0 -5

### 4.3. Buffer

Buffer of specified quantity of paving blocks (of the same shape, size and thickness) required for normal maintenance of paved area as specified by the Engineer, shall be supplied and stored for replacement as and when needed. Normally this will be 5 per cent of the blocks used in the paved area.

### 4.4. Block Thickness

For rural roads catering to heavy vehicles, the minimum thickness of paving blocks shall be 60 mm for traffic up to 100 vehicles per day, and 80 mm for projected traffic from 100 to 200 vehicles per day.

#### 4.5. Dimensions and Tolerances

The dimensions and tolerances of paving blocks shall conform to the Specifications given in Table 1500.7. Aspect ratio is the ratio of length to thickness of blocks. Chamfer is the bevelled edge, provided on the top surface of a block. Plan area is the horizontal area bounded by the vertical faces. Wearing surface area is the horizontal area bounded by the vertical faces, minus the area reduced due to the presence of chamfer.

TABLE : DIMENSIONS AND TOLERANCES FOR PAVING BLOCKS

S. No.	Dimension	Recommended Values	Tolerance Limit
(1)	Width W To be specified by Manufacturer		$\pm 2$ mm
(2)	Length L To be specified by Manufacture		$\pm 2$ mm
(3)	Thickness T	60 to 80 mm	$\pm 3$ mm
(4)	Aspect Ratio L/T	Maximum : 4.0	$\pm 0.2$
(5)	Chamfer (Arris)	Miximum : 5 mm Maximum : 7 mm	$\pm 1$ mm
(6)	Plan Area	Maximum : 0.03 m <sup>2</sup>	+0.001 m <sup>2</sup>
(7)	Wearing Face Area	Minimum 75% of Plan Area	-1%
(8)	Squareness	Nil	$\pm 2$ mm

#### 6. Compressive Strength

6.1. The average 28 days compressive strength of 8 blocks shall be 30 MPa and strength of individual block shall not be less than 26 MPa.

6.2. The 28 days compressive strength of paving blocks tested as per relevant IS specification shall be determined as explained hereinafter.

6.2.1. Compression testing machine of adequate capacity shall be used for testing of blocks. The steel bearing plates shall have a minimum thickness of 25 mm. The surface area of the bearing side of the plate should be such that no edge of the bearing plate is less than 10 mm from the outer edge of the paving block being tested.

6.2.2. Incase the testing surface of the paving block departs from a plain surface by more than 0.05 mm, capping using suitable materials shall be adopted for testing as per IS:516.

6.2.3. The blocks shall be stored for  $24 \pm 4$  hours in water maintained at a temperature of  $(20 \pm 5)^{\circ}\text{C}$  before testing. The dimensions and plan areas of the block shall be determined. The bearing plates of the testing machine shall be wiped clean. The specimen shall be clamped between the plates in such a way that the axes of the specimen are vertically aligned with those of the bearing plates.

6.2.4. The load shall be applied without shock and increased continuously at a rate of  $15 \pm 3$  N/mm<sup>2</sup>/minute until no greater load can be sustained by the specimen or delamination occurs. The maximum load applied to the specimen shall be noted..

6.2.5. The apparent compressive strength of individual block shall be calculated by dividing the maximum load (N) by the plan area (mm<sup>2</sup>). The corrected compressive strength shall be calculated by multiplying the apparent compressive strength by the appropriate correction factor



from Table 1500.8. The strength shall be expressed to the nearest 0.1 N/ mm<sup>2</sup>.

TABLE 1500.8 : CORRECTION FACTORS FOR THICKNESS AND CHAMFER OF PAVING BLOCK FOR CALCULATION OF COMPRESSIVE STRENGTH

Paving Block

Thickness (mm)      Correction Factor for

	Plain Block	Chamfered Block
60	1.00	1.06
80	1.12	1.18

6.2.6. Water Absorption: The water absorption being the average of five blocks shall be not more than 6 per cent by mass.

#### 6.2.7. Edge Blocks

The edge blocks shall have equivalent cube compressive strength not less than 30 MPa. The road kerbs provided on the edges of the road also serve the purpose of edge blocks. In case the end kerbs are not provided, 300 mm x 300 mm x 150 mm of M30 grade concrete edge blocks or other suitable size as per drawings or direction of the Engineer shall be provided.

#### 7.2. Subgrade

The Subgrade shall conform to Clause 1501.5.1 of these Specifications. The soaked CBR of subgrade soil shall not be less than 4 per cent.

#### 4.8. Sub-base

The sub-base shall be 100 mm thick granular layer conforming to Clause 401 or 100 mm thick WBM Gr.I conforming to Clause 405 of these Specifications. In case the subgrade soil is clayey, the sub-base shall be extended over the full formation width for proper drainage.

#### 4.9. Base Course

A minimum 100 mm thick layer of granular/stabilized base course shall be provided. The base course layer shall be extended at least 300 mm beyond the edge restraints. The material shall conform to Clause 402 of these Specifications.

4.10. Bedding Sand . Bedding sand conforming to Table 1500.6 shall be uniformly laid to a compacted thickness of 25 mm for 60 mm thick blocks and 30 mm for 80 mm thick blocks. Bedding sand shall be unloaded in small piles regularly placed over the base course and shall preferably have a moisture content of about 6 per cent which will facilitate its spreading and compaction. Bedding sand shall be screeded in a uniform layer over the base course. The screed can be guided to level by tensioned string lines set above the base course. At the time of screeding, the thickness of sand must allow for the amount by

which it will be subsequently compacted which is normally about 25 per cent more than the compacted thickness. Screeding shall not proceed beyond about 1 m ahead of the planned end of block paving for the day. Sand shall preferably be compacted with a manual, fabricated plate compactor and the level shall be readjusted using the screed.

The surface profile of the screeded bedding sand shall match that required for the completed pavement.

#### 4.11. Paving Pattern

The pattern in which blocks are to be paved shall be decided in advance from the two choices or their derived forms available. These are the herringbone and stretcher patterns

4.11.1. By and large, these patterns are the same as adopted for brick paving. All shapes of blocks are not amenable to the above paving patterns. For paving in trafficked areas, herringbone pattern shall be adopted for ensuring better performance. Paving shall commence and progress

from one starting line only.

Wherever possible, paving shall commence adjacent to or against edge restraint.

As a guide to the characteristics of typical vibrating plate compactors, standard compactors have a weight of 90 kg, a plate area of 0.3 m<sup>2</sup> and apply a centrifugal force of 1500 kg. Heavy duty compactors weigh between 300 to 600 kg, have a plate area of about 0.5 to 0.6 m<sup>2</sup> and apply a centrifugal force in the range of 2000-3000 kg. Use of heavy duty compactors is desirable for trafficked pavements.

4.12.1. Trial length : The contractor shall lay a trial length of 30 m and get it inspected and approved by the Engineer before proceeding with the regular paving work. The trial length shall be rectified / relaid if found deficient in any respect. The procedure demonstrated in the laying of trial length shall be followed while executing the main construction work.

4.13. Opening to Traffic The pavement can be opened to traffic as soon as the construction work is completed.

4.14.1. Transverse profile : When measured by a camber template, the transverse profile shall not deviate by more than 10 mm from the design profile.

4.14.2. Longitudinal profile: When measured by a 3 m straight edge, the longitudinal profile shall not deviate by more than 12 mm from the design profile.

#### 4.15. Acceptance Criteria

From each lot of 500 blocks, 5 blocks shall be selected at random for water absorption and compressive strength tests. In case the number of blocks in the lot is less than 500, a minimum 1 per cent of the blocks delivered to site shall be tested for water absorption and strength. The blocks shall be first tested for water absorption and these shall meet the requirement of Clause 1504.5.2.6 of these Specifications. The same five blocks (or minimum 1 per cent) shall be tested for strength and shall conform to the strength as per Clause 1504.5.1 of these Specifications.

The paved surface shall meet the tolerances for lines, levels, and grades etc. as given in Section 1800 of these Specifications.

#### 4.16. Measurements for Payment

The measurement of the paved area shall be in square metres measured from the inner edge of edge restraints on one side of the pavement to the inner edge of the edge restraints on the transverse side of the pavement. The measurement of the edge restraints shall be in number of units or in cubic metres.

#### 4.17. Rate

The contract unit rate shall include the cost of blocks, cost of stacking, Transportation to site and paving including supply and application of bedding sand and joint filling sand. The rate shall include full compensation for labour, tools, plant, equipment, testing and all incidentals to the work, including all royalties, taxes, storage rents wherever necessary, and all leads and lifts.

**ITEM NO: 50 Point wiring for Light / Fan/ Bell/ Primary Point with 2-1.5 sq. mm & earth wire of 1.5 sq. mm (green) both are of ISI marked 1.1 kv grade FRLS PVC insulated multi strand copper wires upto max length of 10 mt, in below type of pipe erected with 6A Tissino Type ISI marked flush type switch / bell push and accessories erected on Metal / PVC /Wooden Box covered with 3 mm thick PC (Poly carbonate) /Acrylic/Laminated sheet. with necessary Lamp holder/ceiling rose / H.D.Connector as directed.(f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete (Elect S.O.R. P NO. 1 Item No. 1-1-1 (f))**

#### 1.0 Materials

1.1 Wiring Conductors • 2 Nos. 1.5 sq.mm copper conductor for phase and neutral • 1 No. 1.5 sq.mm green insulated copper conductor for earth continuity • 1.1 KV grade • FRLS PVC

insulated • Multi-strand copper • ISI marked 1.2 Socket Outlet • 6 Amp, 3/5 Pin socket • ISI marked 1.3 Switch • 6 Amp, Tissino type • Flush type • ISI marked 1.4 Conduit System • Medium class rigid PVC conduit • ISI marked • Suitable size (generally 20 mm dia or as required) • Including bends, couplers, inspection/junction boxes and accessories 1.5 Mounting Box and Cover Plate • Metal / PVC / Wooden box • Covered with 3 mm thick Polycarbonate (PC) / Acrylic / Laminated sheet

1.6 Accessories • Screws, rawl plugs, saddles, fixing hardware • All necessary connectors and termination materials

1.7 All materials shall conform to relevant IS standards and approved specifications. 2.0 Workmanship

## 2.1 Installation

2.1.1 Wiring shall be carried out in concealed medium class rigid PVC conduit erected in wall or ceiling.

2.1.2 The wiring shall consist of 2 × 1.5 sq.mm copper mains from nearby switch board / DB board up to 6 meters length for 6A plug point.

2.1.3 Total point wiring length shall not exceed 10 meters.

2.1.4 The conduit shall be properly aligned and securely fixed before plastering.

2.1.5 The 6A socket and 6A switch shall be mounted on flush type box at approved height and level.

2.1.6 Proper earth continuity shall be provided and connected to the socket earth terminal.

2.1.7 All joints shall be made only inside junction boxes and shall not be concealed directly in plaster.

## 2.2 Testing and Commissioning

2.2.1 Insulation resistance test shall be carried out using a megger.

2.2.2 Earth continuity shall be tested for proper connection.

2.2.3 Polarity of phase and neutral shall be checked.

2.2.4 The socket outlet shall be tested by connecting a suitable load.

2.3 Precautions (a) Power supply shall be switched off during installation. (b) Conduit shall be free from moisture before drawing wires. (c) Colour coding of conductors shall be strictly maintained. (d) No damaged or jointed conductor shall be used. (e) Work shall be executed as per Indian Electricity Rules and relevant IS standards.

## 3.0 Mode of Measurement and Payment

3.1 Measurement shall be made on per point basis.

3.2 The rate shall include: • Supply and laying of 2 × 1.5 sq.mm + 1 × 1.5 sq.mm earth wire • 6 Amp socket and 6 Amp switch • Flush mounting box with cover plate • Medium class rigid PVC conduit (concealed) • All accessories, labour, testing and commissioning

3.3 The rate shall be inclusive of all materials, labour, tools, and incidental charges required for complete.

**ITEM NO:51 Providing & erecting Approved make Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C.50 Hz 1200 mm sweep complete having 3 blades aluminium body and blade sets having ornamental design shanks , canopy erected with earthing. [ Make shall be approved by Engineer in Charge] (Elect S.O.R P NO. 74 item code 5-1-3)**

#### 1.0 Materials

- 1.1 Ceiling Fan • Approved make (to be approved by Engineer-in-Charge) • ISI marked • 230 Volts A.C., 50 Hz • 1200 mm sweep • Double ball bearing type • Complete with condenser • Three aluminium blades • Aluminium body • Blade sets with ornamental design shanks • Complete with canopy
- 1.2 Down Rod • Suitable length as required at site, Finished with powder coating or enamel paint
- 1.3 Mounting Accessories • Fan hook / fan box, Nut bolts, screws, rubber bushes, safety pin, All necessary fixing hardware
- 1.4 Earthing Arrangement • Proper connection to earth conductor, ISI marked copper earth wire
- 1.5 All materials shall conform to relevant IS standards and approved specifications.

#### 2.0 Workmanship

##### 2.1 Installation

- 2.1.1 The ceiling fan shall be securely erected on an approved fan hook or fan box.
- 2.1.2 The down rod shall be properly aligned and rigidly fixed to avoid vibration.
- 2.1.3 Electrical connections shall be made with proper phase, neutral and earth continuity.
- 2.1.4 The canopy shall completely cover the electrical connections and mounting arrangement.
- 2.1.5 The fan shall be erected in such a manner that no wobbling or imbalance occurs during operation.
- 2.1.6 Proper earthing shall be provided as per Indian Electricity Rules and relevant IS standards.
- 2.2 Testing and Commissioning
  - 2.2.1 After installation, the fan shall be tested by energizing the circuit.
  - 2.2.2 The fan shall run smoothly without abnormal noise, vibration or overheating.
  - 2.2.3 Speed regulation shall be checked for proper functioning.
  - 2.2.4 Current consumption shall be within permissible limits as per manufacturer's rating.
- 2.3 Precautions (a) Power supply shall be switched off before installation. (b) Mounting hook / box shall be structurally sound and capable of bearing the load. (c) Proper tightening of blades and hardware shall be ensured. (d) Earthing connection is mandatory. (e) Make of fan shall be approved by the Engineer-in-Charge before installation.

#### 3.0 Mode of Measurement and Payment

- 3.1 Measurement shall be made on per number basis.
- 3.2 The rate shall include: • Supply of ceiling fan complete with condenser • Down rod and canopy • All mounting accessories • Wiring connection and earthing • Labour charges • Testing and commissioning
- 3.3 The rate shall be inclusive of all materials, labour, tools and incidental charges required for complete erection.

**ITEM NO:52 Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sinks hallbe made of thick sheet Steel conforming to IS: 513/CRCA/ aluminium die cast powder coated and high U.V. & corrosion resistance with diffuser with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15%, CCT 3000 K to 6500K, Luminaire efficacy> 85 lumens/watt ,LED LED driver efficiency > 85 % ( fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings.TheEngineer inchargemayselect any wattage capacity between the ranges shown.) (A) Tube Light with integral driver. (iii) 18-20 Watts, Surge-2KV,IP-20, conventional 4 feet (Elect. SOR P.NO.30 It Code 2-15-1 Cat. III)**

## **Technical Specifications**

### **1. LED Type**

- LEDs shall be of wattage ranging from 0.2 Watt to 0.5 Watt each.
- LEDs shall be mounted on single MCPCB (Metal Core Printed Circuit Board).

### **2. Housing Material**

The luminaire housing shall be manufactured from:

- Thick CRCA sheet steel conforming to IS: 513 OR
- Aluminium die-cast body.

The housing shall:

- Act as heat sink for efficient heat dissipation.
- Be powder coated.
- Have high UV resistance.
- Have corrosion resistant finish.

### **3. Diffuser**

- Suitable high quality diffuser shall be provided.
- Diffuser shall provide uniform glare-free illumination.

### **4. Marking**

- Company name / logo / mark shall be clearly embossed or printed on fitting.

### **5. Operating Voltage**

- Input voltage range: 160 Volts to 270 Volts AC.

### **6. Power Factor**

- Power Factor (PF) shall be more than 0.95.
- PF > 0.95

### **7. Total Harmonic Distortion**

- THD shall be less than 15%.
- THD < 15%

### **8. Colour Temperature**

- Correlated Colour Temperature (CCT): 3000K to 6500K.
- 3000K  $\leq$  CCT  $\leq$  6500K

### **9. Luminaire Efficacy**

- Minimum luminaire efficacy shall be greater than 85 lumens/watt.
- $\text{Luminaire Efficacy} > 85 \text{ lumens/watt}$

### **10. Driver Efficiency**

- LED driver efficiency shall be greater than 85%.
- $\text{Driver Efficiency} > 85\%$

### **11. Certification**

The fitting shall have:

- LM-79 Certificate
- LM-80 Certificate

from NABL approved / authorized laboratory.

### **12. Wattage**

- Tube light wattage range: 18 Watts to 20 Watts.

### **13. Surge Protection**

- Surge protection: 2 KV minimum.

### **14. Protection Class**

- IP Rating: IP-20.

### **15. Size**

- Conventional 4 feet tube light fitting.

### **Installation Mounting**

- The fitting shall be wall mounted / ceiling mounted as directed.
- Necessary clamps, screws and accessories shall be included.

### **Wiring**

- Internal wiring shall be complete.
- Proper terminal connector shall be provided.

### **Workmanship**

- The fitting shall be installed true to line and level.
- No loose connection shall be permitted.
- Proper testing shall be carried out before handing over.

**ITEM NO: 53 Point wiring for independent PLUG with following size mains earth wire of 1.5 sq.mm (green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires upto 10 mt length, in following below of pipe erected complete with ISI marked 3 / 5 Pin socket and tissino type switch erected with earth continuity connection erected on Metal / PVC/Wooden box covered with 3 mm thick PC (Polycarbonate)/ Acrylic/ Laminated sheet.[A] For 6 amp plug and 6 amp switch with 2- 1.5 sq. mm Cu. Mains from near by switchboard/ db board upto 6 mt.(f) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete (Elect S.O.R. P NO. 1 Item 1-1-2 (f))**

### **1.0 Materials**

- 1.1 Wiring Conductors • 2 Nos. 1.5 sq.mm copper conductor for phase and neutral • 1 No. 1.5 sq.mm green insulated copper conductor for earth continuity •
- 1.1 KV grade • FRLS PVC insulated • Multi-strand copper • ISI marked
- 1.2 Socket Outlet • 6 Amp, 3/5 Pin socket • ISI marked
- 1.3 Switch • 6 Amp, Tissino type • Flush type • ISI marked
- 1.4 Conduit System • Medium class rigid PVC conduit • ISI marked • Suitable size (generally 20 mm dia or as required) • Including bends, couplers, inspection/junction boxes and accessories
- 1.5 Mounting Box and Cover Plate • Metal / PVC / Wooden box • Covered with 3 mm thick Polycarbonate (PC) / Acrylic / Laminated sheet
- 1.6 Accessories • Screws, rawl plugs, saddles, fixing hardware • All necessary connectors and termination materials
- 1.7 All materials shall conform to relevant IS standards and approved specifications.

### **2.0 Workmanship**

#### **2.1 Installation**

- 2.1.1 Wiring shall be carried out in concealed medium class rigid PVC conduit erected in wall or ceiling.
- 2.1.2 The wiring shall consist of 2 × 1.5 sq.mm copper mains from nearby switch board / DB board up to 6 meters length for 6A plug point.
- 2.1.3 Total point wiring length shall not exceed 10 meters.
- 2.1.4 The conduit shall be properly aligned and securely fixed before plastering.
- 2.1.5 The 6A socket and 6A switch shall be mounted on flush type box at approved height and level.
- 2.1.6 Proper earth continuity shall be provided and connected to the socket earth

terminal.

2.1.7 All joints shall be made only inside junction boxes and shall not be concealed directly in plaster.

## 2.2 Testing and Commissioning

2.2.1 Insulation resistance test shall be carried out using a megger.

2.2.2 Earth continuity shall be tested for proper connection.

2.2.3 Polarity of phase and neutral shall be checked.

2.2.4 The socket outlet shall be tested by connecting a suitable load.

2.3 Precautions (a) Power supply shall be switched off during installation. (b) Conduit shall be free from moisture before drawing wires. (c) Colour coding of conductors shall be strictly maintained. (d) No damaged or jointed conductor shall be used. (e) Work shall be executed as per Indian Electricity Rules and relevant IS standards.

## 3.0 Mode of Measurement and Payment

3.1 Measurement shall be made on per point basis.

3.2 The rate shall include: • Supply and laying of  $2 \times 1.5 \text{ sq.mm} + 1 \times 1.5 \text{ sq.mm}$  earth wire • 6 Amp socket and 6 Amp switch • Flush mounting box with cover plate • Medium class rigid PVC conduit (concealed) • All accessories, labour, testing and commissioning

3.3 The rate shall be inclusive of all materials, labour, tools, and incidental charges required for complete installation.

**ITEM NO: 54 Providing & erecting 240 V MCB double pole switch for motor & inductive load (C Curve) having 10 KA breaking capacity & confirms to IS: 8828 in existing box having following capacity(A) 6 to 32 Amp(Elect S.O.R. P NO. 50 Item No. 3-10-2 cat II)**

## 1.0 Materials

1.1 Miniature Circuit Breaker (MCB) • Double Pole (DP) • Rated Voltage: 240 Volts A.C. • Current Rating: 6 to 32 Amps (as specified) • Tripping Curve: C Curve (suitable for motor / inductive load) • Breaking Capacity: 10 kA • Conforming to IS: 8828 • ISI marked • Suitable for 50 Hz supply

1.2 Mounting Arrangement • Suitable for installation in existing distribution board / MCB box • With necessary terminals, screws, and fixing accessories

1.3 All materials shall be of approved make and conform to relevant IS standards and project specifications.

## 2.0 Workmanship

### 2.1 Installation

2.1.1 The MCB shall be erected in the existing distribution board / enclosure in the space provided. 2.1.2 Proper tightening of incoming and outgoing conductors shall be ensured.

2.1.3 Both phase and neutral shall be connected through the double pole MCB.

2.1.4 The MCB shall be properly aligned and firmly fixed on DIN rail or mounting arrangement.

2.1.5 Connections shall be made using suitable size copper conductors as per load requirement.

2.1.6 The MCB shall be clearly labeled indicating the circuit it controls.

### 2.2 Testing and Commissioning

2.2.1 Insulation resistance of the circuit shall be checked before energizing.

2.2.2 Proper operation of the toggle mechanism shall be verified.

2.2.3 Tripping operation shall be checked for correct functioning.

2.2.4 The MCB shall operate without abnormal heating or loose contact.

2.3 Precautions (a) Supply shall be switched off before installation. (b) Correct current rating shall be selected as per motor/load requirement. (c) All terminals shall be properly tightened to avoid sparking or overheating. (d) The enclosure shall be properly earthed. (e) Installation shall comply with Indian Electricity Rules and relevant IS standards.

### 3.0 Mode of Measurement and Payment

3.1 Measurement shall be made on per number basis.

3.2 The rate shall include: • Supply of DP MCB (6–32 Amp, 10kA, C Curve) • Fixing in existing box • Connection of incoming and outgoing wiring • Testing and commissioning • All labour, tools and incidental charges

3.3 The rate shall be inclusive of complete installation and satisfactory operation of the MCB.

**ITEM NO: 55 Providing and erecting Pipe type earthing with 40 mm dia 2.5 mtr long 'B' grade G.I. pipe with necessary coupling buch buried in specially prepared earth pit & G.I. earth wire of 8 SWG erected & connected as directed (For panel) (Elect S.OR P NO. 56 Item No. 3-14-6-B)**

### 1.0 Materials

1.1 G.I. Pipe • 40 mm diameter • 2.5 meters long • 'B' grade G.I. pipe • ISI marked

1.2 Coupling Bush / Accessories • Suitable coupling for joining sections • ISI marked

1.3 Earth Wire • G.I. wire, 8 SWG • For connecting pipe to panel • ISI marked

1.4 Earthing Compound / Backfill Material • Salt, charcoal, and bentonite as required for proper conductivity

1.5 All materials shall conform to relevant IS standards and approved specifications.

### 2.0 Workmanship

#### 2.1 Installation

2.1.1 The earth pit shall be excavated at the designated location with proper dimensions.

2.1.2 The G.I. pipe shall be buried vertically in the pit, leaving top portion exposed for connection.

2.1.3 Coupling bush shall be used to connect any pipe extensions if required.

2.1.4 The earth pit shall be backfilled with alternate layers of charcoal and salt as per specification for low resistance.

2.1.5 The 8 SWG G.I. wire shall be securely connected from the pipe to the panel or equipment as directed.

2.1.6 Proper clamp and bolted connection shall be provided to ensure reliable continuity.

#### 2.2 Testing

2.2.1 Earth resistance shall be measured using standard earth tester.

2.2.2 The earth resistance shall be within permissible limits as per IE rules and project specifications (typically  $\leq 1$  ohm for panel earthing).

2.2.3 Connections shall be inspected for mechanical integrity and corrosion protection. 2.3 Precautions (a) Location of earthing shall be approved by Engineer-in-Charge before excavation. (b) Pipes shall not be bent or damaged during installation. (c) Proper filling material (charcoal/salt/bentonite) shall be used to ensure low earth resistance. (d) G.I. wire connections shall be tight and free from corrosion. (e) Safety precautions shall be observed during excavation and installation.

### 3.0 Mode of Measurement and Payment

3.1 Measurement shall be made on per number of earthing pit basis.

3.2 The rate shall include: • Supply of 40 mm × 2.5 m 'B' grade G.I. pipe • Coupling bush and accessories • 8 SWG G.I. wire from pit to panel • Earth pit excavation and backfilling • Earthing compound (charcoal/salt/bentonite) • Labour, tools, and commissioning

3.3 The rate shall be inclusive of complete erection and testing to ensure proper earthing.

**ITEM NO: 56 Providing & erecting open well horizontal mono block pump set with cast iron body, complete for three phase submersible motor having SECTION 9-4 [A] For 1.5 HP 3 phase open well horizontal mono block pump set suitable for 190 LPM @ 20 mtr head suitable for 40 mm dia delivery pipe Catt-II (Elect S.OR P NO. 272 Item No. 9-4-2)**



## 1.0 Materials

- 1.1 Pump Motor Set • Rated Capacity: 1 H.P., Single Phase • Type: Open well / Centrifugal pump (as per site requirement) • Discharge Capacity: 185 LPM • Head: 25 meters • Suitable for 32 mm dia delivery pipe • Motor shall be ISI/approved make, suitable for 230V, 50 Hz supply • Water-cooled or self-cooled as per manufacturer design
- 1.2 Pump Body and Impeller • Corrosion-resistant material (cast iron / stainless steel as per approved make) • Impeller dynamically balanced
- 1.3 Delivery and Suction Piping Accessories • Couplings, flanges, gaskets, valves as required 1.4 Control Panel • Single phase control panel with MCB / switch for motor protection • ON/OFF switch, indicator lamps • ISI / approved make
- 1.5 Cabling and Wiring • Suitable copper conductor flexible cable for connection from control panel to pump motor • Proper insulation and weatherproofing
- 1.6 All materials shall conform to relevant IS standards and be of approved make.

## 2.0 Workmanship

### 2.1 Installation

- 2.1.1 The pump set shall be installed at the designated open well / sump location.
- 2.1.2 Delivery pipe (32 mm dia.) shall be connected properly with necessary couplings, supports, and valves.
- 2.1.3 Pump shall be aligned correctly to avoid vibration and ensure smooth operation.
- 2.1.4 Control panel shall be mounted at convenient location with proper earth continuity.
- 2.1.5 Flexible copper cables shall be securely connected to motor and control panel.
- 2.1.6 Motor shall be grounded as per Indian Electricity Rules and safety norms.

### 2.2 Testing and Commissioning

- 2.2.1 Pump shall be test-run to verify: • 185 LPM discharge at 25 m head • Smooth operation without vibration or noise • Correct rotation direction • Proper operation of control panel and protection devices
- 2.2.2 Electrical checks: • Insulation resistance of motor winding • Proper earthing and continuity • Functional check of MCB / ON-OFF switch
- 2.3 Precautions (a) Ensure power supply is switched off during installation. (b) Pump shall not run dry during testing. (c) Proper alignment and mechanical tightness of all joints shall be checked. (d) All electrical connections shall be insulated and weatherproofed. (e) Motor protection shall be ensured against overload and short circuit.

## 3.0 Mode of Measurement and Payment

- 3.1 Measurement shall be made on per set basis.
- 3.2 The rate shall include: • Supply of 1 H.P. single-phase pump motor set • Control panel with MCB / switch • Delivery and suction pipe connections, couplings, valves • Wiring from panel to motor • Labour, tools, and commissioning
- 3.3 The rate shall be inclusive of complete installation, testing, and satisfactory operation of the pump set.

**ITEM NO: 57 Providing and fixing 600 mm x 450 mm bevelled edge mirror of superior glass mounted on 6 mm thick plywood sheet or PVC framing and fixed to wooden plugs with C.P brass screw and washers. {SOR. P No 177 It. Code. 23024}**

### Materials

- 1.0. The 600 mm. x 450 mm. size mirror shall be of superior glass with edge rounded over beveled as specified. It shall be free from flaws specks, or bubbles and its thickness shall not be less than 6 mm. The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects Silvering shall have a protective uniform covering of red lead paint. The 6 mm thick plywood shall conform to M-37. The 6 mm. thick A.C. sheets shall conform to M-24.
- 2.0. **Workmanship**

2.1. The mirror of 600 mm. x 450 mm. size mounted on A.C. Sheet or plywood 6 mm thick with C.P. brass clips shall be fixed as directed, by fixing wooden plugs in wall and C.P brass screws and washers. The work shall be carried out in best workman like manner.

**3.0. Mode of measurements & payment**

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item. The rate shall be for a unit of One number..

**ITEM NO: 58 Providing and fixing C.P. brass towel rail complet with C.P. brass brakets fixed to wooden plugs with cpbrass screws ( B ) 600 mm X 20mm size {SOR. P No. 177 It. Code. 23025}**

**1.0. Materials**

1.1. The C.P. brass towel rail shall be 600 x 20 mm. of best quality as approved by the Engineer-in-charge The brackets shall be of C.P. brass. The rail shall conform to I.S. 1068-1958.

**2.0. Workmanship**

2.1. The brackets of the towel rail shall be fixed by means of C.P. brass screws to wooden firmly embedded in the wall with C.M. 1:3 (1 cement : 3 coarse sand). The towel rail shall be fixed as and where directed.

**3.0. Mode of measurements and payment**

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One number.

**ITEM NO: 59 Sheesham wood study Table and Chair. Table dimension 34 inches length , 18 inches width and 30 inches height. Primary material solid sheesham woodand secondary material 15mm solid MDF color teak finish style. (MR)**

Scope: Supply of Sheesham wood (Dalbergia sissoo) study table and chair set, or equivalent hardwood furniture approved by the Engineer-in-Charge.

Material: Seasoned Sheesham wood with moisture content  $\leq 12\%$ , treated with IS 5539-1969 compliant anti-termite solution. Joints to be mortise and tenon, glued with IS 848:2006 synthetic resin adhesive.

Dimensions: Table – min. 900 mm × 600 mm × 750 mm (L×W×H). Chair – height to seat 450 mm ± 10 mm, ergonomic backrest.

Finish: Three coats of polyurethane polish conforming to IS 3536:1999.

Standards: Furniture construction to comply with IS 5967:1980.

Warranty: Minimum 2 years against structural defects, warping, or termite attack.

Inspection: Moisture testing, finish uniformity check, and structural stability verification

**ITEM NO: 60 2 Seater School Benches and Desks (small) for childrens (MR)**

Scope: Supply and installation of small-sized two-seater benches and desks for children aged 3–6 years.

Frame: Powder-coated MS tubular sections (25×25×1.6 mm) conforming to IS 4923:2017, powder coating as per IS 13871:1993 with 50 micron minimum thickness.

Seat & Desk: Pre-laminated particle board IS 12823:1990, 18 mm thick, edge-banded with PVC

(2 mm thick).

Design: Ergonomic height for pre-primary level per IS 4837:1990, rounded edges for safety.

Installation: As per approved layout plan, firm anchorage where required.

Warranty: 2 years against manufacturing defects and corrosion.

Testing: Weld quality inspection, powder coat thickness test, and board moisture resistance test.

## **ITEM NO: 61 Furniture for Cup board**

### **1. Dimensional Specifications**

- Standard Height: 2100 mm to 2300 mm (~7 to 7.5 feet).
  - Standard Width: 1200 mm (~4 feet for a standard 2-door/3-door system).
  - Standard Depth: 600 mm (~2 feet for wardrobes/clothes cupboards; reduced to 300–400 mm for kitchen overhead wall units).
  - Floor Clearance: 100 mm to 150 mm base plinth height equipped with PVC or rubber leg shoes to prevent water ingress.
- ### **2. Core Material Construction**
- Carcass & Frame: Constructed from 19 mm thick commercial board or MR-grade (Moisture Resistant) BWP/BWR plywood to guarantee maximum load-bearing strength.
  - Internal Shelves: Fabricated from 12 mm to 16 mm thick plywood or commercial board capable of supporting up to 15–20 kg per shelf layer.
  - Back Panel: Made from 6 mm to 9 mm thick high-density MR-grade commercial ply securely fastened to the back framing.
  - Shutters (Doors): 18 mm to 19 mm thick solid calibrated plywood or dense engineered wood board to prevent warping over time.

### **3. Surface Finishes**

- Exterior Surfaces: High-pressure 1.0 mm thick decorative laminate (Mica), acrylic sheet, or natural wood veneer finished with a protective polyurethane (PU) coat.
- Interior Surfaces: Covered with 0.8 mm thick white or balancing color laminate to provide a clean, scratch-resistant, and easily wipeable surface.
- Edge Banding: All raw visible edges are sealed with machine-pressed 2 mm thick PVC edge banding tape matching the external color to ensure a moisture-proof seal.

### **4. Hardware & Ironmongery Requirements**

- Hinges: 3D adjustable, corrosion-resistant, concealed soft-close auto-hinges (stainless steel grade 304) allowing a minimum opening angle of 95 to 110 degrees.
- Drawer Channels: Heavy-duty, telescopic ball-bearing slider runners featuring soft-close technology.
- Handles: Sleek 100 mm to 200 mm stainless steel (SS), brass, or aluminum profile handles or push-to-open latch mechanisms.
- Locking Mechanism: Multi-lever metal wardrobe lock with internal locking rods or individual drawer locks.

**ITEM NO: 62    Premium quality Kids Play school indoor setup   (1) Amazon basic junior BPA free 4 to score Giant premium plastic games set. (MR)**

**Product Detail Specifications**

Specification Metric	Details & Measurements
Material Safety	100% BPA-Free, Non-toxic, Phthalate-free heavy-duty plastic
Durability Grade	UV-resistant, fade-resistant, and crack-resistant Polyethylene (PE) and Polypropylene (PP)
Assembled Dimensions	106.7 cm (Length) x 55.9 cm (Width) x 83.8 cm (Height) / ~42" x 22" x 33"
Product Weight	22.05 Pounds (approx. 10 kg) — Heavy enough for stability, light enough to relocate safely
Game Pieces Included	42 Jumbo Plastic Rings (Vibrant, high-contrast colors like Red, Yellow, Green, or Blue)
Reset Mechanism	Built-in, dual spring-loaded bottom release sliders for instant ring clearance
Portability Elements	Includes 1 Heavy-duty Canvas Storage/Carrying Bag
Assembly Required	Tool-free, snap-together modular design (sets up or packs away in under 2 minutes)

**Key Features for Play School Indoor Environments**

- **Child-Safe Construction:** Features smooth, heavily rounded edges on the frame and rings to prevent scratches or pinching during enthusiastic group play.
- **High Stability Design:** Engineered with widened, low-profile side panels/feet to prevent tipping if toddlers lean against or bump into the unit.
- **Developmental Benefits:** Supports early years learning frameworks by targeting crucial developmental metrics:
  - **Cognitive Planning:** Introduces basic spatial awareness, turn-taking, and strategic problem-solving.
  - **Motor Skills & Coordination:** Gripping and dropping the jumbo rings improves hand-eye coordination and manual dexterity.
  - **Mathematical Foundations:** Great visual aid for teaching basic counting, color sorting, grouping, and pattern recognition.

**Recommended Indoor Play School Layout Strategy**

To incorporate this giant game set safely and effectively into your premium classroom or indoor play zone, consider the following environmental setup:

1. **Flooring Foundation:** Place the unit on high-density EVA foam mats (minimum 10mm thickness). This cushions the sound of dropping plastic rings and protects the floor.
2. **Clearance Zone:** Maintain a 1.5-meter clear radius around the game. This prevents kids who are waiting for their turn or watching the game from crowding the active players.
3. **Ring Management:** Utilize small, shallow open bins on either side of the frame to hold the rings during a match, helping children practice tidying up after the game resets.

**ITEM NO: 63 Premium quality Kids Play school indoor setup (2) Jazz Drum set. (MR)**

Complete Kit Components

- 1 Bass Drum (Kick Drum): The large central hub of the setup, providing a deep, resonant rhythm base.
- 4 Tom-Tom / Snare Drums: Smaller side drums producing varied acoustic notes to mimic a professional band environment.
- 1 Metallic Crash Cymbal: Mounted securely on a top pillar to deliver clear, bright high-frequency highlights.
- 1 Bass Drum Foot Pedal: Reinforced mechanical spring pedal for realistic, responsive foot coordination.
- 2 Heavy-Duty Drumsticks: Sized perfectly for toddlers' and preschoolers' hands, featuring smooth, splinter-free handles.
- 1 Thickened Stool (Throne): A wide-base, anti-topple sitting chair that ensures absolute stability during active performances.

Technical Specifications & Material Detail

Attribute	Specification Details
Target Age Group	Ideal for children aged 3 to 7 years old
Primary Material	High-grade, impact-resistant ABS/PP Plastic & Alloy reinforcement
Drumhead Film	Upgraded PET Synthetic Polymer Film with shock-absorbing side spring buffers
Assembled Height	Stands approximately 21.3 to 29.5 inches (54 to 75 cm) tall
Bass Drum Size	Approximately 11.8" x 5.3" (30 cm x 13.5 cm)
Safety Certifications	Non-toxic, odorless, BPA-free with 100% rounded, child-safe edges
Durability Rating	Drumheads factory-tested to withstand up to 50,000 continuous strikes

Key Features for Play School Classrooms

- Tool-Free Assembly: Features an intuitive, interlocking snap-and-lock puzzle system that lets you set up or dismantle the full unit in under 5 minutes without any extra tools.
- Acoustic Noise Management: Specially engineered with an acoustic dampening core, the drumheads produce authentic musical notes that remain mellow, soft, and volume-controlled, preventing loud auditory overstimulation in indoor spaces.
- Anti-Skid Tripod Support: The base stands are integrated with wide rubberized tripod pods to prevent the kit from sliding across classroom play mats or shiny tile floors.

**ITEM NO: 64 Premium quality Kids Play school indoor setup (3) Play rubber tiles. (MR)**

**1. Physical & Dimensional Specifications**

Parameter	Standard Specification	Premium	Purpose / Advantage
Standard Tile Dimensions	500 mm × 500 mm (or 1000 mm × 1000 mm)		Minimises visible seams; easy to map to room grids.
Total Thickness	15 mm to 36 mm (depending on play equipment height)		Provides targeted impact attenuation for falls up to 6–10 feet.
Layer Configuration	Dual-Layer: 6 mm Virgin EPDM top layer + SBR rubber base layer		Maximises top durability and elasticity while reducing material costs.
Edge Interlocking Profile	Double-T puzzle lock or pin-connector matrix		Prevents tile separation or tripping hazards during active running.
Surface Finish	Matte, micro-textured non-porous finish		Prevents dirt buildup in seams; optimizes dry and wet grip.

**2. Material Chemistry & Safety Standards**

Indoor air and contact safety are paramount for young children. Premium tiles must adhere to strict environmental safety metrics: Polymer Content: Minimum 24% pure EPDM polymer in the top wear layer to prevent cracking and crumbling.

- **Chemical Safety:** Must be completely certified non-toxic, BPA-free, Phthalate-free, and
- **Indoor Air Quality (VOCs):** Volatile Organic Compound emission rating under 3.0 g/l to prevent harsh chemical odors in enclosed rooms.
- **Hygiene:** Must feature built-in antimicrobial and antifungal treatments to resist bacterial breeding from sweat, spills, or saliva.

**3. Mechanical Performance & Testing Data**

Premium play school tiles are tested rigorously under global engineering matrices:

- **Impact Attenuation:** Fully compliant with ASTM F1292-18 standard specifications for critical fall height protection.
- **Hardness:** Rated at 62 ± 5 Shore A (ASTM D-2240). This guarantees a surface that is soft enough to cushion toddlers, yet firm enough to support furniture, playhouses, and toys without leaving permanent indentations.
- **Tensile Strength:** Minimum 198 kg/cm² (ASTM D-412) to handle heavy multi-child foot traffic.
- **Elongation at Break:** Greater than 750% (ASTM D-412), showing extreme material flexibility and tear resistance.

- Fire Performance / Flammability: Combustibility rated under 40 mm/min (Test Method UL-94HB) to meet school fire safety regulations.
- Acoustic Insulation: Sound dampening coefficient of  $\geq 18$  dB. This significantly deadens the noise of running, screaming, and dropped heavy toys.

#### 4. Aesthetic & Maintenance Capabilities

- Color Customization: Available in vibrant base pigments (e.g., Apple Green, Bright Blue, Yellow, Terracotta). Top EPDM layers allow for mixed graphic layouts, numbers, alphabets, or hopscotch patterns directly inside the tile matrix.
- UV Stability / Colorfastness: Minimum 3-4/5 on the Greyscale test. Tiles will not fade or discolor under heavy indoor lighting or adjacent window sunlight.
- Maintenance Protocol: Water-resistant and machine/hand washable. Sealed surfaces allow for quick mopping with mild sanitizer without absorbing moisture or warping.

#### 5. Recommended Layout & Installation Prerequisites

1. Sub-Base Requirements: Must be laid over a completely flat, cured concrete subfloor, smooth IPS finish, or vitrified tiles.
2. Adhesive Requirement: For an indoor setup, loose-lay interlocking is highly recommended. This lets you replace single damaged tiles easily without tearing up the entire room floor.
3. Perimeter Edging: Sloped rubber ramp reducers are required at doorways or room edges to eliminate stubbed toes and accommodate wheelchair accessibility.

### **ITEM NO: 65 Premium quality Kids Play school indoor setup (4) Clapjoy slingo fastest finger first board. (MR)**

#### Key Specifications

- Brand: Clapjoy
- Dimensions: 59 cm (L) x 31 cm(W) x 4 cm (H)
- Weight: ~1.2 kg to 1.5 kg
- Material: Premium crafted MDF and Pine wood
- Player Capacity: 2 players
- Recommended Age: 5 years and above
- Included in Box: 1x Wooden sling puck table board and 10x Wooden coins/pucks

#### How to Play

1. Setup: Place 5 wooden pucks on each side of the board.
2. Action: Both players use the attached elastic string to launch the pucks through the small center gate simultaneously.
3. Winning: You can only use one hand to shoot. The first player to clear all the pucks from their side of the board wins the round.

#### Setup & Durability Highlights

- **Child-Safe:** Designed with a smooth, polished, splinter-free finish.
- **Sturdy Frame:** Solid frame ensures the pieces stay contained on the table, preventing clutter.
- **Versatile:** Can be played either on a classroom table or directly on the floor.

**ITEM NO: 66 Premium quality Kids Play school indoor setup (4) Clapjoy slingo fastest finger first board. (MR)**

#### Technical Specifications

- **Material Composition:** Premium Linear Low-Density Polyethylene (LLDPE) / High-Density Polyethylene (HDPE).
- **Safety Processing:** 100% Non-toxic, virgin, UV-stabilised, and fade-proof food-grade polymer.
- **Product Dimensions:** 148 cm (L) x 43 cm (W) x 70 cm (H).
- **Package Dimensions:** 148 cm (L) x 43.5 cm (W) x 47 cm (H).
- **Net Weight:** 11.2 kg.
- **Gross Weight:** 14.2 kg.
- **Weight Capacity:** Recommended maximum weight of 30 kg.
- **Target Age Group:** 1 to 4+ Years.
- **Player Capacity:** Dual-seat (Accommodates 2 children simultaneously).

#### Premium Safety & Design Features

The construction prioritizes institutional resilience and child injury prevention through advanced mechanical designs: [6]

- **Anti-Tip Stability Base:** Engineered with an ultra-wide, secure base featuring a specific provision for sand-filling to eliminate tipping hazards during intense group play.
- **Shock-Absorbing Engineering:** Features a built-in bottom shock-absorption system underneath the seats to cushion ground impacts, protecting children's spines from sudden jolts.
- **Ergonomic Safety Handles:** Outfitted with intuitive, non-slip, easy-grip handlebars that give toddlers absolute steering control and confidence.
- **Smooth Form Factor:** The structural body uses seamless roto-molding to ensure entirely rounded edges, excluding sharp corners or skin-pinching joints.

#### Why It's Ideal for Play School Environments

- **Institutional Longevity:** The UV-stabilised, break-resistant structure withstands heavy continuous daily usage from multiple classes without cracking or losing color vibrance.
- **Skill & Coordination Development:** Specifically aids preschool curriculums by teaching toddlers gross motor movement, spatial awareness, core balance, and cooperative teamwork.
- **Hygiene-Friendly:** Smooth plastic walls allow teachers to quickly wipe down, sanitize, and wash off dirt, paint, or marker stains using a damp cotton cloth and mild soap.
- **Indoor Mobility:** Though structurally robust, it remains lightweight enough to be easily moved by school staff between separate classrooms or multi-purpose halls.



**ITEM NO: 67 Premium quality Kids Play school indoor setup (6) OK play Rocker medium for kids, boat ride on toy. (MR)**

Technical Specifications

- Product Dimensions: 102 cm (Length) × 41 cm (Width) × 48 cm (Height)
- Product Net Weight: 4.0 kg
- Maximum Weight Capacity: 30 kg
- Material: Premium-grade, UV-stabilized Linear Low-Density Polyethylene (LLDPE)
- Recommended Age Group: 1.5 to 4 years
- Accommodates: Up to 3 children simultaneously (depending on layout configuration)
- Assembly Requirements: Zero assembly needed (Ready-to-use single-mould robust body)
- Certification: BIS Certified (Bureau of Indian Standards)

Key Design & Safety Features

- Heavy-Duty Construction: The single-piece, high-precision machine-moulded structure offers exceptional structural stability without any weak joints or screws.
- 100% Child-Safe Design: Features fully rounded, smooth, wipe-clean edges with zero sharp protrusions to eliminate injury risks.
- Stability Infrastructure: Engineered with a wide, anti-slip base and a low-to-the-ground seat height that prevents accidental tipping or over-rocking.
- Ergonomic Seating: Outfitted with continuous backrests and integrated footrests for secure, comfortable posture support.
- Easy-Grip Support: Two heavy-duty, dual-sided moulded handles allow children to maintain a firm grip while rocking.

Benefits for Play School Setup

- All-Weather Durability: Built from anti-oxidation, fade-proof, and waterproof plastic that tolerates heavy cleaning or outdoor transit without degradation.
- Skill Development: Actively trains toddlers' gross motor skills, core muscle strength, balancing mechanisms, and physical coordination.
- Social Play Integration: The boat-ride configuration promotes cooperative play, turn-taking, and active communication among classroom peers.

**ITEM NO: 68 Premium quality Kids Play school indoor setup (7) Table tennis trainer .(MR)**

Technical Detail Specifications

1. System Options & Dimensions

- Hanging/Door-Mounted Version:
  - Main Module Size: Approx. 24 cm x 16 cm x 5 cm.
  - Adjustable String/Rope Length: Retractable cord extending up to 1.5 metres, allowing teachers to instantly customise heights for different toddler age groups.
- Weighted Floor Base Version:
  - Pedestal Base Diameter: 20 cm.
  - Flexible Support Rod Height: 85 cm to 90 cm (Optimal height for children aged 3 to

7).

- 2. Premium Material Construction

- Trainer Body & Casing: Made from premium-grade, high-impact ABS & PVC plastic. It must be certified non-toxic, BIS-approved, and ISI-certified to guarantee safety in commercial play school environments.
- Flexible Axis / Support Wire: Constructed from a highly resilient carbon fiber or fiberglass composite rod. This delivers a 180° rapid rebound system that ensures the ball bounces back instantly when struck, eliminating the need for kids to constantly chase after rogue balls.
- Base Stability: For floor setups, the base features an integrated anti-shake heavy metal/iron plates plate or an industrial-grade silicone suction cup that locks tightly onto smooth play school flooring or study tables.

### 3. Racquets & Balls Specifications

- Kid-Friendly Racquets (Paddles):
  - Dimensions: Styled proportionally for children's hands (approx. 24 cm Height x 14 cm Width).
  - Build: Crafted using lightweight, smooth engineered wood or soft-edged, non-shattering PVC.
  - Surface: Covered in high-grip, soft-odourless rubber to give toddlers an authentic "ball feel" and absolute control.
- Training Ping Pong Balls:
  - Size: Standard 40 mm high-visibility seamless balls.
  - Connection: Specifically engineered with a copper-reinforced central eyelet or seamless plastic line-insert to prevent the ball from detaching during heavy play.

### Design & Commercial Play School Features

- Tool-Free Quick Setup: Features an effortless, damage-free installation mechanism. The hanging version utilizes a heavy-duty scratch-resistant clamp that snaps firmly over standard door frames or ceiling hooks.
- Multiplayer Optimization: Though excellent for solo play, premium sets include at least 2 paddles and 4 to 6 spare balls, encouraging healthy parent-child or peer-to-peer interactive games.
- Child-Safe Aesthetics: Designed in high-contrast vibrant tones (such as pastel blues, oranges, or kid-friendly astronaut/unicorn motifs) to instantly attract and engage early-stage learners.

**ITEM NO: 69 Premium quality Kids Play school indoor setup (8) table tennis press button. (MR)**

Detailed Technical Specifications

Parameter	Specification Details
Ages	Optimized for children aged 3 to 8 years.
Adjustment Range	0 to 1.3 metres via the adjustable string mechanism.
Housing Material	Heavy-duty, impact-resistant, non-toxic ABS / PVC plastic.
Mounting Hardware	Non-invasive, dual-option setup with a heavy-duty door frame clamp and trackless adhesive hooks.
Total Set Weight	350 Grams (ultra-lightweight to prevent injuries if pulled down).
Paddle Dimensions	Ergonomic grips measuring 24 cm × 14 cm optimized for toddlers.
Safety Certifications	Fully compliant with standard BIS Quality Control Regulations for commercial toys.

Key Design & Commercial Features

- Anti-Screen Active Play: Promotes immediate vestibular engagement, sharpens young reflexes, and enhances toddler hand-eye coordination.
- Safety First Build: The hanging ball setup completely eliminates sharp corners or heavy wooden table bases, making it safe against running toddlers.
- Solo or Multiplayer Flexibility: Can be operated as a single-child training tool or used by two children simultaneously for cooperative play.

**ITEM NO: 70 Premium quality Kids Play school indoor setup (9) Dawnwake Baby play. (MR)**

Technical Specifications

Core Setup Components & Play Modules

1. Built-in Educational & Activity Panels (14-Panel Version)

- Early Learning Facade: Molded English letters and numbers directly into the panels for passive vocabulary and mathematical recognition.
- Graffiti Drawing Board: Dedicated structural panel finished for water-based markers to satisfy creative toddler expressions.
- Mini Football Goal: Integrated low-profile net cutout that introduces early motor-skill coordination and group sports.

## 2. Structural Frame & Security Additions (Steel Frame Version)

- Anti-Fall Grasp Rings: Dual safety pull-up rings that lock onto the top rails, assisting toddlers in independent standing.
- Bonus Ball Pit Matrix: Each unit includes 5 to 10 vibrant ocean balls to transition the enclosure seamlessly into a sensory ball pool.
- Shock-Absorbing Wrap: Soft sponge-wrapped top frame profiles coupled with large anti-collision corner bags to mitigate sudden impact injuries.

**ITEM NO: 71 3D Wall painting (two coats) painting tech that creates the illusion of depth and dimension on a flat surface wall art that can be used in public place 3D model physical body using collection of point in 3D space connected by various geometric entities curve surface with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even draw a picture and writing a slogan related to different painting and other theme based like heritage painting, cleanliness, plastic free city, save water, save daughter, go green, clean city, etc. shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth etc. all material, scaffolding, additional coats if required and labour or painter as directed by Engineer in Charge . Method**

**1. Removing Dust from wall with use of wire brush and sand paper .**

**2. Prepare surface with applying exterior putty , cement slurry, or plastering which one required for even surface. 3. Applying Base coat of primer 4. apply final even coat of colour 5. Draw line picture 6. pre detailing for painting 7. final detailing of 3D painting 8. applying lacquer protection coat on the whole painting area (make :- Asian Paints, Berger, Nerolac. Equivalent brand as approved by the authority. ) (MR).**

Scope: Creation of high-quality artistic 3D and 2D paintings on interior walls per approved design.

Materials: Acrylic emulsion paint IS 15489:2004, primer IS 3536:1999, 3D materials (PU foam, FRP) IS 6746 compliant.

Surface Preparation: Cleaning, patching, and priming per IS 2395 (Part 1):1994.

Execution: Skilled artist to follow approved theme. Protective polyurethane clear coat IS 10177:1982 applied.

Warranty: 3 years against fading/peeling.

Inspection: Adhesion test, color match verification, finish inspection.

**ITEM NO: 72 2D Wall painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even draw a picture and writing a slogan related to SWATCHHTA SURVEKSHAN Campaign and other theme based like a heritage, cleanliness, plastic free city, save water, save daughter, go green, clean city, City importance etc. shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth etc. all material, scaffolding, additional coats if required and labour or painter as directed by Engineer in Charge . Method 1. Removing Dust from wall with use of wire brush and sand paper. 2. Prepare surface with applying exterior putty, cement slurry, or plastering which one required for even surface. 3. Applying Base coat of primer 4. apply final even coat of colour 5. Draw line picture 6. pre detailing for painting 7. final detailing of 2D painting 8. applying lacquer protection coat on**

**the whole painting area (make :- Asian Paints, Burger, Nerolac. Equivalent brand as approved by the authority.) (MR)**

Scope: Creation of high-quality artistic 3D and 2D paintings on interior walls per approved design.

Materials: Acrylic emulsion paint IS 15489:2004, primer IS 3536:1999, 3D materials (PU foam, FRP) IS 6746 compliant.

Surface Preparation: Cleaning, patching, and priming per IS 2395 (Part 1):1994.

Execution: Skilled artist to follow approved theme. Protective polyurethane clear coat IS 10177:1982 applied.

Warranty: 3 years against fading/peeling.

Inspection: Adhesion test, color match verification, finish inspection.

**ITEM NO: 73 Providing and laying cement concrete 1:2:4 (1 Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth (R & B SOR 2024-25 P.No. 53 Item Code-05010AA)**

#### **1.0. Materials & Workmanship**

- 1.1.** The relevant specifications of item No. 5.3.13 shall be followed except that the work shall be carried out for reinforced concrete work for work as specified in item 1.2. In addition, the following stipulations shall be followed for:
- (a) The bars shall be kept in position by the following methods :
  - (i) In case of beam and slab construction, sufficient number of precast cover blocks in cement mortar 1:2 (1 cement : 2 coarse sand) about 4 cms. x 4 cms. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement. In case of cantilevered or doubly reinforce beams or slabs, the main reinforcing bars shall be held in position by introducing chain spacers or supports bars at 1.0 to 1.2 meter centers.
  - (ii) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them, the templates shall be removed after concreting has been done below it. The bars may be also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.
- 1.0.** All bars projecting from pillars, columns, beams, slabs etc, to which other bars and concrete are to be attached or bounded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting.

#### **2.0. Mode of Measurement & Payment**

- 2.1.** The relevant specifications of item No. 5.3.13 shall be followed.

The volume Occupied by reinforcement shall not be deducted from R.C.C. work.

- 2.2** The rate shall be for a unit of one cubic meter\_

**ITEM NO: 74 Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 Kg/ Sq.Cm. in Cement mortar 1:4 (1 Cement: 4- coarse sand) in foundation and plinth (B) Conventional (R & B SOR 2024-25 P.No. 73 Item Code-06008A2A)**

- 1.0.** Materials Bricks shall conform to M-15. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11.

- 2.0.** Workmanship

2.1. Relevant specifications of bricks, wetting and laying of bricks, joints, curing etc shall conform to item no. 6.19.(A) except that the brick work of half shall be carried out.

2.2. Cement mortar used in masonry work shall be in proportion of 1 part of cement and 4 parts of sand by volume.

2.3. AH bricks shall be laid stretcher wise, breaking joints with those in the upper and lower courses. The wall shall be taken truly plumb. All courses shall be said truly horizontal and all vertical joints shall be truly vertical. The bricks shall be laid with frogs upwards. A set of masons tools shall be maintained on work as required for frequent checking.

3.0. Mode of measurement and payment

3.1. The half brick masonry work in foundation and plinth shall be measured under this item the limiting dimensions shall not exceed those shown in the plan or as directed. Any work done extra over the specified dimensions shall be ignored.

3.2. The relevant specifications of item no. 6.12. shall be followed. The length shall be measured nearest to one cm.

3.3. The rate shall be for a unit of one sq. meter.

**ITEM NO: 75 Providing 15mm thick cement plaster in single coat on brick /concrete walls for interior plastering upto floor two level and finished even and smooth in. (ii)Cement mortar 1:4 (1 cement:4-sand ) with finishing in floating coat of neat cement slury (R & B SOR2024-25 P.No.136+137ItemNo.17.60(ii)+ 17.69, Item code-17002B + 17004A)**

#### **Materials & workmanship**

The relevant specifications of item No. 27 shall be followed except that the thickness of cement plaster shall be 15 mm. The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:3.

2.3. **Mode of measurements & payment**

2.4. The relevant specifications of item No. 27 shall be followed.

2.5. The rate shall be for a unit of One sq. meter.

**ITEM NO: 76 Providing and laying cement concrete flooring 1:2:4 (1-cement : 2-coarse sand : 4-graded stone aggregate 20mm nominal size) laid in one layer and finished with a floating coat of neat cement. (B) 50mm thick. (R & B SOR 2024-25 P.No.128 Sr. No.14.71 (B), It. Code 14015BA)**

1.0. Materials Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone aggregate 20 mm. nominal size shall conform to M-12. Cement concrete of 1:2:4 proportion measured by volume shall conform to relevant specifications of ordinary grade 1:2:4 concrete.

2.0. Workmanship

2.1. The cement concrete flooring of 50 mm thick (Average) is to be laid as per the site condition. The concrete shall be mixed in a mechanical mixer at the work. Hand mixing may however be allowed for smaller quantities of work and in case of failure of machineries or as permitted by the Engineer-in-charge. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However in such cases 10% more cement than otherwise required shall have to be used without any extra cost. The mechanical mixing shall be done for period of 1.1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose, Flooring or specified thickness shall be laid in accordance with approved pattern or as directed.

Finishing operation shall depending upon the temperature and atmospheric conditions. The surface shall be left for some time till moisture disappears from it. Fresh quantity of cement shall be mixed with water to form a thick slurry and spread over the surface while the concrete is still green. Use of dry cement or cement and sand mixture sprinkled on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted. The cement slurry shall then be properly pressed twice by means of iron floats, once when the slurry is applied and the second time when cement setting and finished floated smooth. The surface shall be marked with string or B.R.C. fabric jali to make the surface non-slippery as and when directed. The junction of floors with wall plaster, dado or skirting shall be rounded off where so required up to 25 mm. radius. Flooring in lavatories and bath rooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage done to water supply or sanitary fittings during execution of work shall be made good.

2.2. After the final set, the concrete shall be kept continuously wet. if required by ponding for a period of not less than 7 days from the date of placement.

2.3. The form work shall be provided if necessary as directed by Engineer-in-charge. Concreting shall be done as per alternate bay method with necessary centering either by mastic or cement mortar as directed

### 3.0. Mode of measurements & payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above. No deduction shall be made or extra paid for any opening up to 0.1 sq. mt. In area in the floor, nothing extra shall be paid for laying the floor at different levels in the same room or the counter yard.

3.2. The rate shall be for a unit of one sq. meter.

## **ITEM NO: 77 Providing and laying in ground 110 mm diameter PVC rain Water pipe 6 Kg./ Sq.cm. necessary fittings connection as per detailed drawing as directed by Engineer - in - charge. (As per R.A.-1)**

### Material Specifications

- Pipe Standard: Conform strictly to IS: 4985 (or equivalent local standards) for uPVC pipes.
- Pressure Rating: Working pressure must be 6 Kg/sq.cm (Class 3).
- Fittings: Injection-moulded uPVC fittings conforming to IS: 7834 (tees, bends, elbows, couplers, and shoe pieces).
- Solvent Cement: High-grade synthetic solvent cement conforming to IS: 14182 for watertight joints Execution & Installation

### Trenching and Alignment

- Excavate trenches to required gradients and depths specified in drawings.
- Ensure the trench bed is flat, smooth, and free of sharp stones.
- Provide a 100 mm thick sand cushion bed if the natural soil is rocky Jointing Methodology
- Cut pipes square using a fine-tooth saw.
- Chamfer the pipe ends at an angle of 15 degrees.

- Clean mating surfaces with a dry cloth to remove dirt and moisture.
- Apply an even layer of solvent cement to both pipe end and fitting socket.
- Push the pipe firmly into the socket; hold for 30 seconds without twisting.
- Wipe off excess solvent cement immediately.

#### Fixing and Support (For Exposed/Vertical Sections)

- Anchor vertical pipes to walls using heavy-duty G.I. or uPVC clamps.
- Maintain a maximum clamp spacing of 1.5 meters.
- Leave a 10 mm expansion gap at joints for vertical stacks exposed to sunlight.

#### Testing and Acceptance

- Hydraulic Test: Conduct a water tightness test before backfilling trenches.
- Pressure Test: Subject the pipeline to a smoke test or a hydrostatic test at 6 Kg/sq.cm to check for leaks.
- Rectification: Replace any defective pipe or leaking joint immediately and retest.

#### Measurement and Payment

- Unit of Measurement: Linear meter (running meter) measured along the centerline of the pipe.
- Inclusions: The rate includes costs for pipes, fittings, joints, clamps, labour, scaffolding, and testing.

**ITEM NO: 78 Providing and laying in ground 150mm diameter PVC rain Water pipe 6 Kg./ Sq.cm. necessary fittings connection as per detailed drawing as directed by Engineer - in - charge. (As per R.A.-2)**

#### Material Specifications

- Pipe Standard: Conform strictly to IS: 4985 (or equivalent local standards) for uPVC pipes.
- Pressure Rating: Working pressure must be 6 Kg/sq.cm (Class 3).
- Fittings: Injection-moulded uPVC fittings conforming to IS: 7834 (tees, bends, elbows, couplers, and shoe pieces).
- Solvent Cement: High-grade synthetic solvent cement conforming to IS: 14182 for watertight joints

#### Trenching and Alignment

- Excavate trenches to required gradients and depths specified in drawings.
- Ensure the trench bed is flat, smooth, and free of sharp stones.
- Provide a 100 mm thick sand cushion bed if the natural soil is rocky
- Cut pipes square using a fine-tooth saw.
- Chamfer the pipe ends at an angle of 15 degrees.



- Clean mating surfaces with a dry cloth to remove dirt and moisture.
- Apply an even layer of solvent cement to both pipe end and fitting socket.
- Push the pipe firmly into the socket; hold for 30 seconds without twisting.
- Wipe off excess solvent cement immediately.

#### Fixing and Support (For Exposed/Vertical Sections)

- Anchor vertical pipes to walls using heavy-duty G.I. or uPVC clamps.
- Maintain a maximum clamp spacing of 1.5 meters.
- Leave a 10 mm expansion gap at joints for vertical stacks exposed to sunlight.

#### Testing and Acceptance

- Hydraulic Test: Conduct a water tightness test before backfilling trenches.
- Pressure Test: Subject the pipeline to a smoke test or a hydrostatic test at 6 Kg/sq.cm to check for leaks.
- Rectification: Replace any defective pipe or leaking joint immediately and retest.

#### Measurement and Payment

- Unit of Measurement: Linear meter (running meter) measured along the centerline of the pipe.
- Inclusions: The rate includes costs for pipes, fittings, joints, clamps, labour, scaffolding, and testing.

### **ITEM NO: 79 Brickwork using common burnt clay building bricks having crushing strength not less than 35 kg./ Sq.Cm. in foundation and plinth in Cement Mortar 1:6 (1- Cement : 6-fine sand) (B) Conventional (R&B SOR 2024-25 P.No.71 It.No.6.13(B) Item Code 06002BA)**

#### 4.0 Materials:

5.0 Water shall conform to M-I, Cement mortar shall conform to M-I1. Bricks shall conform to M-15.

#### 6.0 Workmanship:

##### 6.1. Proportion:

6.1.1. The proportion of the cement mortar shall be 1 : 6 (1 cement: 6 fine sand) by volume.

6.2. Wetting of bricks : 2.2.1. The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is an indication of through wetting of bricks.

##### 6.3. Laying:

2.4. .1. Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond; closers in such case shall be cut to required size and used near the ends of walls.

2.3.2. A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.

23.3. The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly

one over the other. The thickness of brick course shall be kept uniform.

2.3.6. The brick shall be laid with frog upwards. A set of tools comprising of wooden straight edges, mason's spirit level, square half metre rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.

2.3.7. Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one metre over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.

23.6. All fixtures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar.

2.5. Joints:

2.5.1. Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exceed 12 mm. The face joints shall be raked out as directed by taking tools daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to be done.

2.5.2. The face of brick shall be cleaned the very day on which the brick work is laid and all mortar dropping removed,

2.6. Curing.

2.5.1. Green work shall be protected from rain suitably. Masonry work shall be kept moist on all the faces for a period of seven days. The top of masonry work shall be kept well wetted at the close of the day.

2.7. Preparation of foundation bed : 2.6.1. If the foundation is to be laid directly on the excavated bed, the bed shall be levelled, cleared of all loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing, the top of concrete shall be cleaned and moistened. The contractor shall obtain the Engineer's approval for the foundation bed, before foundation masonry is started. When puccas flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

3.0 Mode of measurements and payment:

3.4. The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered, tapered and curved portions shall be measured net.

3.5. No deduction shall be made from the quantity of brick work, nor any extra payment made for embedding in masonry or making holes in respect of following items :

(7) Ends of joints, beams, posts, girders, rafters, purlins, trusses, corbel steps etc. where cross sectional area does not exceed 500 Sq.Cm.

(8) Openings not exceeding 1000 Sq. Cm.

(9) Wall plates and bed plates, bearing of slabs, chhajjas and the like whose thickness does not exceed 10 Cms. and the bearing does not extend to the full thickness of wall.

(10) Drainage holes, and recesses for cement concrete blocks to embed hold fasts for doors, windows etc.

(11) Iron fixtures, pipes upto 300 mm. dia; hold fasts and doors and windows built into masonry and pipes etc. for concealed wiring.

(12) Forming chases of section not exceeding 350 Sq. Cm. in masonry.

3.6. Apertures for fire places shall not be deducted nor shall extra labour required to make splaying of jambs, throating and making Arches over the aperture be paid for separately.

3.4 The rate shall be for a unit of one cubic metre.

**ITEM NO: 80 Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc. Height of propping and centering below supporting floor to ceiling not exceeding 4M. and removal of the same for in situ reinforced concrete and plain concrete work in. (A) Foundations Footings Bases of Columns etc. and Mass concrete.) (R&B SOR 2024-25 P.No.81 Item No.9.1 (A), Item Code-09001AA)**

1.0. Materials

1.1. The shuttering to be provided shall be of ordinary timber plank and shall conform to M-26.

1.2. The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.

## 2.0. Workmanship

2.1. The form work shall conform to the shape lines and dimensions as shown on the plans and be constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safe-guard against any settlement of the form-work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding, bracing etc. shall be as per design.

### 2.2. Clearing and Treatment of forms:

2.2.1. All rubbish, particularly chipping shaving and saw dust shall be removed from the interior of the form before the concrete work is placed and the-form in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joint surface and reinforced bars.

### 2.3. Stripping time:

2.3.1. In normal circumstances and where ordinary cement is used forms may be struck after expiry of following periods.

(a) Sides of walls columns and vertical faces of beams.....24 to 48 hours.

(b) Beam soffits, (props, left under).....7 days.

(c) Removal of props slabs: (i) Slabs spanning up to 4.5. m.....7 days.

(ii) Spanning over 4.5 mm.....14 days.

(e) Removal of props t beams and Arches: (i) Spanning up to 6 mm.....14 days.

(f) (ii) Spanning over 6 m.....21 days.

### 2.4. Procedure when removing the form work:

2.4.1. All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffits form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened

### 2.5. Centering:

2.5.1. The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behavior or centering and form work is satisfactory during concreting. Erection should also be such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.

2.5.2. The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.

2.5.3. The centering and form work shall, be inspected and approved by the Engineer-in-charge before concreting. But this will not relieve the contractor of his responsibility for strength,-adequacy and safety of form work and centering. If there is a failure of form work or centering, contractor

shall be responsible for the damages to property.

## 2.6. Scaffolding:

2.6.1. All scaffolding, hoisting arrangements and ladders etc., required for the facilitating of conceding shall be provided and removed on completion of work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to with stand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.

2.6.2. The scaffolding, hoisting arrangements and ladder shall allow easy approach to the work spot and afford easy inspection.

2.6.3. The rate is applicable to all condition of working and height up to 4 mts. The rate shall include the cost of materials and labour for various operations involved such as: (a) Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering propping, bolting, wedging easing, striking and removal. (b) Filleting to form stop chamfered edges or splayed external angles not exceeding 20 mm: width to beams, columns and the like. (c) Temporary openings in the forms for pouring concrete, if required removing rubbish etc. (d) Dressing with oil to prevent adhesion of concrete with shuttering and. (e) Raking or circular cutting.

## 2.7. Re-Use:

2.7.1. Before re-use, all form shall be inspected by Engineer-in-charge and their suitability ascertained. The forms shall be scarred, cleaned and joints are gone over, repaired where required. Inside surface shall be retreated to prevent adhesion of concrete.

## 3.0. Mode of Measurements & Payment

3.1. Form work shall be measured as the area in square meters to shuttering in contract with concrete except in the case of inclined member and portion of curved profile and upper side in which case on area of underside shall be measured for payment.

3.4. Form work to secondary beams shall be measured up to the sides of main beams but no deduction shall be made from the form work of the main beam at the inter section point. No deduction shall be made from the form work of a column at inter section of beams.

3.5. The rate is for the completed item

3.6. The rate shall be for a unit of one sq. meter.

## **ITEM NO: 81 Supplying of crushed stone aggregate of 25 to 40 mm size as directed with 5 Km. lead**

### 1.0 Materials

#### 1.1 Stone Aggregate:

- The coarse aggregate shall consist of hard, durable, crushed stone obtained from approved quarry sources.
- Stones shall be angular in shape and free from dust, clay, organic matter, or other deleterious substances.
- Flaky, elongated, or soft particles shall not exceed 15% by weight.
- The aggregate shall conform to IS: 383 – 2016 (*Specification for Coarse and Fine Aggregates for Concrete*).

#### 1.2 Size Range:

- The supplied material shall be **machine crushed** and screened to obtain sizes **25 mm to 40 mm**.
- The gradation shall meet the following limits:

Sieve Size (mm)	Percentage Passing
40	100
25	35 – 70
20	0 – 15
10	0 – 5

### 1.3 Physical Properties:

Property	Requirement	Test Reference
Aggregate Crushing Value	≤ 30%	IS:2386 (Part 4)
Los Angeles Abrasion Value	≤ 40%	IS:2386 (Part 4)
Water Absorption	≤ 2%	IS:2386 (Part 3)
Specific Gravity	≥ 2.6	IS:2386 (Part 3)

### 1.4 Water (if used for washing):

- Water shall be clean, potable, and free from salts or organic impurities.

## 2.0 General

- The contractor shall obtain material only from an approved quarry having crushing and screening facilities.
- The material shall be screened to required size before dispatch.
- All royalty, quarry fees, seigniorage, and taxes shall be borne by the contractor.

## 3.0 Workmanship

### 3.1 Collection and Loading

- Crushed stone aggregates shall be collected, screened, and loaded into trucks mechanically.
- Aggregates shall be clean and uniformly graded at the time of dispatch.

### 3.2 Transportation

- The material shall be transported to site by trucks/tippers within a lead of 5 km.
- The truck shall be covered with tarpaulin to avoid loss or contamination during transit.

### 3.3 Unloading and Stacking

- Aggregates shall be unloaded on dry, level ground, free from mud or vegetation.
- Stacks shall be uniform, measurable, and separated by size (if multiple sizes are used).
- Stacks shall be measured in cubic meters (m<sup>3</sup>) for payment.

## 4.0 Measurement

- Measurement shall be taken in cubic meters (m<sup>3</sup>) of stacked quantity at site.
- For volume computation, a deduction of 7% shall be made towards voids as per standard PWD practice.

## 5.0 Rate and Payment

### 5.1 The rate shall include:

- Cost of crushed stone aggregate (25–40 mm) from approved quarry,
- Royalties, taxes, quarry fees, seigniorage charges,
- Loading, unloading, stacking, and transportation up to 5 km lead,
- All labour, tools, and incidental works for proper completion.

### 5.2 Mode of Payment:

- Payment shall be made per cubic meter (m<sup>3</sup>) of aggregate supplied, stacked, and accepted by the Engineer-in-Charge.

## ITEM NO: 82 Supplying of coarse sand as directed with 5 Km. lead)

### 1.0 Materials

#### 1.1 Coarse Sand:

- Coarse sand shall be natural river sand or crushed stone sand obtained from an approved source.
- The sand shall be clean, sharp, angular, and free from clay, loam, mica, salts, and organic impurities.
- It shall conform to IS: 383 – 2016 (*Specification for Coarse and Fine Aggregates for Concrete*).
- Fineness Modulus (F.M.) shall be between 2.5 to 3.0 for coarse sand.

#### 1.2 Quality Requirements:

Property	Requirement
Clay, silt & dust content	Not more than 3% by weight
Organic impurities	Shall not exceed the color limit of standard solution as per IS:2386 (Part 2)
Bulk density	1500–1700 kg/m <sup>3</sup> (approx.)
Grading	Zone I or Zone II (as per IS:383)

#### 1.3 Water (if used for washing):

- Water used for washing or cleaning sand shall be clean, potable, and free from salts or acids.

### 2.0 General

- The contractor shall supply coarse sand from an approved quarry or river bed source, ensuring quality and quantity as per direction of Engineer-in-Charge.
- The sand shall be stacked properly in measurable heaps at the specified site or godown.
- All royalty, quarry fees, seigniorage, and taxes shall be included in the supply rate.

### 3.0 Workmanship

#### 3.1 Collection and Loading

- The sand shall be collected from the approved source, screened, and cleaned of all impurities before dispatch.
- Loading shall be done manually or mechanically into trucks or trolleys ensuring no contamination with foreign materials.

### 3.2 Transportation

- Sand shall be transported by trucks, tractors, or tippers over a distance not exceeding 5 km lead, as specified.
- During transport, suitable measures (like tarpaulin cover) shall be taken to avoid loss of material.

### 3.3 Unloading and Stacking

- Sand shall be unloaded at site and stacked on a dry, level, and well-prepared ground to prevent contamination.
- Stack dimensions shall be recorded for volume measurement.
- A typical stack shall have 1.25 m height and side slopes not steeper than 1:2.

### 4.0 Measurement

- Measurement shall be done in cubic meters (m<sup>3</sup>) of stacked quantity at site.
- A deduction of 8% for voids shall be made from the measured stack volume to arrive at net supply quantity (as per standard PWD practice).

## 5.0 Rate and Payment

### 5.1 The rate shall include the cost of:

- **Material (Coarse Sand)** with approved quality,
- **Royalties, taxes, quarry fees**, and seigniorage charges,
- **Loading, unloading, and stacking** at site,
- **Transportation with 5 km lead**, and
- All **labour, tools, and incidental works** required for satisfactory completion.

### 5.2 Payment shall be made per **cubic meter (m<sup>3</sup>)** of sand supplied and accepted by the Engineer-in-Charge.

Deputy Executive Engineer  
R & B Panchayat Sub Division  
Viramgam

Executive Engineer  
R & B Panchayat Division  
Ahmedabad