

**3.2.** No deduction shall be made from the quantity of brick work, for any extra payment made for embedding in masonry or making holes in respect of following items :

- (1) Ends of joists, beams, posts, girders, 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, chajjas 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 be paid for separately.

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

**6.12. (B)** **Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundations and plinth in cement mortar 1:5 (1 cement : 5 fine sand) conventional bricks.**

**1.0. Materials**

Cement mortar of proportion 1:5 shall conform to M-11. Conventional bricks shall conform to M-15.

**2.0. Workmanship**

The relevant specification of item No. 6.12 (A) shall be followed except that the bricks to be used shall be modular bricks and the proportion of cement mortar is 1:6.

**3.0. Mode of measurements & payment**

**3.1.** The relevant specifications of item No. 6.12(A) shall be followed.

**3.2.** The rate shall be a unit of one cubic metre.

**6.13.(A)** **Bricks work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm in foundation and plinth in cement mortar 1:6 (1 cement : 6 fine sand) with conventional bricks.**

**1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. Bricks shall conform to M-15.

**2.0. Workmanship**

**2.1.** The relevant specification of item No. 6.12 (A) shall be followed except that the bricks to be used shall be conventional bricks and proportion of cement mortar shall in C.M. 1:6.

**3.0. Mode of measurements & payment**

**3.1.** The relevant specification of item No. 6.12(A) shall be followed.

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

**6.0.0.1(A)** **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 1:8 (1 cement : 8 fine sand), with Modular bricks.**

**1.0. Materials**

Water shall conform to M-1. Brick shall conform to M-15. Cement mortar shall be conform to M-11.

**2.0. Workmanship**

**2.1.** The relevant specification of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8 and bricks used shall be conventional bricks.

**3.0. Mode of measurements & payment**

**3.1.** The relevant specification of item No. 6.12(A) shall be followed.

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

**6.00.1.(B)** **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 1:8 (1 cement : 8 fine sand), with conventional bricks.**

**1.0. Materials**

Water shall conform to M-1. Brick shall conform to M-15, cement mortar shall be conform to M-11.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8.

**3.0. Mode of measurement & payment**

**3.1.** The relevant specifications of item No. 6.12(A) shall be followed.

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

**6.0.0.1.(A)** **Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./Sq. Cm. in foundation and plinth in lime mortar 1:1.5 (1 Lime putty : 1.5 fine sand) modular bricks.**

**1.0. Materials**

Lime mortar of proportion ( 1:1.5) shall conform to M-10. Bricks shall conform to M-15.

**2.0. Workmanship**

2.1 The relevant specification of item No. 6.12(A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8 and bricks used shall be conventional bricks.

**3.0. Mode of measurements & payment**

3.1. The relevant specification of item No. 6.12(A) shall be followed.

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

**6.001.(B) Brick work using common burnt clay building having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in cement mortar 1:8 (1 cement : 8 fine sand), with conventional bricks.**

**1.0 Materials**

Water shall conform to M-1. Brick shall conform to M-15. Cement mortar shall be conform to M-11.

**2.0. Workmanship**

2.1. The relevant specifications of item No. 6.12. (A) shall be followed except that the proportion of cement mortar shall be cement mortar 1:8.

**3.0. Mode of measurements & payment**

3.1. The relevant specifications of item No. 6.12. (A) shall be followed.

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

**6.0.0.2.(A) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg./Sq. Cm. in foundation and plinth in lime mortar 1:1.5 (1 Lime putty: 1.5 fine sand) modular bricks.**

**1.0. Materials**

Lime mortar of proportion (1:1.5) shall conform to M-10. Bricks shall conform to M-15.

**2.0. Workmanship**

The relevant specification of item No. 6.12. (A) shall be followed except the masonry work shall be carried out in lime mortar 1:1.5 (1 lime putty 1.5 fine sand) in foundation and plinth.

**3.0. Mode of measurements & payment**

3.1. The relevant specification of item No. 6.12. (A) shall be followed.

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

**6.0.0.2.(B) Brick work using common burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in lime mortar 1:1.5 (1 Lime putty : 1.5 fine sand) conventional bricks.**

**1.0. Materials & Workmanship**

The relevant specification of item No. 6.12(A) and 6.0.2(A) shall be followed except that the masonry work shall be carried out by using conventional bricks in lime mortar 1:1.5 (1 Lime putty : 1.5 fine sand) in foundation and plinth.

**2.0. Mode of measurements & payment**

2.1. The relevant specification of item No. 6.12(A) shall be followed.

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

**6.0.0.3.(A) Brick work using common burnt clay building brick having crushing strength not less than 35 Kg. Sq. Cm. in foundation and plinth in lime mortar 1:2 (1 lime putty :2 fine sand) modular bricks.**

**1.0. Materials & workmanship**

The relevant specification of item No. 6.12(A) and 6.0.0.(A) shall be followed except that the masonry work shall be carried out in lime mortar 1:2 (1 Lime putty : fine sand) in foundation and plinth.

**2.0. Mode of measurements & payment**

2.1. The relevant specification of item No. 6.12 (A) shall be followed.

2.2. The rate shall be for a one cubic metre.

**6.0.0.3(B) Brick work using burnt clay building bricks having crushing strength not less than 35 Kg/Sq. Cm. in foundation and plinth in lime mortar 1:2 (1 Lime Putty : 2 fine sand) modular bricks.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 6.12 A and 6.0.03 shall be followed except that the masonry work shall be carried out in lime mortar 1:2 (1 lime : 2 fine sand) using conventional bricks in foundation and plinth.

**6.19.(A) Brick work using common burnt clay building brick having crushing strength not less than 35 kg/sq.cm. for super structure above plinth level upto floor two level in cement mortar 1:5 (1 cement : 5 fine sand) modular bricks.**

**1.0. Materials**

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

**2.0. Workmanship**

**2.1.** The relevant specification of item No. 6.12 (A) shall be followed except that the masonry work shall be carried out above plinth level to floor two level i.e. for ground floor.

**2.2.** 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-fasts, etc., shall be in the wall and frame embedded later on in order to avoid damage to the frames.

**2.3.** 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.

**2.4.** For the face of brick work, where plastering is to be done, joints shall be raked 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.

**3.0. Mode of measurements & payment**

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

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

**3.3.** 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 and 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 upto 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.

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

**6.19.(B) Brick work using common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. for super structure above plinth upto floor two level in cement mortar 1:5 (1 cement : 5 fine sand) conventional bricks.**

**1.0. Materials & Workmanship**

The relevant specification of item No. 6.19(A) shall be followed except that brick masonry work shall be carried out with conventional bricks.

**2.0. Mode measurement and payment**

**2.1.** The relevant specification of item No. 6.19 (A) Shall be followed.

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

**6.20 Extra for brick in super structure above floor two level.****1.0. Materials and workmanship**

The relevant specifications of item masonry work to be carried out shall be followed except that this work is for additional lift of one floor above two level.

**2.0. Mode of measurements and payment**

2.1. The relevant specification of item No. 6.19 (A) masonry work shall be followed.

2.2. The extra payment shall be made for additional lift above floor two level to each additional floor over and above the rate of masonry work.

2.3. The rate shall be for a unit of cubic metre per floor.

**6.30.I(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:4 (1 cement : 4 coarse sand) for super-structure above plinth level upto floor two level with conventional bricks.****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. All bricks shall be laid streacher 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. metre.

**6.30.I.(B) Half brick masonry in common burnt clay building bricks crushing strength not less than 35 kg/sq. cm. in cement mortar 1:4 (1 cement : 4 coarse sand) for super-structure above plinth level upto floor two level with conventional bricks.****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, 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.

**6.30.II(A) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:5 (1 cement : 5 coarse sand) with modular bricks in foundations and plinth.****1.0. Materials & workmanship**

The relevant specifications of item No. 6.30. I (A) shall be followed except the half brick masonry work shall be carried out in cement mortar 1:5 ( 1 cement : 5 coarse sand) with modular bricks in foundation and plinth.

**2.0. Mode of measurement and payment**

2.1. The relevant specifications of item no. 6.30. I (A) shall be followed.

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

**6.30.II.(B) Half brick masonry on common clay building bricks having crushing strength not less than 35 kg/sq. cm. in cement mortar 1:5 (1 cement : 5 coarse sand) in foundation and plinth using conventional bricks.****1.0. Materials & workmanship**

1.1. The relevant specifications of item No. 6.30I (A) shall be followed for bricks, wetting, laying of bricks, joints, 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 relevant specifications of item No. 6.30(i)-A shall be followed.

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

**6.30 III.(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq. cm. in lime mortar 1:15 (1 lime putty : 1.5 coarse sand) in foundation and plinth with modular bricks.**

**1.0. Materials & workmanship**

The relevant specifications of item No.6.30 (I)-A shall be followed except that the half bricks work shall be carried out in cement 1:5 (1 cement : 5 coarse sand) in foundation and plinth using conventional bricks.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item no. 6.30 (i)-A shall be followed.

2.2. The rate shall for a unit of one sq. metre.

**6.30.III(A) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq. cm. in lime mortar 1 :1.5 ( 1 lime putty : 1.5 coarse sand) in foundation and plith with modular bricks.**

**1.0. Materials**

Modular bricks shall conform to M-15 water shall conform to M-1. Lime mortar or proportion L.M. 1:1.5 (1 Lime putty : 1.5 coarse sand) shall conform to M-10.

**2.0. Workmanship**

The relevant specifications of item No. 6.30 (I) (A) shall be followed except that the half brick masonry work shall be carried out in lime mortar 1:1.5 (1 Lime putty : 1:1.5 coarse sand) in foundation and plinth using modular bricks.

**3.0. Mode of measurements & payment**

3.1. The relevant specification of item No. 6.30 (I) A shall be followed.

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

**6.30.III(B) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. in motar 1: 1.5 (1 Lime putty : 1.5 coarse sand) in foundation and plinth with conventional bricks.**

**1.0. Materials**

Conventional bricks shall conform to M-15, water shall conform to M.1. Lime mortar or proportion L.M. : 1.5 ( 1 Lime putty : 1.5 coarse sand) shall conform to M-10.

**2.0. Workmanship**

The relevant specifications of item No. 6.30 (I)-A shall be followed except that half brick masonry work shall be carried out in Lime Mortar 1:1.5 (1 Lime putty : 1.5 coarse sand) in foundation and plinth using conventional bricks.

**3.0. Mode of measurements and payment**

3.1. The relevant specifications of item No. 6.30 (I)-A shall be followed.

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

**6.30 II(A) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. in cement 1:5 ( 1 cement : coarse sand) with hoop iron 25 mm. x 1.6 mm. or equivalent reinforcement at every third coarse embedded in cement mortar in foundation and plinth with modu'ar bricks.**

**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. M.S. reinforcement shall conform to M-18.

**2.0. Workmanship**

2.1. Relevant specifications of bricks, wetting and laying of bricks, joints, curing, scaffolding etc. shall conform to item No. 6.30 (I)-A except the following :

2.2. Cement mortar used in masonry work shall be in proportion to 1 part of cement and 5 parts of sand by volume and shall conform to M-11, and this work is for half brick thickness for partitions walls.

2.3. The hoop iron 25 mm x 1.6 or equivalent reinforcement shall be provided at every third course. The ends of reinforcement shall be fully embedded in main walls on both sides as directed. Reinforcement shall be placed on the top of the bottom most course. Laps shall be of 15 cms. of mild steel bars or hoop iron.

2.4. The joints in the course where reinforcement is placed shall admit of mortar cover to the reinforcement.

**3.0. Mode of measurements and payment**

- 3.1. The rate shall be for half brick masonry work providing specified reinforcement, the limiting dimensions not exceeding those in the plan or as directed. The length shall be measured nearest to one cm.
- 3.2. Any work done extra over specified dimensions shall be ignored.
- 3.3. The rate shall be for a unit one sq. metre.

**6.30.II(B) Half brick masonry in common burnt clay building having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:5 (1 cement : 5 coarse sand) with hoop iron 25. mm. x 1.6 mm. or equivalent reinforcement at every third course embedded in cement mortar in foundation and pith, with conventional bricks.**

**1.0. Materials & Workmanship**

- 1.1. The relevant specifications of item No. 6.30 I (A) shall be followed except that the work is to be carried out with conventional bricks instead of Modular bricks.

**2.0. Mode of measurements and payment**

- 2.1. The rate shall be for half brick work, including providing specified reinforcement, the limiting dimensions out with conventional bricks instead of Modular bricks.
- 2.2. The work done extra over specified dimensions shall be ignored.
- 2.3. The rate shall be for a unit of one sq. metre.

**6.33.(A) Extra for half brick masonry in superstructure above floor two level. Modular bricks.**

**1.0. Materials & Workmanship**

- 1.1. The relevant specifications for item No. 6.30 A & 6.30. B shall be followed except that this work is for additional lift over and above the payment of work upto floor two level.
- 2.2. The rate shall be for a unit of one sq. metre per floor.

**6.33(B) Extra for half brick masonry work in superstructure above floor two level. Conventional bricks.**

**1.0. Materials & Workmanship**

- 1.1. The relevant specifications for item No. 6.30 A & 6.30. B shall be followed except that this work is for additional lift of each floor two level using conventional bricks.

**2.0. Mode of measurements and payment**

- 2.1. The relevant specification of item No. 6.33 (A) shall be followed.
- 2.2. The rate shall be for a unit of one sq. metre per floor.

**6.55 (1) Half brick thick Honey-comb brick work with burnt work with burnt clay building bricks having crushing strengths not less than 35 kg/sq.cm. in C.M. 1:4 (1 cement : 4 coarse sand)**

**1.0. Materials**

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

**2.0. Workmanship**

The relevant specifications of item No. 6.32(A) shall be followed except that the masonry work shall be carried out Honey-comb in thickness of half bricks in cement mortar 1:4 (1 cement : 4 coarse sand) and as and where directed with all lifts.

**3.0. Mode of measurements and payment**

- 3.1. The honey-comb work shall be measured in sq. metres. The full area of honey comb work shall be measured without with all lifts.
- 3.2. The rate shall be for a unit of one square metre of wall surface.

## SECTION-7

### Rubble Masonry Work

**7.6(1) Uncoursed rubble masonry with hard stone approved quality in foundations and plinth in cement mortar 1:6 (1 cement : 6 coarse sand) including leveling etc. complete.**

**1.0. Materials :**

The cement mortar shall conform to M-11. Stone shall conform to M-16.

**2.0. Workmanship**

**2.1. Dressing of stones :**

Stone used for uncoursed rubble masonry work shall be hammer dressed on the sides, and beds in which such a way as to close with the adjacent stone in the masonry work as strongly as possible. The face stones shall be dressed in such a manner as to give a specified pattern such as polygonal facing etc. The face of the stones shall be so dressed that bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on the face to be plastered, it shall not project by more than 19 mm., nor shall have depressions more than 10 mm. from the average wall surface.

**2.2. Laying :**

All the stone shall be sufficiently wetted before laying to prevent absorption of water from mortar. The wall shall be built true to plumb (or true to required batter when so specified). All connected walls in a structure shall be raised up informally and regularly. However if for any specific reason, one part of masonry is required to be left behind, the wall shall be racked back at an angle not steeper than 45. Vertical toothed joints in masonry shall not be allowed. The work shall be carried out regularly and masonry of any day wall not be raised by more than 1 metre in height.

**2.3.** The stone shall be laid in an uncoursed fashion, or random facing etc. However the masonry is required to be brought to level at various stages viz. plinth level window sill level, roof level and any other level specifically shown in the drawings. This may be done first by adjusting the laying of stone to one level and then by providing leveling course of cement concrete 1:6:12 (1 cement : sand : 12 graded stone aggregate 20 mm. nominal size) or as otherwise specified.

**2.4.** Proper bonding shall be achieved by closely filling in adjacent stones as well as by using bond stones or through stones as described herein below. Face stones shall extend back sufficiently, and bond well with the masonry. The stone shall be carefully set so as to break joints and avoid formation of vertical joints. The depth of stone from the face of wall inwards shall not be less than weight or breadth at the face. The hearing or interior filling of the wall shall consist of rubble stones which may be of any shape. Neither the face stone nor the hearing stone shall be so small to pass through circular ring of 150 mm. internal diameter in any direction nor shall any of them shall have minimum thickness 100 mm.

**2.5.** All stone shall be carefully laid, hammered down by a wooden mallet into position and solidly embedded in mortar, chips and spawns of stone may be used wherever necessary to avoid thick mortar beds or joints at the same time ensuring that no hollow space is left anywhere in the masonry. The chips used shall not be more than 20% by volume of masonry. The hearting shall be laid nearly level with face stones except that at about one metre intervals vertical bond stone or plumes projecting about 150 to 200 mm. shall be firmly embedded to form vertical bonding in masonry.

**2.6. Bond stone:**

Bond stones or through stones running right across the thickness of the wall shall be provided in wall upto 600 mm. thick. In thicker walls two stones overlapping each other by atleast 150 mm. shall be provided across the thickness of the wall to form bond stones. There shall be atleast one bond stone for every 0.5 sq. mt. of wall surface. The bond stone shall be marked by a distinguishing letter during construction for subsequent verification and shall be laid staggered in subsequent layers.

**2.7. Quoins :**

The quoins or corner stones shall be selected stone neatly dressed with hammer and/or chisel to form the required corner angle and laid header and stretcher alternatively. The bed top surface of quoins shall be chiselled dressed to give horizontal joints. The quoins shall have a uniform chisel draft of atleast 25 mm. width at four edges of each exposed face, all the edges of the same face being in one plane. No quoins stone shall be smaller than 0.025 cum. in volume.

**2.8. Jamb Stones :**

The jamb stone shall be made with stone specified for quoins, that the stone provided on the jambs shall have their length equal to thickness of wall upto 600 mm. and a line of headers shall be provided for walls thicker than 600 mm. as specified for bond.

**2.9. Joints :**

All the joints shall be completely filled with mortar and width shall not exceed 25 mm. when plastering of pointing is not required to be done, the joints shall be struck flush and finished simultaneously while laying the stone. Otherwise the joints shall be raked to a minimum depth of 20 mm. by a racking tools, during progress of laying while the mortar is still green.

**2.10. Scaffolding :**

Single or double scaffolding shall be used. The scaffolding shall be strong and sound. The holes left in masonry for supporting scaffolding shall be filled and made good before plastering.

**2.11. Curing :**

Green work shall be protected from rains by covering the same. Masonry shall be kept constantly moist on all the faces for a period of atleast 7 days. The top of masonry shall be flooded at close of the day.

**3.0. Mode of measurements and payment**

3.1. All work shall be measured on the basis of finished dimensions and measured net except where otherwise specified. Only specified dimensions shall be allowed. Anything extra shall be ignored. The masonry work in foundation and plinth shall be measured under this item. No deduction shall be made, nor extra payment made for the following :

- (a) Ends of joints, beams, spots, girders, rafters, purloins, trusses, corbles, etc. each upto 500 sq. cm. in section.
  - (b) Opening each upto 0.1 sq.m.
  - (c) Wall plates and bed plates, bearing of chhaja and like upto 10 cm. depth (bearing of floor and roof slabs shall be deducted from masonry).
  - (d) Drain holes and recesses for cement concrete blocks to embed hold fasts for doors windows.
  - (e) Building in the masonry iron fixtures pipes upto 300 mm. dia. hole fasts of doors and windows.
  - (f) Forming chases in masonry upto section of 350 sq.cm.
- 3.2. The rate shall be for a unit of one cubic metre.

**7.6.(II) Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:5 (1 cement : 5 coarse sand) including levelling up etc. complete.**

**1.0. Materials and workmanship**

The relevant specification of item No. 7.6(I) shall be followed except that the proportion of cement mortar shall be in C.M. 1:5 (1 cement : 5 coarse sand)

**2.0. Mode of measurements and payments**

2.1. The relevant specifications of item No. 7.6(I) shall followed.

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

**7.6.(III) Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in lime mortar . 1:1.5 (1 lime putty : 1.5 coarse sand) including levelling etc. complete.**

**1.0. Materials :**

Lime mortar shall conform to M-10. The rubble shall conform to M-16.

**2.0. Workmanship**

The relevant specifications of item No. 7.6 (I) shall be followed.

**3.0. Mode of measurement and payment**

3.1. The relevant specifications of item No. 7.6 (I) shall be followed.

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

**7.17(A) Coursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:6 (1 cement : 6 coarse sand) etc. complete.**

**1.0. Materials**

Cement mortar shall conform to M-11. The stone shall conform to M-16.

**2.0. Workmanship****2.1. Dressing of stones :**

The face stone shall be hammer dressed so as to give approximately rectangular blocks. They shall be squared on bed and side joints. The bed joints shall be rough chisel dressed for a depth of atleast 50 mm. back from the faces and the side joints shall be so dressed to a depth of atleast 40 mm. back from the face, such that no portion of the dressed surface is more than 10 mm. from a straight edge held against the surface. The remaining portions of surface shall not project above the chisel dressed bed and side joints. The bushing on the face shall not project by more than 40 mm. on an exposed face and 10 mm. on a face to be plastered. The hammer dressed stone shall also have a rough tooling for a minimum width of 25 mm. along the four edges of the face of the stone.



**2.9. Joints :**

All the joints shall be completely filled with mortar and width shall not exceed 25 mm. when plastering of pointing is not required to be done, the joints shall be struck flush and finished simultaneously while laying the stone. Otherwise the joints shall be raked to a minimum depth of 20 mm. by a racking tools, during progress of laying while the mortar is still green.

**2.10. Scaffolding :**

Single or double scaffolding shall be used. The scaffolding shall be strong and sound. The holes left in masonry for supporting scaffolding shall be filled and made good before plastering.

**2.11. Curing :**

Green work shall be protected from rains by covering the same. Masonry shall be kept constantly moist on all the faces for a period of atleast 7 days. The top of masonry shall be flooded at close of the day.

**3.0. Mode of measurements and payment**

**3.1.** All work shall be measured on the basis of finished dimensions and measured net except where otherwise specified. Only specified dimensions shall be allowed. Anything extra shall be ignored. The masonry work in foundation and plinth shall be measured under this item. No deduction shall be made, nor extra payment made for the following :

(a) Ends of joints, beams, spots, girders, rafters, purloins, trusses, corbels, etc. each upto 500 sq. cm. in section.

(b) Opening each upto 0.1 sq.m.

(c) Wall plates and bed plates, bearing of chhaja and like upto 10 cm. depth (bearing of floor and roof slabs shall be deducted from masonry).

(d) Drain holes and recesses for cement concrete blocks to embed hold fasts for doors windows.

(e) Building in the masonry iron fixtures pipes upto 300 mm. dia. hole fasts of doors and windows.

(f) Forming chases in masonry upto section of 350 sq.cm.

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

**7.6.(II) Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:5 (1 cement : 5 coarse sand) including levelling up etc. complete.**

**1.0. Materials and workmanship**

The relevant specification of item No. 7.6(I) shall be followed except that the proportion of cement mortar shall be in C.M. 1:5 (1 cement : 5 coarse sand)

**2.0. Mode of measurements and payments**

**2.1.** The relevant specifications of item No. 7.6(I) shall followed.

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

**7.6.(III) Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in lime mortar . 1:1.5 (1 lime putty : 1.5 coarse sand) including levelling etc. complete.**

**1.0. Materials :**

Lime mortar shall conform to M-10. The rubble shall conform to M-16.

**2.0. Workmanship**

The relevant specifications of item No. 7.6 (I) shall be followed.

**3.0. Mode of measurement and payment**

**3.1.** The relevant specifications of item No. 7.6 (I) shall be followed.

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

**7.17(A) Coursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:6 (1 cement : 6 coarse sand) etc. complete.**

**1.0. Materials:**

Cement mortar shall conform to M-11. The stone shall conform to M-16.

**2.0. Workmanship****2.1. Dressing of stones :**

The face stone shall be hammer dressed so as to give approximately rectangular blocks. They shall be squared on bed and side joints. The bed joints shall be rough chisel dressed for a depth of atleast 50 mm. back from the faces and the side joints shall be so dressed to a depth of atleast 40 mm. back from the face, such that no portion of the dressed surface is more than 10 mm. from a straight edge held against the surface. The remaining portions of surface shall not project above the chisel dressed bed and side joints. The bushing on the face shall not project by more than 40 mm. on an exposed face and 10 mm. on a face to be plastered. The hammer dressed stone shall also have a rough tooling for a minimum width of 25 mm. along the four edges of the face of the stone.

## 2.2. Laying :

**2.2.1.** All stones shall be wetted before laying. The wall shall be built up truly plumb (or to required better where so specified.)

All connected masonry in a structure shall normally be raised up uniformly and regularly. However, if for any specific reasons one part of wall is required to be left behind, such wall shall be raked back at an angle not steeper than 45°; vertical toothed joints in masonry shall not be allowed. The work shall be carried up regularly and masonry on any day shall not be raised by more than 1 metre in height.

**2.2.2.** All the courses shall be laid truly horizontal. The height of course shall not be less than 150 mm. nor more than 300 mm. Face stone shall be laid in alternate header and stretcher fashion. They shall be so arranged as to break joints by atleast 75 mm. Stones shall be laid with grains horizontal so that the load is transmitted along the direction of their maximum crushing strength. The depth of stone shall not be less than the height or breadth. The breadth of a face stone shall also be not less than the breadth. The breadth of a face stone shall also be not less than 150 mm. Each face stone shall be of the same height in any give course. The courses shall be not less than 150 mm. Each face stone shall be of the same height in any give course. The courses shall be built in perpendicular to the pressure which the masonry will bear. In case of battered walls (such as retaining walls) the beds of the stone and the plate of courses shall be laid with their bed perpendicular to the battered face.

**2.2.3.** The hearting or the interior filling of the wall shall consist of flat bedded stones carefully laid on their proper beds in mortar, chips and spawns of stone being used where necessary to avoid excessive use of mortar, care being taken to see that no hollow space is left anywhere in the masonry. Chips shall not be used below the hearting stone to bring these upto the level of stones. The use of chips shall be restricted to be filling of interstices between the hearting stone but the volume of chips shall be limited to 15% of the total volume of the masonry.

## 2.3. Bond Stones :

The relevant specification of item No. 7.6 (I) para 2.6 shall be followed except that the bond stone shall be provided for at least 1.8 m. length of every courses.

### 2.2.4. Quoins :

The quons, which shall be of the same height as the course to which it belongs shall be formed from selected stone of at least 400 mm. length. They shall be laid square or beds on stretchers and headers alternatively. The beds shall be rough, chisel dressed to a depth of at least 100 mm. These stones shall have a minimum uniform chisel draft of 25 mm. width at four edges being in the same plane, quoin stone shall not be smaller than 0.025 cum. in volume and it shall also be not less than 300 mm. in length, 25 % of them being not less 500 mm. in length.

## 2.5. Joints :

All the bed joints shall be horizontal and all shall be vertical. Face joints shall not be more than 10 mm. thick. All joints shall be properly and completely filled with mortar. On faces where no plastering not pointing is required to be done the joint shall be flush and finished simultaneously while laying stones. In other cases the joints shall be raked to a minimum depth of 20 mm. by raking tools during the progress of work while the mortar is still green.

## 2.6. Curing :

The relevant specification of item No. 7.6 (I) area para 2.9 shall be followed.

## 3.0. Mode of measurements & payment

**3.1.** The relevant specification of item No. 7.6 (I) shall be followed.

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

**7.17.(B) Coursed rubble masonry with stone of approved quality in foundation and plinth in cement mortar 1:5 (1 cement : 5 coarse sand) etc. complete.**

### 1.0. Materials & Workmanship

The relevant specifications of item No. 1.17 (A) shall be followed except that the proportion of cement mortar shall be C.M. 1:4 (1 cement : 5 coarse sand)

### 2.0. Mode of measurement & payment

**2.1.** The relevant specification of item No. 7.17 (A) shall be followed.

**2.2.** the rate shall be for a unit of one cubic metre.

**7.17 (C) Coursed rubble masonry with stone of approved quality in foundation and plinth in C.M. 1:4 (1 cement : 4 coarse sand) etc., complete)**

### 1.0. Materials & workmanship

The relevant specifications of item No. 7.17 (A) shall be followed except that the proportion of mortar shall be C.M. 1:4 (1 cement : 4 coarse sand)

### 2.0. Mode of measurements & payment

**2.1.** The relevant specifications of item No. 7.17 (A) shall be followed.

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

**7.17(D) Coarsed rubble masonry with stone of approved quality in foundation and plinth in c.m. 1:3 (1 cement : 3 coarse sand) etc. complete.**

**1.0. Materials and Workmanship**

1.1. The relevant specification of item No. 7.17 (A) shall be followed except that the proportion of mortar shall be C.M. : 3 (1 cement : 3 coarse sand)

**2.0. Mode of measurement & payment**

2.1. The relevant specification of item No. 7.17 (A) shall be followed.

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

**7.19(A) Coarsed rubble masonry with stone of approved quality for structure above plinth level up to floor two level in C.M. 1:6 (1 cement : 6 coarse sand) etc. complete.**

**1.0. Materials & Workmanship**

1.1. The relevant specification of item No. 7.17 (A) shall be followed except that the coarsed rubble masonry work shall be carried out for superstructure above plinth level upto floor two level.

1.2. Single or double scaffolding may be used. The scaffolding shall be strong and sound. In case single scaffolding is used, the holes shall be carefully made good as directed.

**2.0 Mode of measurement & payment**

2.1. The relevant specifications of item No. 7.17 (A) shall be followed.

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

**7.75. Precast concrete block masonry (including quoin block, jamb blocks, closer etc.) with solid concrete blocks of approved size made of cement concrete 1:3:6 Mix. (1 cement : 3 coarse sand - 6 graded stone aggregate of 20 mm. and down gauge) in foundation and plinth in cement mortar 1:6.**

**1.0. Materials**

(a) Aggregate shall conform to M-12. (b) Sand shall conform to M-6. (c) Cement shall conform to M-3.

1.1. The solid cement concrete blocks shall be precast with concrete of 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate)

1.2. A block shall be deemed to be solid if the solid materials is not less than 75% of the total volume of the blocks calculated from overall dimensions.

1.3. The concrete mix used for block shall be one of the following :

1.4. The actual size of the block shall be one of the following :

Size : A. 39 x 30 x 19 cms. Size-B 39 x 20 x 19 cms. Size-C 39 x 10 x 19 cms.

The size other than those specified above may be used with the approval of Engineer-in-charge.

1.5. The blocks may be either machine made or hand made. The concrete mix, the mixing of concrete the manufacture of blocks, curing and drying shall be in accordance with para-6 to 10 under I.S. : 2185-1967.

1.6. Faces of blocks shall be flat and rectangular. Surface finish shall be rendered smooth or plastered with cement mortar 1:3 coarse sand)

1.7. The average compressive strength of eight blocks when determined in the manner described in I.S. : 2185 -1967 shall not be less than 50 Kg/Sq. Cm. of gross area. The strength of lowest individual block shall not be less than 75 percent of average compressive strength of eight blocks.

1.8. Concrete blocks shall be stored and stacked properly in such a way as to avoid any contact with moisture at site. They shall be stock plied on planks or other supports free from contact with ground and covered to protect against wetting. Cement mortar of proportion 1:6 shall conform to M-11.

**2.0. Workmanship**

2.1. The blocks need not wetted before of during laying in the walls. In case climatic conditions so required, the top and the sides of block may only be slightly moistures so as to prevent absorption of water from the mortar and ensure the development of required bond with mortar.

2.2. Operations of laying precast cement concrete block masonry shall be carried out in accordance with instructions detailed in I.S. : 6042 -1952. The mortar shall not be spread so much ahead of the actual laying of the units that it tends to stiffen and loose its plasticity, thereby resulting in poor bond. For most of the work, the joints, both horizontal and vertical shall be 10 mm. thick except in the case of extended joint, construction, the mortar joints shall be struck off flush with wall surface and when the mortar has stated stiffening, it shall be compressed with rounded or U-shaped tool. The mortar shall be pressed against the units with a jointing tool after the mortar has stiffened in effect intimate contact between the mortar and the masonry unit and obtained a weather tight joint.

**2.3. Quoins and closures :**

Special quoins blocks (with a return face equal to half the length of normal face) shall be cast for all building blocks and slabs for external work. Proper half closures shall be cast and not cut from full size blocks. The returned ends of blocks for door windows reveals and quoins shall be finished with a fair face in the mould.

**2.4.** Only double scaffolding shall be used. The scaffolding be strong and sound. No holes in the masonry for supporting shall be allowed.

**2.5. Curing :** The curing of concrete block masonry shall be carried out for 7 days.

**3.0. Mode of measurements & payment**

**3.1.** The relevant specifications of item No. 7.6 (I) shall be followed.

**3.2.** The work of concrete block masonry in foundation and plinth shall be measured under this item.

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

**7.82 (A) Precast concrete block masonry in partition walls 10 cms. thick with solid block of approved size ( including quoins, blocks, jamb blocks closer etc) made of C.C.1 :3 :6 (1 cement : 3 coarse sand : 6 graded stone aggregates 20 mm. and down gauge) in C.M. 1:4.**

**1.0. Materials :**

**1.1.** The relevant specification of item No. 7.75 shall be followed except that the precast concrete blocks shall be of size suitable for 10 cms. size partition wall i.e. size. c, and the proportions of cement mortar shall be in cement mortar 1:4 (1 cement : 4 coarse sand).

**2.0. Workmanship**

The relevant specifications of item No. 7.75 shall be followed except that the work shall be for precast concrete block partition walls of 10 cms. thickness.

**3.0. Mode of measurement & payment**

**3.1.** The relevant specifications of item No. 7.75 shall be followed.

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

**7.0.0.1. White stone masonry block in coarse in superstructure with stone of approved quality in lime mortar 1:1.5 (1 Lime putty 1:5 fine sand) including raking out joints etc. complete.**

**1.0. Materials :**

**1.1.** The stone or bela shall be white hard sand stone or block. The stone shall be sound hard rough and durable. It shall be free from skin. The thickness of bela or block shall not be less than 15 cms. or as directed. The mortar used shall consist. One part of lime putty and 1.50 parts of fine sand. Lime mortar shall conform to M-10.

**2.0. Workmanship****2.1. Dressing of stone :**

Stone shall be chiselled on all the sides so that all six sides shall be in a rectangular shape and all the stones shall be so dressed that the bushing of the exposed face shall not project nor be depressed for the general wall surfaces. The size of bela or block shall be as per thickness of the wall to be constructed or as directed.

**2.3. Laying :**

All the stone shall be sufficiently wetted before laying to prevent absorption of water from mortar. All connected walls in a structure shall normally be raised up uniformly and regularly. The vertical joint shall not be allowed and also it shall not be more than 12 mm. in thickness.

**2.3.** Proper bonding shall be made by laying bela or block side by side each other with lime mortar on bed as well as in between two bela or block vertically.

**2.4. Bond stones :**

Bond stones or through stones running right across the thickness of the wall shall be provided in walls upto 450 mm. thick. In thicker walls two bela or blocks or laying each other by at least 150 mm. each other shall be provided across the thickness of the wall to bond stone. Such bond stone shall be at least one for every 1.0 sq. mt. area of the wall surface.

**2.5. Joints :**

All the joints shall be completely filled up with mortar and their thickness shall not exceed by 12 mm. When plastering or pointing is not required to be done, the joints shall be struck flush and finished, simultaneously while laying the stone. Otherwise the joints shall be raked to a minimum depth of 20 mm. during process of laying while mortar is still green.

**2.6. Scaffolding :**

Single or double scaffolding shall be used. It shall be strong and sound. The holes left in masonry for supporting shall be made good before plastering.

**2.7. Curing :**

Green work shall be cured for a period of 7 days continuously.

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

**3.1.** The work shall be measured on the basis of finished dimensions. No deduction shall be made nor extra payment shall be made for the following :

(a) Ends of joint, beams, posts, girders, rafters, purlins, corbels etc., each upto 500 sq.cms. in section (B) Opening each upto 0.10 Sq.m. (c) Small plates and bed plates, bearing of chhajas and like upto 10 cms. depth (bearing or floor and roof shall be deducted from masonry). (d) Drain holes and recesses for cement concrete blocks to embedded hold fasts of one cubic metre.

**7.0.0.2. White stone bela masonry work in partition walls upto 15 cms. thickness in C.M. 1 : 4 (1 cement : 4 coarse sand.)**

#### **1.0. Materials and workmanship**

The relevant specifications of item No. 7.0.0.1 as above shall be followed except that the proportion of mortar shall be in C.M. 1:4 (1 cement : 4 coarse sand.)

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

**2.1.** The relevant specifications of item No. 7.6 (I) shall be followed.

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

**7.0.0.3. White stone bela masonry block in coarse in superstructure with stone of approved quality in C.M. 1:5 (1 cement : 5 coarse sand) including raking the joints etc. complete.**

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

The relevant specifications of item No. 7.0.0.1. as above, except that the proportion of cement mortar shall be in C.M. 1:5 ( 1 cement : 5 coarse sand)

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

**2.1.** The relevant specifications of item No. 7.6 (I) shall be followed.

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

**7.0.0.4. White stone bela masonry block in coarse in superstructure with stone of approved quality in C.M. 1:6 (1 cement : 6 coarse sand) including raking the joints etc. complete.**

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

The relevant specifications of item No. 7.0.0.1 shall be followed except that the proportion of cement mortar shall be 1:6 (1 cement : 6 coarse sand)

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

**2.1.** The relevant specifications of item No. 7.6. (I) shall be followed.

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

## SECTION -9

### Centering & Form Work

- 9.1.(A)** Providing form work of ordinary timber planking so as to give a rough finish including centering strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced concrete and plain concrete work in foundation, footings, bases of columns, and mass concrete.

#### **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 so 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 expire 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 upto 4.5 m.....	7 days
(ii) Spanning over 4.5 m.....	14 days
(d) Removal of props t beams and Arches :	
(i) Spanning upto 6 m.....	14 days
(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 concreting 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 withstand 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 upto 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.

**3.0.0. Mode of Measurements & Payment**

**3.1.** Form work shall be measured as the area in square metres 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. metre.

**9.1.(A) (i) Extra for providing form work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc., height of propping and centering below supporting floor to ceiling is between 4 to 5 m. and removal of the same for in situ reinforce or plain concrete work in foundations, footings, bases of columns etc. and mass concrete.**

**10. Materials workmanship**

**1.1.** The relevant specification of item No. 9.1. (A) shall be followed except they the height of propping and centering below supporting floor to ceiling exceeding 4 m. but not exceeding 5 m.

**2.0. Mode of measurements and payment**

**2.1.** The payment shall be made extra over and above the payment made up to 4 m. height. The relevant specifications of item No. 9.1. (A) shall be followed. The rate shall be for a unit of one sq. metre.

**9.1.(B)(i) Providing form work of ordinary timber planking so as to give a rough finish including centering, below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in flat surface such as soffits of slabs, landing and the like floors etc. upto 200 mm. in thickness.**

**1.0. Materials & Workmanship**

**1.1.** Relevant specifications of item 9.1. (A) shall be followed except that work is to be carried out for flat surfaces such as soffits of slabs, landings, and the like for floors etc. upto 200 mm. in thickness.

**2.0. Mode of measurement and payment**

**2.1.** The relevant specifications of item No. 9.1 (A) shall be followed.

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

**9.1.(B)(ii) Providing form work of ordinary timber planking so as give a rough finish including centering shuttering, strutting and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in flat surface such as soffits of slabs, landings, and the like floors etc. above 200 mm. in thickness.**

**1.0. Materials and Workmanship**

**1.1.** Relevant specifications of item No. 9.1 (A) shall be followed except that the work is to be carried out for flat surfaces such as soffits of slabs, landings, and the like for floors etc. upto 200 mm. in thickness.

**2.0. Mode of measurement and payment**

2.1. The relevant specifications of item No. 9.1 (A) shall be followed.

2.2. The rate shall be for a unit of sq. metre.

9.1.(C) Providing form work of ordinary timber plankings 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 excluding 4 m. and removal of the same for in situ reinforced concrete and plain concrete work in vertical surface such as walls (any thickness) partitions.

**1.0. Materials and Workmanship**

The relevant specifications of item 9.1 (A) shall be followed except that the form work shall be carried out for vertical surfaces such as walls of any thickness, partitions etc.

**2.0. Mode of measurement and payment**

2.1. The relevant specifications of item No.9.1 (A) shall be followed.

2.2. The rate shall be for a unit of sq. metre.

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No.9.1.(A) shall be followed.

1.2. The rate shall be for a unit on one sq. metre.

9.1.(G)(i) Providing form work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work columns, pillars, ports, and struts, square rectangular, polygonal in plan.

**1.0. Materials and Workmanship**

1.1. The relevant specification of item No. 9.1. (A) shall be followed except that the work is for columns, pillars, posts and struts, square, rectangular, polygonal in plan.

**2.0. Mode of measurement and payment**

2.1. The relevant specification of item No. 9.1. (A) shall be followed.

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

9.1.(H) (I) Providing form work of ordinary 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 4 m. and removal of the same for in situ reinforced and plain concrete work in side and soffits of beam haunchings, cantilevers, girders, bressumers, and lintels not exceeding 1 m. depth.

**1.0. Materials and Workmanship**

1.1. The relevant specification of item No. 9.1 (A) shall be followed except that the work is for sides and soffits of beams, haunching cantilevers, girders, bressumers and lintels not exceeding 1 M. in depth.

**2.0. Mode of measurement and payment**

2.1. The relevant specifications of item No. 9.1 (A) shall be followed.

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

9.1.(H)(2) Providing form work 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 4 m. and removal of the same for in situ reinforced and plain concrete work in sides and soffits of beams, haunchings, cantilevers, girders, bressumers and lintels exceeding 1 m. in depth.

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that the work is for side and soffits of beam haunchings, girders, bressumers and lintels, exceeding 1 m. in depth.

**2.0. Mode of measurement and payment**

2.1. The relevant specifications of item No. 9.1.(A) shall be followed except that the work is for side and soffits of beams haunching cantilevers, girder, bressumers and lintels, exceeding 1 m. in depth.

2.2. The rate shall for a unit of one sq. metre.

9.1.(i) Providing from work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor toe ceiling not exceeding 4 m. and removal of the same for situ reinforced and plain concrete work in edges of slabs and breaks in floor and walls.



**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1. (A) shall be followed except that the work is for edges of breaks in floors and walls.

**2.0. Mode of measurements and payment**

2.1. The length and breadth shall be measured nearest to one Cm.

2.2. The rate shall be for a unit of one Sq. metre.

**9.1.(K) Providing form work 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 4 m. and removal of the same in situ reinforced and plain concrete in small surface such as cantilevers ends, brackets and ends of the steps., caps and bases to pilasters and columns and the like.**

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that work is for small as cantilever ends, brackets and ends of steps, caps and bases to pilasters and columns and the like.

**2.0. Mode of measurement and payment**

2.1. The relevant specification of item No. 9.1.(A) shall be followed.

2.2. The rate shall be unit of one sq. metre.

**9.1.(I) Providing form work 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 4 m. and removal of the same for in situ reinforced and plain concrete in chullah hoods, weather sheds, chhajas, corbels etc. including edges.**

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1 (A) shall be followed except that the work is for chullah hoods, weather-sheds, chhajas, corbels, etc. including edges of the same.

**2.0. Mode of measurements and payment**

2.1. The relevant specification of item No. 9.1. (A) shall be followed.

2.2. The rate shall be for a unit of one square metre.

**9.1.(M) Providing from work of ordinary timber planking so as to give a rough finish including centering, shuttering and propping etc. height of propping and centering below supporting floor to ceiling not exceeding 4 m. and removal of the same for in situ reinforced and plain concrete work in staircase with slopping or stepped soffits including risers and stringers excluding landing.**

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1.(A) shall be followed except that the work is for staircases, with slopping or stepped including risers and stringers excluding landing.

**2.0. Mode of measurements and payment**

2.1. The relevant specifications of item No. 9.1. (A) shall be followed.

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

**9.1.(Q) Providing form work 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 4 m. and removal of the same for in situ reinforced and plain concrete work in vertical fins and vertical sun-breakers.**

**1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 9.1. (A) shall be followed except that the work is for vertical fins and vertical sun breakers.

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

**9.7. Extra for providing form work with sweating of steel sheets so as to give a fair finish in :**

- (A) Foundation, footings, base of columns etc. mass concrete.
- (B) Flat surfaces such as soffits, of slab landing and the like.
- (i) Floors etc. upto 200 mm. in thickness.
- (ii) Floors etc. above 200 mm. in thickness.
- (C) Vertical surfaces such as walls (Any thickness) partitions.
- (D) Columns, pillars posts and struts.

1. Square, rectangular, bressumers, and lintels not exceeding 1 mm. depth.
2. Sides and soffits and beams, beam haunchings, cantilevers, girders, breassumers and lintels exceeding 1 mm. in depth.
- (I) Edges of slabs, and breaks in floors and walls.
- (K) Small surfaces such as cantilever ends, brackets, and ends of steps, caps and bases to pillars and columns including edges.
- (L) Chollar woods, weather sheds, chhajjas, coroeds etc. and the like.
- (M) Stair cases sloping or stepped soffits, including risers, skidders excluding landing.
- (Q) Vertical fine and vertical sun breakers.

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

1.1. The relevant specification of item No. 9.1.(A) to (Q) shall be followed except that the extra rate shall be paid for using sheathing of steel sheets, and plates of steel or plywood instead of ordinary timber plank, to obtain a desired smooth exposed finish of surface. The surface shall be presentable without further treatment.

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

2.1. The measurement of form work shall be taken for the work done with steel sheathing, extra over and above the rate of form work of respective item of from work done. The relevant specification of respective item No. 9.1. (A) to (Q) shall be followed.

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

## SECTION 10

### Wood Work, Doors & Windows

**10.1.(A) Providing wood work in frames of doors, windows, clerestory windows and other similar work, wright, framed and fixed in position, Indian Teak wood.**

**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 are 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 from 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. metre. 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 of 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 upto 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.

**10.4.(A) Providing work in trusses, purlins, falters, posts, post plates, wall plates, and like wrought, framed, hoisted and fixed in position, Indian teak wood.**

**1.0. Materials**

The teak wood shall conform M-29.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 10.1.(A) shall be followed except that wood work shall be carried out in trusses, purlins, falters, posts, plates, wall plates and like wrought framed.

**2.2.** The work shall be carried out as per detailed drawings supplied by the Department as directed.

**2.3.** The length of the each member shall be in one piece or as directed.

**3.0. Mode of measurement and payment**

The length, breadth and depth shall be measured nearest to 1 cm. of unfinished member. The rate shall be for a unit of 10 cubic Decimeter.

**10.5. (A) Providing wood work in frames of false ceiling partition etc. swan and put up in position, Indian teak wood.**

**1.0. Materials**

The teak wood shall conform to M-29.

**2.0. Workmanship**

The relevant specification of item No. 10.1. (A) shall be followed except that the wood work shall be for false, ceiling, partitions, etc. swan and put in position.

**3.0. Mode of measurement and payment**

**3.1.** The relevant specifications of item No. 10.1. (A) shall be followed.

**3.2.** The rate shall be for a unit of Ten cubic Decimeter.

**10.12.(A)(i) Providing and fixing 35 mm. thick fully panelled shutters for doors, windows and clerestory windows including anodised aluminum butt hinges with necessary screws. Indian Teak Wood.**

**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.** Panelled 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.** Finishings 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. metre.

**19.12. (A)(II) Providing and fixing 35 mm. thick fully shutters for doors, windows and clear story windows including anodised aluminum butt hinges with necessary screws, Indian teak wood.**

**1.0. Materials**

Teak wood shall conform to M-29 Glass shall conform to M-38. Anodised aluminum butt hinges shall conform to M-43.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 10.12 (A) I shall be followed except that the 35 mm. thick shutters full glazed for doors, windows and clear story windows including anodised aluminum butt hinges with necessary screws.

**2.2. Glazing :**

**2.2.1.** The glass panels shall be embedded in putty and secured to the rebate by wooden beads, or moulding shape and size as approved with counter sunk screws of suitable size.

**2.2.2.** The glass panels shall be properly cut to fit the rebates of the frames and sashes fully with a slight minus margin of about 1.5 mm. on all sides. Before glazing, the frame shall be primed and prepared for painting so that wood may not draw oil out of putty. The rebate shall be putted to an extent to provide bedding all round the glass.

**2.2.3.** The glass shall then be bedded in putty and fitted to frames with wooden heads or moulding as directed and secured with counter sunk screws. The screws shall be spaced not more than 100 mm. from each corner and not more than 200 mm. apart.

**2.2.4.** The size of the rebate in the frame and size and shape of beads of moulding shall be as per detailed drawings or as directed. The beads or mouldings shall have mitred corners.

**3.0. Mode of measurement and payment**

**3.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

**10.12(A)(III) Providing and fixing 35 mm. thick partly panelled and party glazed shutters, or doors, windows, including anodized aluminum butt hinges with necessary screws, Indian teak wood.**

**1.0. Materials**

Teak wood shall conform to M-29. Glass shall conform to M-38. Anodised aluminum butt hinges shall conform to M-43.

**2.0. Workmanship**

The relevant specifications of item No. 10.12 (A) (II) shall be followed except that the 35 mm. thick shutter shall be partly panelled and partly glazed for doors, windows, clear story windows etc. as per drawings.

**3.0. Mode of measurement and payment**

**3.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

**10.13(A)(I) Providing and fixing 35 mm. thick full panelled, shutters for doors, windows and clear story windows including black enamelled M.S. Butt, hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No. 10.12 (A) (II) shall be followed except that the hinges shall be of black enamelled M.S. Butt hinges. The hinges, bolts and other items of iron mongery with moving parts shall be properly oiled by the contractor before handing over the building.

**2.0. Mode of measurement and payment**

**2.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

**10.13(A)(II) Providing and fixing 35 mm. thick full glazed shutters for doors, windows and clear story windows including black enamelled M.S. Butt, hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No. 10.12 (A) (II) shall be followed except that the hinges shall be of black enamelled M.S. Butt hinges. The hinges, bolts and other items of iron mongery with moving parts shall be properly oiled by the contractor before handing over the building.

**2.0. Mode of measurement and payment**

**2.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

**10.13(A)(III) Providing and fixing 35 mm. thick partly panelled and partly glassed shutters for doors, windows, and clearstory windows including black enamelled M.S. Butt hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials & Workmanship**

The relevant specification of item No. 10.12 (A) (III) shall be followed except that the hinges shall be of black enamelled M.S. butt hinges, bolts and other items of ironmongery with moving parts shall be properly oiled by the contractor before handing over the building.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 10.12. (A) (I) shall be followed.

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

**10.15.(A)(I) Providing and fixing 25 mm. thick panelled, shutters for cup-boards etc. including anodised aluminum butt hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials**

First class Indian teak wood for shutters shall conform to M-29. Glass shall conform to M-38. Anodised aluminum butt hinges shall conform to M.43.

**2.0. Workmanship**

2.1. The relevant specification of item No. 10.12. (A) (I) shall apply except that the thickness of shutter shall be 25 mm. for cup-boards.

**3.0. Mode of measurement & payment**

3.1. The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

**10.15.(A)(II) Providing and fixing 25 mm. thick fully glazed shutters for cup-boards etc. including anodised aluminum butt hinges with necessary screws, Indian teak wood.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 10.12. (A) (I) and 10.12 (A) (II) shall be followed except that the thickness of shutters shall be 25 mm. thick and partly panelled and partly glazed shutters as per drawings for cup-boards.

**2.0. Mode of measurements and payment**

2.1. The relevant specifications of item No. 10.12 (A)(I) shall be followed.

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

**10.15.(A)(III) Providing and fixing 25 mm. thick partly panelled and partly shutters for cup-boards etc. including anodised aluminum butt hinges with necessary screws, Indian teak wood.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 10.12. (A) (I) and 10.12 (A) (II) shall be followed except that the thickness of shutters shall be 25 mm. thick and partly panelled and partly glazed shutters as per drawings for cup-boards.

**2.0. Mode of measurements and payment**

2.1. The relevant specifications of item No. 10.12 (A)(I) shall be followed.

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

**10.16.(A) (I) Providing and fixing 25 mm. thick fully panelled, shutters for cup-boards etc., including black enamelled M.S. butt hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials & workmanship**

1.1. The relevant specifications of item No. 10.12 (A) (I) shall apply except that the wood for shutters shall be Indian teak wood and black enamelled M.S. Butt hinges are to be used instead of anodised aluminum butt hinges and thickness of shutter shall be 25 mm.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 10.12. (A) (I) shall be followed.

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

**10.16.(A)(II) Providing and fixing 25 mm. thick fully glazed shutters for a cup-boards etc., including black enamelled M.S. butt hinges with necessary screws, Indian Teak Wood.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 10.15. (A) (I) shall be followed except that the fully glazed shutters of 25 mm. thickness shall be of India Teak Wood fixed in position with black enamelled butt hinges for cup-boards.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 10.12 (A) (I) shall followed.

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

**10.16. (A) (III) Providing and fixing 25 mm. thick partly panelled and partly glazed shutters for cupboards etc., including black enamelled M.S. butt hangs with necessary screws, Indian Teak Wood.**

**1.0. Materials**

The relevant specifications of item No. 10.15 (A) (I) & 10.15 (A) (II) shall be followed except that the shutters shall partly panelled and partly glazed of 25 mm. thickness of Indian Teak Wood fixed with black enamelled butt hinges for cup-boards.

**2.0. Mode of measurement & payment**

2.1. The relevant specifications of item No. 10.12 (A)-shall be followed.

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

- 10.23. Providing and fixing 35 mm. thick panelled glazed or panelled and glazed shutters for doors, windows, and clearstory windows including anodised aluminum butt hinges with necessary screws. Indian Teak Wood shutters with (A) Plywood, (B) Particle, (C) Hard Board, (D) Asbestos Shett panels.**

**1.0. Materials**

Indian teak wood for shutters shall conform to M-29. Glass shall conform to M-38.

- (A) Plywood shall conform to M-37.
- (B) Particle board shall conform to M-40. Anodised aluminum butt hinges shall conform to M-43.
- (C) Hard board shall of best quality and shall be as approved by Engineer-in charge.
- (D) A.C. sheet shall conform to M-24.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 10.12 (A) (I) shall apply to this item except that the work is shuttered with (A) plywood (B) particle board (C) hard board panels (D) A.C. sheets panels as specified in item.

**2.2.** The shutter shall be prepared by fittings styles and rails (top, bottom, lock and frieze) as for panelled leaves with simple chamfer on edge only. The styles and rails shall be grooved with just sufficient width for receiving panels and plain panels of specified type panels shall be fitted into the grooves.

**3.0. Mode of measurements & payment**

**3.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

- 10.24. Providing and fixing 35 mm. thick panelled, glazed or panelled and glazed shutters for doors, windows and clearstory windows including black enamelled M.S., butt hinges with necessary screws. Indian Teak Wood shutters with (A) Plywood (B) Particle board (C) Hard Board (D) Asbestos panels.**

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No.10.23 shall be followed except that the hinges shall be of back enamelled M.S. Butt hinges instead of anodised aluminum butt hinges and shutter with (A) Plywood (B) Particle board (D) Hard Board (D) Asbestos sheet panels as specified in item.

**2.0. Mode of measurement & payment**

**2.1.** The relevant specifications of item No. 10.12 (A) (I) shall be followed.

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

- 10.30. Providing & fixing flush door shutters, solid core construction with frame of 1st class hard wood with cross band and face veneer or plywood face panels including anodised aluminum butt hinges with necessary screws (B) Non-decorative type and block board core. (2) 35 mm. thick.**

**1.0. Materials**

Flush door shall conform to M-30. Plywood shall conform to M-37. Anodised aluminum butt hinges shall conform to M-43.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 10.23. shall be followed except that the shutters be non decorative type and block board core with face veneer or plywood with 35 mm. thickness.

**2.2.** Ready made shutters shall be of correct size and shall fit into the door or other openings without excessive scraping of edges. Adding of battens etc., to make up to the size shall not be allowed.

**3.0. Mode of measurement & payment**

**3.1.** The relevant specification of item No. 10.12 A (I) shall be followed.

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

- 10.37. Extra for using bright finished M.S. Piano hinges instead of anodised aluminum butt hinges in flush door shutter (A) Nickel Plated Piano hinges.**

**1.0. Materials and workmanship**

**1.1.** The relevant specification of item No. 10.30 shall be followed except that the nickel plated piano hinges shall be provided and fixed. It shall conform to the latest Indian Standards and shall be got approved by the Engineer-in-charge.

**2.0. Mode of measurement & payment**

**2.1.** The extra payment shall be made on sq. M. basis of door over and above item No. 10.30 for providing finish M.S. planed hinges instead of anodised aluminum butt hangs.

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

**10.39. Extra for providing vision panel not exceeding 0.1 sq. m. in all types of flush doors. (A) Rectangular square.**

**1.0. Materials and workmanship**

1.1. The relevant specification of item No. 10.30 shall be followed except that the vision panel not exceeding 0.1 sq. m. shall be provided.

1.2. The glass panels shall conform to M-38 and this item is extra work of providing vision panel rectangular or square not exceeding 0.1 sq. in all types of flush doors.

**2.0. Mode of measurements & payment**

2.1. The payment shall be made over of item No. 10.30 for this extra work on shutter in which visions panels are provided.

2.2. The rate shall be for a unit of one sq. metre of door area.

**10.51. Providing and fixing 30 mm. thick wire gauze shutters using galvanised M.S.Wire of I.S. gauze designation 85-G with wire of 0.56 mm. dia butt hinges with necessary screws : Indian Teak Wood.**

**1.0. Materials**

Wire gauze all shall conform to M-36. The teak shall conform to M-29. Anodised aluminum butt hinges shall conform to M-43.

**2.0. Workmanship**

2.1. Specification for item No. 10.12 A(l) shall be adopted for shutter and fixtures and fastenings except that 30. mm. thick wire gauze shutter shall be provided.

**2.2. Wire gauze shuttering :**

2.2.1. The finished sizes of the wooden components like styles, rails, mountings, shall be as per the panelled doors. Each leaf shall have 2 panels of wire gauze as per drawings or as directed.

2.2.2. The styles, rails etc. shall be rebated 12 mm. along the side where they receive the gauze. The galvanised iron webbing of 0.56 mm. dia mesh shall be used unless otherwise specified. The webbing shall be at 90 to 12 mm. along both sides of the rebate and fixed securely to the styles and rails and fillets of the size 10 mm x 10 mm, shall be securely and neatly fixed with small screws, spaced about 7.5. cm. centers around the rebate for each panel of webbing. After the fillets are pressed well into the angle to hole the gauze in two faces, the exposed edge of fillets shall be neatly rounded. The gauze shall be tightly stretched during fixing. The space between the fillet and the rebate where the webbing is bent shall be neatly finished with putty, so that cut end of webbing may not be visible. Each shutter shall be fitted with a pair of anodised aluminum butt hinges with necessary iron screws.

**3.0. Mode of measurement & payment**

3.1. The relevant specifications of item No. 10.12 shall be followed.

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

**10.53. Providing and fixing 30 mm. thick wire gauze shutters using galvanised M.S. wire of wire gauze designation 85 G with wire of 0.56 mm. dia. for doors, windows, and clerestory windows including bright finished or/and black enamelled M.S.butt hinges with necessary screws. Mango wood or equivalent quality.**

**1.0. Materials & workmanship**

The relevant specification of item No. 10.51 shall be followed except that the hinges to be used shall be bright finish or/and black enamelled M.S. butt hinges with screws and the wood shall be used of Mango wood or equivalent quality of non teak wood.

**2.0. Mode of measurement and payment**

2.1. The relevant specification of item No.10.12 shall be followed.

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

**10.54. Extra for providing and fixing galvanised M.S. gauze of I.S. gauge designation 140 G. to doors windows and clerestory windows with wire of dia 0.71 mm. instead of I.S. gauge designation 85 G. with wire of dia. 0.56 mm.**

**1.0. Materials & workmanship**

1.1. The relevant specification for item no. 10.51 & 10.53 shall be followed for this item except that the diameter of wire shall be 0.71 mm. of I.S. gauge designation 140 G. instead of 0.56 mm. diameter I.S. gauge designation 85 G.

**2.0. Mode of measurements and payment**

2.1. The payment shall be made extra over and above the payment for galvanised M.S. wire gauge.

2.2. The rate I.S. gauge designation 85 G. shall of one sq. mt of size of doors and windows shutters.



- 10.74. Providing and fixing 12 mm. thick and 100 mm. wide pellet of flat pressed 3 layer veneered particle board solid core with 25 mm. diameter aluminum curtain rod brackets including fixing with 25 mm. x 3 m. M.S. flat 10 long and plug etc. comp.**

**1.0. Materials**

(1) 3 layers veneered particle board solid core shall conform to M-40 25. mm. diameter aluminum curtain rod and 25 mm. x 3 mm. x 10 cms. long M.S. flat and plugs shall of best approved quality as directed.

**2.0. Workmanship**

The work shall be done as per drawing and description given in the item of work. The wooden planks shall be planed smooth and even on the exposed surface.

The pellet shall be fixed to level by means of 10 cms. long x 25 mm. x 3 mm. M.S. flat brackets lent in the form of angle and wooden plug fixed in the walls using wood screws. For pelmet upto 1.5. metre long two such brackets shall be used and additional bracket provided for longer pelmet at the rate of one per metre length extra. The curtain rods be fixed by suitable brackets at the ends to the pelmet as directed.

**3.0. Mode of measurement and payment**

**3.1.** Pelmet shall be measured in running metres along the sides and face.

**3.2.** The rate shall be for a unit of one running metre.

- 10.84. Providing and fixing 40 mm. panelled, glazed or panelled and glazed partitions fixed to frames with iron screws etc., complete with India teak wood (Frames to be paid separately)**

**1.0. Materials**

Indian Teak wood shall conform to M-29. Glass shall conform to M-38. Iron screws on shall of best approved quality. Plywood, asbestos shall conform to relevant specification of materials.

**2.0. Workmanship**

The work shall be done as per detailed drawing or as directed. The wooden frames shall be of sizes as indicated in the drawing and description of item. They shall be planed and finished smooth and even. The vertical styles and rails shall be framed by tenon and mortise joints.

The panels which may be of planks, asbestos, plywood, glass or any other materials specified shall be fixed in the grooves made in styles and rails or by means of rebate and beading fixed by suitable screws. When glazing is used as panels the glass shall be fixed by using putty in addition to beading, the putty shall be used before applying material.

**3.0. Mode of measurement and payment**

Partitions shall be measured in square metres of the net area of the filler materials provided. The rate shall be for a unit of one sq. metre.

- 10.85. Providing and fixing decorative plywood 4 mm. thick in portions including fixing to frames with screws etc., complete with 50 mm. x 12 mm. teak wood beading (Frames to be paid separately)**

**1.0. Materials**

4 mm. thick decorative plywood shall be of best approved quality. Teakwood beading and screws shall of best approved quality as directed.

**2.0. Workmanship**

The relevant specifications shall be same as per that of item No. 10.84 expect that partitions shall be with 4 mm. thick decorative plywood and with teakwood beading.

**3.0. Mode of measurements and payment**

The specifications shall be same as that of item No. 10.84.

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

- 10.86. Providing an fixing plain Asbestos cement sheet 6 mm. thick in partition including fixing to frames with screws etc., complete with 50 mm. x 12 mm. deodar wood beading (Frames to be paid separate)**

**1.0. Materials**

Plain A.C. Sheets shall conform to M-24. Deodar wood beading shall conform to M-29. A.

**2.0. Workmanship**

The relevant specification of item No. 10.84 shall be followed same except that plain asbestos cement sheet 6 mm. thick shall be used in partition and Depdar wood beading of size 50 x 12 mm. size shall be used.

**3.0. Mode of measurement and payment**

**3.1.** The relevant specifications of item No. 10.84 shall be followed except that the rate excludes cost of frame work.

**3.2.** The rate shall be for a unit of one square metre.

- 10.88. Providing and fixing in partition 4 mm. thick medium hard board approved quality including fixing to frames with screws etc., complete with 50 x 12 mm. Teak wood beading (Frame to paid separated)**

**1.0. Materials**

The hard board shall be 4 mm. thick and of best quality and made as approved. Teak wood beading shall conform to M-29.

**2.0. Workmanship**

The relevant specifications of item No. 18.84 shall be followed except that the hard board of 4 mm. thickness shall be used in partition and teak wood beading 50 x 12 mm. size shall be used.

**3.0. Mode of measurements and payment**

**3.1.** The relevant specifications of item No. 10.84 shall be followed except that the rate excludes cost of frame work.

**3.2.** The rate shall be for a unit of one square metre.

- 10.96. 26 mm. thick wooden shelves supported on 40 x 40 x 6 mm. T or Iron brackets fixed at suitable distances not exceeding 75 cms. apart with Mango wood or equivalent quality.**

**1.0. Materials**

The mango wood shall conform to M-29-A. Structural steel shall conform to M-22.

**2.0. Workmanship**

The mango wood or equivalent quality non teak wood shelves shall be prepared from 25 mm. thick planks. The planks shall be planed smooth. The planks shall be used in single piece upto 30 cms. width. The shelves shall be fitted in position by fixing 40 x 40 x 6 mm. T or L Iron brackets. The spacing of brackets shall not be more than 75 cms. The 40 x 40 x 6 mm. T or L from brackets shall be fixed firmly in position by imbibing the same in concrete. The shelves shall be fixed as directed. The season teak wood buttons of size 35 x 12 mm. shall be fixed on open side as directed.

**3.0. Mode of measurements and payment**

**3.1.** The shelves shall be measured in Sq. meter. The length and breadth of shelves shall be measured net.

**3.2.** The rate is inclusive of button provided.

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

- 10.97. 40 mm. thick wood shelves supported on 40 x 40 x 6 mm. T or L Iron brackets fixed at suitable distance but not exceeding 75 cms. apart with mango wood or equivalent quality.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 10.96 shall be followed except that the thickness of shelves shall be 40 mm. Thick teak wood buttons shall be provided of 50 x 12 mm. on all open sides.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item NO. 10.96 shall be followed.

**2.2.** The rate shall be for a unit of one square metre.

- 10.99. Providing and fixing M.S. round or square bars with M.S. flats at required spacings in wooden frames of windows and clerestory windows.**

**1.0. Materials**

M.S. bars and flats shall conform m. 18 and M-22. respectively.

**2.0. Workmanship**

**2.1.** The M.S. bars shall be fabricated as shown in the drawing or as directed. It shall conform to I.S. 226-1975 and I.S. 96 and I.S. 1977-1975. The M.S. bars shall be fixed at the required spacing in mild steel flats, after drilling holes in the latter. The diameter and spacing of these bars shall be as mentioned in the drawing or as directed. The bars shall be passed through drill holes drilled into the mild steels flats, fixed in the recess in frames. The flats shall be fixed with iron screws.

**3.0. Mode of measurements & payment**

**3.1.** The rate shall be for the M.S. round or square bars with M.S. flats provided and fixed in position as per the specifications for the completed item.

**3.2.** The rate shall be for a unit of one Kg.

- 10.100.(A) Providing and fixing M.S. Grills of required pattern to wooden frames of windows etc., with M.s. flats at required spacing and frame around, square, or round bars with round headed bolts and nuts or by screws : plain Grill.**

**1.0. Materials**

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.

**10.100.(B) Providing and fixing M.S.Grill of required pattern to wooden frames of windows etc. with M.S. plates, at required spacing and frame around, square or round bars with round headed bolts and nuts or by screws and with ornamental grill.****1.0. Materials & Workmanship**

- 1.1. The relevant specification of item no. 10.100 (A) shall be followed except that the work is for of ornamental grill.

**2.0. Mode of measurements & payment**

- 2.1. The relevant specifications of item No. 10.100 (A) shall be followed.
- 2.2. The rate shall be for a unit of one Kg.

**10.102. Providing and fixing hard drawn steel wire fabric 75 x 25 mm. mesh of weight not less than 7.75 kg. per sq.M to window frames etc, including 60 x 20 mm. beading of teak wood.****1.0. Materials**

Hard drawn steel wire of 75 x 25 mm. mesh shall conform to M-34. Teak wood beading shall conform to M-29.

- 2.0. The steel wire fabric 75 x 25 mm. mesh of weight of not less than 7.75 kg per Sq.M. to windows frames etc. shall be fabricated as per detail drawings. The wire fabric shall be fixed to windows frame by teak wood beading of 60 x 20 mm. size be by means of screws.

**3.0 Mode of measurements & payment**

- 3.1. The wire mesh (Hard drawn) shall be measured net clear opening of frame of windows in which mesh is fitted. Nothing shall be paid extra for fixing mesh in groove below teak woods beading.
- 3.2. The rate shall be for a unit of one sq. metre.

**10.103. Providing and fixing fly proof galvanised M.S. Wire gauge of I.S. Gauge designation 85 G. with wire of dia. 0.56 mm. to windows and clerestory windows including 60 x 20 mm. beading of Indian Teak Wood.****1.0. Materials**

The fly proof galvanised M.S. wire gauge shall conform to M-36. Teak wood beading shall conform to M-29.

**2.0. Workmanship**

The relevant specifications of item No. 10.102 shall be followed except that fly proof galvanised M.S. wire gauge of I.S. gauge designation 85-G with wire of 0.56 mm. shall be provided.

**3.0. Mode of measurement & payment**

- 3.1. The relevant specifications of item No. 10.102 shall be followed.
- 3.2. The rate shall be for a unit of one square metre.

**10.120. Providing and fixing first class Indian teak wood, 75 x 60 mm. moulded hand rails in straight lengths completed.****1.0. Materials**

First class Indian teak wood shall conform to M-29.

**2.0. Workmanship**

The teak wood hand rail shall be of size 75 x 60 mm. The hand rail shall be prepared from first class Indian teak wood. The hand rail shall be moulded as per detail drawings. The hand rail shall be fixed in straight length as per detail drawings with screws. The relevant specifications of item No. 10.4 shall be followed except that the teak wood work shall be for a railing of specified size.

**3.0. Mode of measurements & payment**

3.1. The hand rail shall be measured in running metre.

3.2. The rate shall be for a unit of one running metre.

**10.0.0.(I) Providing and fixing glazed louvered Glass windows and ventilators with teak wood frame 10 x 75 mm. size including 3 coats of oil painting to wood work etc. complete.**

**1.0. Materials**

Indian teak wood shall conform to M-29. Glass shall conform to M-38.

**2.0. Workmanship**

The relevant specifications of item No. 10.1 (A) shall be followed for frame work except that the frame work of 10 x 7 cms. size of required size ventilators shall be provided with glazed glass loubers. The glass louvers shall be provided as directed. In the groove of 1.25 cms. depth made in frames, the thickness of glass shall be 5 mm. and glass shall be glass of best quality. The ventilation blades shall slope done towards the outside at an angle of 45°.

**3.0. Mode of measurements and payment**

3.1. The area of opening within the frame in which louvers are fixed shall be measured in sq. metres.

3.2. The rate included painting 3 coats to wood work with ready mix paint.

3.3. The rate shall be for a unit of one square metre.

**10.0.0.(II) Providing & fixing with wooden louvers plank 12 mm. thick windows and ventilators with teak wood frame 10 x 7 cms. size including 3 coats of oil painting to wood etc. complete.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 10.00 (I) shall be followed except that the teak wood planks 12 mm. thick louvers shall be provided.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 10.00 (I) shall be followed.

2.2. The rate shall be for a unit of one square metre.

## SECTION-11

### Steel Shutters, Windows, Ventilators

- 11.2. (A)** Steel work riveted, in built up sections, framed work including cutting, hosting fixing in position and applying a priming coat of red lead paint. In beam and joints, channels, angles tees, flats, with connecting plates or Angle cleats as in main & cross beams, Hop and jack falters, pralines connected to common rafters and the like.

**1.0. Materials**

The structured steel work shall conform to M-22. Red lead paint shall conform to I.S : 102-1962.

**2.0. Workmanship**

**2.1.** The steel sections as specified or required shall be cut, square and to correct lengths, as per drawings and design. The cut ends exposed to view shall be finished smooth. No two pieces shall be welded or otherwise jointed to make up the required length of member, except as indicated in the drawing or as directed. All straightening and shaping to form shall be done by application of pressure and not by hammering. Any bending or cutting shall be carried out in such a manner as not to impair the strength of the metal. All operations shall be done in cold state unless otherwise directed/permitted.

**2.2.** Steel riveted or bolted in built up sections, frame work.

**2.2.1.** The steel structure as shown in the drawings or as per direction of the Engineer-in-charge shall be laid out on a level platform to full scale and to full sizer in parts. A steel tape shall be used for measurements to ensure maximum accuracy.

**2.2.2.** Wooden templates 12 mm. to 19 mm. thick or metal sheet template shall be made to correspond to each connecting gussets plate and rivet holes shall be accurately marked on them and drilled. The templates shall be laid on the steel members and holes of the steel members shall also be marked for curing. The base of steel column and the position of Anchor bolts shall be carefully set out.

**2.2.3.** All stiffeners shall be formed by pressure and where practicable, the metal shall not to be cut and welded in making these. In major works or where so specified, shop drawings giving complete details and information for the fabrication of the component parts of the structure, including location, type, size, length and details or rivets, bolts or weld shall be prepared in advance of the actual fabrication and as distinctly marked or stencilled with paint with the identification mark as given in the shop drawings. The bars shall be thickened at the ends, so as to provide for screwed threads and gradually tapered off to meet their normal section.

Great accuracy shall be observed in fabrication of various member, so that these can be assembled without being unduly packed, stained, or forced into position and when build up, shall be true and free from twists, brinks, buckles, or open joints.

Before making holes in individual members for fabrication the steel work intended to be riveted or bolted together shall be as embled or clamped properly and tightly so as to ensure close abutting or lapping or the surfaces of the different members. All stiffeners shall bear tightly both at top and bottom without being drawn or caulked. The abutting joints shall be cut or crossed true and straight and fitted close together. Web splice plates and fillers under stiffeners shall be cut to fit within 3 mm. or flange Angles Web plates of Girders shall have no cover. Plates, shall have their ends flush with the top of angles forming the flanges unless otherwise required. The web plates when spiced shall have clearance of not more than 6 mm.

The erection, clearance for cleated ends of members connecting steel shall preferably be not greater than 1.5 mm. The erection clearance at the ends of beams without web cleats shall not be more than 3 mm. at each end but where for a practical reason greater clearance is necessary, suitably designed seating shall be provided.

Pains and rollers shall be accurately tuned to gauge. These straight and smooth and free from flows. The roller bearing shall be provided with adequate arraignments for holding the girders or truss resting on it. In columns caps and bases, the ends of shifts together with the attached gussets Angles, channels etc. after riveting together shall be accurately machanised so that the parts connected butt against each other over the entire surfaces of contact connecting angles or channels shall be fabricated and placed in position with greater accuracy so that they are not unduly reduced in thickness by machining. The ends of bearing stiffeners shall be machanised or ground to fit tightly both at the top and bottom. All holes shall generally be drilled to the required size and at required position. Sub punching shall be permitted, provided it is done 3 mm. or less in diameter and reamerred thereafter to the require size. The holes for rivets and bolts shall be larger by 0.4 to 6 mm. than the nominal diameter of rivets or black bolts depending upon the diameter of rivets.

Holes shall have their axis perpendicular to the surface bored through. The drilling or remarrying shall be free from burrs, and the holes should be clean and accurate holes for counter shunk bolts shall be made in such a manner that their heads fit flush with the surface after fixing.

The fabrication work shall be completed in workshop as far as it is practicable to do so. Site joints shall be done with rivets and fitted bolts or black bolts, as shown in the drawings or as directed. Generally the following principles shall govern the use of rivets turned and fitted bolts, and black bolts :

- (i) Rivets and turned and fitted bolts shall be used where the connections is such that slip under load has to be avoided.
- (ii) Black bolts may be used very sparingly where a force is carried through a connection without impact, vibration or reversal or stresses.

#### **2.2.4. Riveting :**

The parts assembled for riveting shall be in close contact with each other and the bearing stiffeners shall bear tightly both at top and bottom without being drawn or caulked. Members to be riveted shall be properly pinned or bolted and rigidly held to gather while riveting. Drifting of holes shall not be permitted except to draw the parts together and the drifting tools so used shall have maximum diameter not exceeding the nominal diameter of rivets or bolts. Drifting done during assembling shall not distort the metal or enlarge the holes.

The shanks of rivets shall project beyond the plate-surface sufficiently so as to fill hole thoroughly and form the required head after riveting.

The riveting shall be done by hydraulic or pneumatic process. However, where such facilities are not available, hand riveting may be permitted. The rivet shall be heated red hot, care being taken to control the temperature of heating so as not to burn the steel. Rivets of diameter less than 10 mm. may be fitted cold. Rivets shall be of heat finish with heads full and of equal size. All loose, burnt or badly formed rivets with concentric or deficient heads shall be cut out and replaced. The heads of rivets shall be central to shanks and shall grip the assembled member firmly. In cutting out rivets, care shall be taken so as not to injure assembled members, caulking or reequipping shall not be permitted.

For testing rivets, a hammer weighing approximately 0.25 kg. shall be used. Both heads of the rivets shall be tapped, slack rivets will give a hollow sound and a jar.

All rivet heads shall be painted with red lead paint within a week of their fixing.

**2.2.5.** All bolt heads and nuts shall be hexagonal and of equal size unless specified otherwise. The screwed heads shall conform to I.S. 1363-1960 and the threaded surface shall not be tapered. The bolts shall be of such length so as to project two clear threads beyond the nuts when fixed in position and these shall fit in the holes without any shakes. The nut shall be fit in the threaded ends of bolts properly.

Where turned and fitted bolts are required to be used in place of rivets shall be provided with washers not less than 6 mm. thick so that the nut when tightened shall not bear on the unthreaded body of the bolt. Tapered washers shall be provided for all heads and nuts bearing on levelled surfaces. The threaded portion of the bolt shall not be within the thickness of the parts bolted together. The faces of the bolt heads and nuts abutting against steel members shall be machine finished. Where there is a risk of the nut being removed or becoming loose due to vibrations or reversal of stresses, these shall be secured from slackening by the use of locknuts, spring washers, cross-cutting or hammering down of threads as directed.

Bolts, nuts, and washers shall be thoroughly cleaned and dipped in double boiled linseed oil before use. The whole steel work shall be painted with a coat of priming coat of red lead, as per relevant specification of painting.

### **3.0 Mode of measurements & payment**

**3.1.** The steel work shall be measured in general as under :

- (a) All work shall be measured on the basis of finished dimensions as fixed at site and measured net unless specified otherwise.
- (b) The weight of steel sections, steel rods, and steel strips in finished work shall be calculated from standard weight on the same basis on which steel is supplied to Contractor by department or those given in relevant I.S. : if steel is arranged by the contractor.
- (c) The weight of steel plates and strips shall be taken from relevant I.S. based on 7.85 kg./ sq. metre for every millimeter sheet thickness if steel is supplied to the contractor by department.
- (d) Unless otherwise specified, weight of cleats, brackets, packing pieces, bolts, nuts, washers, distance pieces, separators, diaphragm gusset (taking over all square dimensions) fish plates etc. shall be added to the weight of respective items.
- (e) In riveted work allowance is to be made for weight of rivet hands. No deductions shall be made for rivet or bolt holes excluding holes for anchor or holding down bolts.
- (f) For forged steel and steel castings, weight shall be calculated on the basis of 7850 kg./cum.
- (g) Unless otherwise specified, no allowance shall be made for the weld metal in case of welded steel structure.

- (i) Dimensions other than cross sections and thickness of plates shall be measured to nearest 0.001 m.
- (j) Mill tolerance shall be ignored when weight is determined by calculation.

3.2. The rate includes cost of all material, labour, erection, hoisting scaffolding, protective measure, required for proper completion of the item of work. This shall also include conveyance and delivery handling, loading, unloading and storing etc., required for completing the item described above including necessary wastage involved.

3.3. The rate shall be for a unit of one quintal.

**11.2.(D) Steel work riveted in built up section, framed work including cutting, hoisting, fixing in position and applying a priming coat of red lead paint in trusses, and trussed, purlins, upto 25 m. span and 15 m. overall height.**

**1.0. Materials & Workmanship**

The relevant specifications of item No. 11.2 (A) shall be followed except that the work shall be for trusses and trussed purlins upto 25 m. span and 15 m. overall height.

**2.0. Mode of measurement & payment**

2.1. The relevant specifications of item No. 11.2. (A) shall be followed.

2.2. The rate shall be for a unit of one quintal.

**11.4.(A) Steel work welded, in built up sections frame work including, cutting, hoisting, fixing in position and applying a priming coat of red lead paint. In beams and joints, channels, angles tees, flats, with connecting plates or angle celates as in main and cross beams. Hip and jack rafters, purlins, connected to common falters and the like.**

**1.0. Materials & Workmanship**

1.1. The relevant specification of item No. 11.2 (A) shall be followed except that the steel work shall be done by welding.

1.2. Welding shall generally be done by electric process. Gas welding shall be resorted to, using oxyacehylene flame with specific prior approval. Gas welding shall not be permitted for structural steel work.

1.3. The work shall be done as shown in the shop drawings which should clearly indicate various details of the joints to be welded, shop and site welded as well as type of electrodes to be used. symbol for welding on plans and shop drawings shall be according to I.S. 813-1961. As far as possible every effort shall be made to limit the welding that must be done after improper welding that is likely to be done due to heights and difficult positions on scaffoldings etc. The welding work shall conform to I.S. 816-1969.

1.4. Preparation of surfaces : Surfaces which are to be welled together shall be free from loose mill scale, rust, paint, grease or other foreign matter. A coating of boiled linseed oil shall be permitted.

1.5. Assembly for welding : Before welding is commenced, the plates shall first be brought together and firmly clamped or spot welded at specified distance. This temporary connection has to be strong enough to hold the plates accurately in place without displacement.

1.6. Precautions : All operations connected with welding and cutting equipment shall conform to safety requirement given in I.S. 818-1968.

The following points shall be borne in mind during the process of welding :

(b) Are length voltage and amperage shall be suited to the thickness of material type of groove and other circumstances of the work.

(c) The segments of welding shall be such that where possible the members which offer the greatest resistance to compression are welded first.

1.7. The defective welds which shall be considered harmful to the structural strength shall cut out and rewelded.

1.8. Finished welds and adjacent parts shall be protected with clean boiled linseed oil and after all stag has been removed. Welds and adjacent parts shall be painted after the same are approved.

1.9. All the members shall be thoroughly cleaned of rust-scales, dust etc. and given a priming coat of red lead paint before fixing them in position.

Testing of welding to be added in the specification I.N. 12.2.2.12-(i) to (viii)

**2.0. Mode of measurements & payment**

2.1. The relevant specification of item No. 11.2 (I) shall be followed.

2.2. The rate shall be for unit of one quintal.

**11.4.(D) Steel work welded in built up section framed work, cutting, hoisting, fixing in position and applying a priming coat a red lead paint in trusses and trusses purlines upto 25 m. span and 15 m. overall height.**

**1.0. Materials & Workmanship**

The relevant specification of item No. 11.4. (A) shall be followed except that the work shall be for trusses and trussed purlines upto 25 m. span and 15 m. overall height.

**2.0. Mode of measurement & payment**

2.1. The relevant specifications of item No. 11.4 (A) shall be followed.

2.2. The rate shall be for unit for one quintal.

11.6. Providing and fixing in position collapsible steel shutters with vertical channels 20 x 10 x 2 mm. bracked with flat iron diagonals 20 x 5 mm. size with top and bottom rails of T Iron 40 x 40 x 6 mm. with 38 mm. dia steel pulleys complete with bolts, nuts, locking arrangements, stoppers, handles, including applying a priming coat red lead paint.

**1.0. Materials**

The collapsible steel gate shall conform to M-33.

**2.0. Workmanship**

T-rails shall be fixed to the floor and to the lintel at top by means of Anchor bolts, embedded in cement concrete of floor and lintel. The anchor bolts shall be placed approximately at 45 mm. centers alternatively in groove shall be formed along the runner for the purpose. The collapsible gate shall fixed at the sites by fixing the double channels in the T-iron rail and also by hold fasts bolted to the end double channel and fixed in the masonry of the side walls or the otherwise.

In case where the collapsible gate is not required to the lintel beams or slop above, a tee iron suitably designed may be fixed at the top embedded in masonry and provided with necessary clamps and roller arrangement at the top.

All the adjoining work damaged while fixing of gate shall be made good to match the existing work without any extra payment.

All the members of the collapsible gate including T-iron shall be thoroughly cleaned of rust, scales dust etc., and given a priming coat of red lead, before fixing them in position.

**3.0. Mode of measurement and payment**

3.1. The collapsible gate shall be measured in sq. metre. The height of the gate shall be measured as the length of double channels and breadth from outside to outside of the end fixed double channels in open position of the gate. The rate includes providing handles, arrangements stoppers etc.

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

11.7. Providing and fixing 1 mm. thick M.S. sheet sliding shutters both frame and diagonal braces of 40 x 40 x 6 mm. Angle iron 3.15. M.ss. gusset plates at junctions and corners, 25 mm. dia. pulley 40 x 40 x 6 mm. angle and T-iron guide rail at top and bottom respectively with handles, stoppers and locking arrangements etc. including applying priming coat of red lead paint.

**1.0. Materials**

M.S. sliding shutters shall be fabricated of M.S. component as given in the description of item. M.s. sheets 1 mm. thick shall be fixed to the frame with rivets of weld as approved. The shutters shall be provided with top and bottom guide rails of Angles or T-iron as specified and 25 mm. dia. steel pulleys at the bottom guide black with steel pulleys at the top. The frame shall be riveted and /or welded and wherever riveting shall be done 3.15 mm. gussets plates shall be provided at the junctions.

**2.0. Workmanship**

2.1. The shutters shall be single or double leaf shutters as specified. The guide rails shall be sufficiently long and continued along the wall on the both ends so that the sliding shutters can rest against walls, living full opening when so required.

2.2. The guide rails shall be fixed to the floor by means of anchor bolts embeded in the cement concrete floor. The steel section at the top shall be suitably supported from the walls. Two channel section shall suitably fixed vertically below the extreme clamps in the wall and floor to avoid the shutters from going out of the supports at the top and bottom. A suitable clamping arrangement will be provided at either end of the opening to avoid the shutters from rolling back into opening.

2.3. All the adjoining work damaged while fixing shall be made good to match the existing work.

2.4. All members of the sliding shutter including T-iron shall be thoroughly cleaned of rust, scales dust etc. and given a priming coat of red lead before fixing them in position.

**3.0. Mode of measurements & payment**

3.1. The sliding doors shall be measured on sq. metre. The height of the shuters shall be measured from outside to outside of the guide, rail and width outside to outside of shutters including vertical channels in sides. The rate includes providing handles, stopped and locking arrangements etc., complete.

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



## SECTION-12

### Labour for fixing fixtures & fastening

**12.4. Fixing metallic tower bolts of sizes with necessary screws etc. complete (tower bolts and screws to be paid under separate items:)**

**1.0. Workmanship**

- 1.1. This item provides for labour for fixing metallic tower bolts of any size with screws, nuts etc.
- 1.2. The tower bolts shall be fixed in proper position as shown in the drawings or as directed. There shall be fixed truly vertical or horizontal as the case may be.
- 1.3. The screws shall be driven home with screw driver. In no case the screws shall be hammered in.
- 1.4. All recesses and seats shall be cut to the exact size for counter sinking etc. where so required.
- 1.5. Care shall be taken to see that no gaps are left between the fitting and the surface meant to receive the fittings.
- 1.6. The fittings shall be properly cleaned and left in original finish after fixing.

**2.1. Mode of measurements & payment**

- (1) Cutting of holes, recesses, and seats involved in process of fixing.
  - (2) Cost of filling and cushioning materials where so required for proper seating of new fittings.
  - (3) Cost of nails etc. for temporary positioning of fitting.
  - (4) Cost of cleaning materials like old washed dhobi stain remover etc.
  - (5) Cost of making good the over cut recesses or holes if any.
  - (6) Cost of making hole of required size on the wooden frame for housing the bolt for locking.
- 2.2. The rate includes cost of labour involved in all operations required for proper completion of the items including carriage, handling, fixing etc. complete.
- 2.3. The rate shall be of unit of one number.

**12.5. Fixing metallic flush bolts of size with necessary screws etc., complete (flush bolts and screws shall be paid under separate items):**

**1.0. Workmanship**

- 1.1. The relevant specifications shall be followed as per item No. 12.4. except for fixing metallic flush bolts instead of tower bolts.

**2.0. Mode of measurements and payment**

- 2.1. The relevant specifications of item No. 12.4. shall be followed.
- 2.2. The rate shall be for a unit of one number.

**12.8. Fixing metallic or plastic door handles of sizes with necessary screws etc. complete (door handles and screws to be paid under separate items)**

**1.0. Workmanship**

- 1.1. The relevant specifications of item No. 12.4. shall be followed except fixing door handles instead of tower bolts.

**2.0. Mode of measurements and payment**

- 2.1. The relevant specifications of item No. 12.4. shall be followed.
- 2.2. The rate shall be for a unit of one number.

**12.10. Fixing metallic gate and shutter hooks and eyes of sizes (hooks and eyes to be paid under separate items)**

**1.0. Workmanship**

- 1.1. The relevant specifications shall be followed as per item No. 12.4 except that fixing of eye and hooks instead of tower bolts.

**2.0. Mode of measurements and payment**

- 2.1. The relevant specifications of item No. 12.4 shall be followed.
- 2.2. The rate shall be for a unit of one number. (Hook & Eye)

**12.11. Fixing metallic door latches of size with necessary screws (door latches and screws to be paid under separate items) :**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallic door latches instead of tower bolts.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 12.4 shall be followed.

2.2. The rate shall be for a unit of one Number.

**12.12. Fixing metallic mortise night latches with necessary screws including making necessary crews holes in wooden door shutters etc., complete (mortise night latches and screws to be paid under separate items):**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4 above shall be followed except that the fixing of mortise night latches instead of tower bolts.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 12.4 shall be followed.

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

**12.18. Fixing metallic ball catches 100 mm. dia. (Ball catches to be paid under separate item):**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4 shall be followed same except fixing of ball catchers 100 mm dia.

**2.0. Mode of measurements and payment**

2.1. The relevant specification of item No. 12.4 shall be followed.

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

**12.20. Fixing metallic casement window fasteners with necessary etc. complete. (Casement window fasteners and screws to be paid under separate items):**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4. shall be followed except fixing metallic casement windows fasteners.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 12.4 shall be followed.

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

**12.21. Fixing metallic casement stays of sizes with necessary screws etc., complete. (Casement stays and screws to be paid under separate items)**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4 shall be followed except fixing of metallic casement stays.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 12.4 shall be followed.

2.2. The shall be for unit of one number.

**12.24. Fixing metallic cupboard of ward robe locks of sizes with necessary screws etc. complete (Locks and screws to be paid separately) :**

**1.0. Workmanship**

1.1. The relevant specifications of item No. 12.4 shall be followed except that fixing metallic cupboard or ward robe locks of size with necessary screws etc. complete.

**2.0. Mode of measurements & payment**

2.1. The relevant specifications of item No. 12.4 shall be followed.

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

**12.25. Fixing metallic or plastic cupboard or ward robe knobs of size with necessary screws/ bolts etc., (knobs and screws/bolts to be paid separately) :**

**1.0. <sup>a</sup> Workmanship**

**1.1.** The relevant specifications of item NO. 12.4 shall be followed except that fixing metallic or plastic cupboard or ward robe knobs of sizes with necessary screws/bolts etc. complete.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 12.4 shall be followed.

**2.2.** The shall be for a unit of one number.

**12.26. Fixing metallic floor stoppers of sizes with rubber cushion, screws etc., to suit shutter thickness complete. (floor door stopper with rubber cushion and screws to be paid under separate items) :**

**1.0. Workmanship**

**1.1.** The relevant specifications of item No. 12.4 shall be followed except that fixing metallic floor stoppers.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 12.4 shall be followed.

**2.2.** The shall be for a unit of one number.

**12.28. Fixing metallic door handles or knobs for mortise jocks with necessary screws etc. complete (doors, handles/knobs and screws to be paid spearately) :**

**1.0. Workmanship**

The relevant specifications of item No. 12.4 shall be followed except that fixing metallic door handles or knobs for mortise with necessary screws etc. complete.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 12.4 shall be followed.

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

## SECTION-13

### Glazing

- 13.1.(I) Providing and fixing sheet glass, selected quality (type-C) bedded in putty and fixed with wooden beading including cost of wooden beading of first class teak wood and necessary cutting of glass 5 mm. thick.**

#### **1.0. Materials**

The glass shall conform to M-38. The wood beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

#### **2.0. Workmanship**

The glass shall be sheet glass of selected quality of 5 mm. thick.

**2.1.** The size of glass for glazing shall allow a clearance of 2.5 mm. between the edges of glass and the wood or metal surrounds. The clearance may be increased, provided the depth of the rebate or groove is sufficient to provide not less than 1.5 m. cover to the glass. The detailed process of glazing shall be as specified in I.S. 3548-1966.

**2.2.** All stains from the surface of glass shall be removed and cleaned with thinner or spirit without any extra payment.

#### **2.3. Wooden beading :**

**2.3.1.** The size of the wood beads for glass panes shall be 1.5 cms. x 3 cms unless otherwise specified. Beads shall be secured to wooden frames with either panels pins or screws and to metal frames in the way provided for in the frame.

**2.3.2.** Sufficient putty compound shall be applied to the rebate so that when the glass has been pressed into the rebate, a bed of compound not less than 1.5 mm. thick will remain between the glass and the rebate. There should also be surplus of compound squeezed out above the rebate which should be stripped at an angle not under cut to prevent water accumulating. Beads should be bedded with compound against the glass and wood beads should also be bedded against the rebate. Care should be taken to see that no voids are left between the glass and the bead.

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

**3.1.** All measurements of cutting shall, unless otherwise stated, be held to include the consequent waste.

**3.2.** Each pane of glass shall be measured to the nearest 0.5 cms. both in width and height/length.

**3.3.** Irregular shaped or circular panes shall be measured as the smallest rectangular area from which the irregular or circular pane can be cut.

**3.4.** The rate includes cost of materials, labour required for completion of the item including hoisting, carriage, temporary erections like scaffolding etc.

**3.5.** The rate also includes :

- (i) The wastages and breakage involved in the process.
- (ii) Straight cutting on glass and glazing sheets.
- (iii) Cost of subsidiary materials required for proper fixing and functioning of glass i.e. nails, spirit, putty, teak wood beading glass, pins, etc. complete.

**3.6.** The rate shall be for a unit of sq. metre.

- 13.1.(II) Providing and fixing sheet glass selected quality (Type-C) bedded in putty and fixed with wooden beading including cost of wooden beddings of first class teak wood, and necessary cutting of glass 6 mm. thick.**

#### **1.0. Materials and workmanship**

**1.1.** The relevant specifications of item No. 13.1 (I) shall be followed except that the sheet glass of selected quality shall be 6 mm. thick.

**2.0. Mode of measurements and payment**

2.1. The relevant specifications of item No. 13.1.(I) shall be followed.

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

**13.3.(C) Providing and fixing rough cast wired glass 6 mm. thick bedded in putty and fixed with wooden beading including the cost of wooden beadings of Indian teak wood and necessary cutting of glass wired figures glass.**

**1.0. Materials :**

Wire figure glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

**2.0. Workmanship**

The relevant specification of item No. 13.1(I) shall be followed except that the wired figured glass of 6 mm. thick shall be used.

**3.0. Mode of measurements and payment**

3.1. The relevant specifications of item No. 13.1(I) shall be followed.

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

**3.5.(3) Providing and fixing sheet glass ordinary quality bedded in putty and fixed with wooden beading including the cost of wooden beadings of first class teak wood and necessary cutting of glass 3 mm. thick.**

**1.0. Materials**

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

**2.0 Workmanship**

The relevant specification of item No. 13.1 (I) shall be followed except that the wired figured glass of 6 mm. thick shall be used.

**3.0. Mode of measurements and payment**

3.1. The relevant specifications of item No. 13.1 (I) shall be followed.

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

**13.5.(3) Providing and fixing sheet glass ordinary quality bedded in putty and fixed with wooden beading including the cost of wooden beadings of first class teak wood and necessary cutting of glass 3 mm. thick.**

**1.0. Materials**

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

**2.0. Workmanship**

2.1. The specification of this item shall be followed as per item No. 13.1(I) except that the sheet glass of ordinary quality shall be used and thickness of sheet glass shall be 3 mm. thick.

**3.0. Mode of measurements and payment**

3.1. The relevant specifications of item No. 13.1(I) shall be followed.

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

**13.5.(4) Providing and fixing sheet glass ordinary quality, bedded in putty and fixed with wooden beadings including the cost of wooden beadings of first class teak wood and necessary cutting of glass 4 mm. thick.**

**1.0. Materials and Workmanship**

The relevant specifications of item No. 13.5 (3) shall be followed, except that the thickness of ordinary sheet glass shall be 4 mm.

**2.0. Mode of measurements and payment**

2.1. The relevant specification of item No. 13.1(I) shall be followed.

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

**13.7. Extra for using ground glass (Frosted or obscured on one side) instead of plain glass.**

**1.0. Materials**

Glass shall conform to M-38. Wooden beading shall conform to M-29. Putty shall conform to I.S. 419-1967.

**2.0. Workmanship**

The specifications of this item shall be followed as per item No. 13.1 except that ground glass (Frosted or obscured on one side) shall be used.

**3.0. Mode of measurements and payment**

3.1. The payment shall be made on sq. mt. basis extra over and above the payment for plain glass for using ground glass (Frosted or obscured).

**3.2.** The relevant specifications of item No. 13.5 (III) shall be followed.

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

**13.11.(A) Difference in cost of material and labour involved in method of glazings if changed in item No. 13.1 to front and back puttied and sprigged or fixed with glazing pins :**

**1.0. Materials and Workmanship**

**1.1.** The relevant specification of item No. 13.1 shall be followed except that the glazing is to be done by front and back puttied and sprigged or fixed with glazing pins.

**2.0. Mode of measurements and payment**

**2.1.** The relevant specifications of item No. 13.1 (I) and 13.1 (II) shall be followed.

**2.2.** The extra rate for extra cost involved shall be paid over and above item No. 13.1(I) & 13.1 (II).

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

**13.12. Grinding, polishing and round of edges or glazing sheets.**

**1.0. Materials**

The glass shall conform to M-38.

**2.0. Workmanship**

The edges of glass or glazing sheets shall be grined, polished and rounded of such that it renders uniform look throughout the length and shall be neatly finished. The work shall be carried out in best workmans like manner.

**3.0. Mode of measurements & payment**

**3.1.** The edges of glass round, polished and rounded off shall be measured in metre.

**3.2.** The rate shall be for a unit of one running metre.

## SECTION-14

### Paving & Floor Finishing

- 14.2.(A)** 40 mm. thick marble chips flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete (1:2:4) (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer, 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3 : 1 (3 cement : 1 marble powder by weight, in proportion of 4 : 7 ( 4 cement marble powder mix : 7 marble chips by volume): Dark shade pigment with ordinary cement (in top layer only).

#### 1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone grit shall conform to M-8.

The pigment incorporated in terrazzo shall be of permanent colour and shall conform to requirement mentioned in Appendix-A in IS: 2114-1962. Marble chips shall conform to M-46. The marble powder shall pass through I.S. Sieve Terrazzo-30.

#### 2.0. Workmanship

**2.1.** Terrazzo finish shall be laid over a layer of base concrete in case of ground floor. When the terrazzo floor is laid over R.C.C. slabs a cushioning layer consisting of 75 mm. thick lime concrete shall be provided below the terrazzo floor. The terrazzo flooring shall consist of an under layer of cement concrete and layer of terrazzo which shall be laid monolithically.

#### 2.2. Under Layer :

**2.2.1.** The under layer shall be of cement concrete mix 1:2:4. The maximum size of aggregate used shall not exceed 10 mm. Specification for cement concrete shall be followed as per item No. 5.4.1.

#### 2.3. Terrazzo Topping :

**2.3.1.** The topping shall have mix of ordinary cement, and marble powder in proportion 3:1 (3 cement : 1 marble powder by weight) and marble aggregate shall be mixed in proportion 4:7 (4 cement marble powder : 7 marble chips by volume). The thickness of concrete and cushioning layer shall not be less than 10 cms. and 7.5 cms. respectively. The minimum thickness of under layer and topping shall be 40 mm.

#### 2.4. Panels :

**2.4.1.** The floor both while laying the under layer and topping shall be divided into panels not exceeding 2 sq. m. in area so as to reduce the risk of cracking due to differential shrinkage or expansion of terrazzo and sub-floor. The joints be so located that the layer dimensions of any panel do not exceed 2 M. The panels shall preferably be separately. However where the butt joint are provided, the bays shall be laid alternatively allowing for an interval of at least 24 hours between the laying of adjacent bays.

#### 2.5. Mixing of materials :

**2.5.1.** With a view to avoid variation in colour, mixing shall be done in trough or tub, and the complete quantities of cement and pigment required for one unit shall be mixed at the beginning of the work. Colour cement or cement and pigment mix shall be dry mixed with marble powder. The mix thus obtained shall be mixed with aggregate. Care shall be taken not to get the materials into a heap as this would result in coarser aggregates moving on the sides and cement to the centre. To the dry mix thus prepared, water shall be added in small quantities while materials are being worked to get a mix of proper consistency. The mixture shall be plastic but not so wet as to flow. The wet mix shall be used within half an hour mix of addition of water during preparation laying.

#### 2.6. Laying :

**2.6.1.** The base shall be divided into panels with the help of dividing strips including the strips required for decorative design up to the finished surface level of the floor. Screeds strips shall be used where the dividing strips are not used. The base shall be cleaned of all dust, dirt laintance and any loose materials. It shall be then wetted with water mopped and smeared with cement slurry at 2.75 kg./sq.mt. Under layer shall be then be spread and levelled with a screening board. The top surface shall be left rough to provide a good bond to the terrazzo.

**2.6.2.** The terrazzo topping shall be laid while the under layer is still plastic but has hardened enough to prevent cement from rising to the surface. This is normally achieved between 18 to 24 hours after laying of under layer. A cement slurry preferably of the same colour as the topping shall be brushed on the surface immediately before laying the topping. The terrazzo mix shall be laid to a uniform thickness on the screed bed and be completed thoroughly by taping or rolling and troweled smooth. Excessive troweling or rolling in early stages shall be avoided as it results in working up cement to the surface which will produce a surface liable to cracking and will require more grinding to expose marble chips. The terrazzo surface shall be tamped, trowelled, and brought true to required level by a straight edge and steel floats in such a manner that the maximum amount of marble chips come up and are spread uniform over the surface and no part of the surface is left without chips.

**2.7. Curing :**

**2.7.1.** The surface shall be left dry for air curing for a period of 12 to 18 hours. Thereafter water shall be allowed to stand overnight in pools for period of minimum of four days. The floor shall be prevented from being subjected to extreme temperature.

**2.8. Grinding and finishing :**

**2.8.1.** Grinding and finishing shall be done either by hand or by machine. In case of manual grinding, the process of grinding shall begin after two days, while in case of machine grinding, the process shall be started after seven days, after completion of laying.

**2.8.2.** First grinding shall be done by carborundum stones of 60 grit size. The surface shall then be washed clean and grouted with a grout of cement or /and coloring matter in the same mix and proportion as the topping in order to fill any pin holes that appear. It shall be allowed to dry for 24 hours and wet cured for four days in the same manner as mentioned in para 2.7 above.

**2.8.3.** The second grinding shall be done with carborundum stone of 80 grit size. The surface shall then be prepared as after first grinding. The third grinding shall be done with carborundum stone of 120 to 150 grit size. The surface shall then be washed again and allowed to dry for 12 hours, and wet cured for four days as before. The fourth grinding shall be done with carborundum stone of 320 to 400 grit size. The surface shall again be washed clean and rubbed hard with felt and slightly moistened Oxalic acid powder @ 5 gms. per sq. metre of floor surface. After the finishing work is over, the surface shall be washed with dilute oxalic acid solution and dried for floor polishing, machine fitted with felt or hession bobs shall then be run over it until floor shines. In case wax-polished surface is required, wax-polished shall be applied on the surface with the help of soft linen over a clean and dry surface. The polishing machine fitted with bobs shall be run over it, clean saw dust shall be spread over the floor surface and polishing machine again operated which will remove excess wax and leave glossy surface. Floor shall not be left slippery.

**3.0. Mode of measurements and payment**

**3.1.** Terrazzo flooring shall be measured as laid in sq. metres. Length and breadth shall be measured for visible area of work done. No deduction shall be made for nor extra for any opening in floor or area upto 0.10 sq. metre. The rate shall cover laying the floor at different levels in the same room or court-yard and nothing extra shall be paid on that account.

**3.2.** The rate includes the cost of all materials and labour involved in all operations described above. The rate shall also not include diving strip.

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

**14.2.(B)** 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. 4 mm. nominal size laid in cement marble powder mix 3 : 1 (3 cement : 1 marble powder by weight) in proportion of 4 : 7 (4 cement : marble powder mix : 7 marble chips by volume) light shade pigment with white cement (in top layer only).

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No. 14.2 (A) shall be followed except that light shade pigment with white cement shall be used in top layer.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 14.2 (A) shall be followed.

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



- 14.2.(C)** 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume). Medium shade pigment with approx. 50% white cement and 50% ordinary cement (In top layer only).

**1.0. Materials & Workmanship**

- 1.1.** The relevant specifications of item No. 14.2. (A) shall be followed except that medium shade pigment with approximately 50% white cement and 50% ordinary cement in top layer only shall be used.

**2.0. Mode of measurements & payment**

- 2.1.** The relevant specifications of item No. 14.2. (A) shall be followed.

- 2.2.** The rate shall be for a unit of one sq. metre.

- 14.2.(D)** 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume). White cement without any pigment (in top layer only).

**1.0. Materials & Workmanship**

- 1.1.** The relevant specifications of item No. 14.2.(A) shall be followed except that white cement without any pigment in top layer only shall be used.

**2.0. Mode of measurements & payment**

- 2.1.** The relevant specifications of item No. 14.2.(A) shall be followed.

- 2.2.** The rate shall be for a unit of one sq. metre.

- 14.2.(E)** 40 mm. thick marble chips, flooring rubbed and polished (i.e. Terrazzo) to granolithic finish with under layer 30 mm. thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm. and down gauge) and top layer 10 mm. thick with white, black or white and black marble chips of required sizes from 1 mm. to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble powder by weight) in proportion of 4:7 (4 cement : marble powder mix : 7 marble chips by volume). light shade pigment with ordinary cement (in top layer only).

**1.0. Materials & Workmanship**

- 1.1.** The relevant specifications of item No. 14.2(A) shall be followed except that the light shade pigment with ordinary cement (in top layer only) shall be used.

**2.0. Mode of measurements & payment**

- 2.1.** The relevant specifications of item No. 14.2 (A) shall be followed.

- 2.2.** The rate shall be for a unit of one sq. metre.

- 14.4.(A)** Marble chips skirting (Terrazzo) or dado rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : Dark shade pigment with ordinary cement (in top layer only).

**1.0. Materials**

- 1.1.** The relevant specifications of item No. 14.2 (A) shall be followed.

**2.0. Workmanship**

- 2.1.** Under layer : The under layer for terrazzo on vertical surfaces like skirting and dados shall be of stiff cement mortar 1:3 (1 cement : 3 coarse sand) finished rough so as to give a good bond to the topping.

- 2.2.** Terrazzo topping shall not be less than 6 mm. thick and the combined thickness of under layer and topping shall be not less than 20 mm. The other details shall be followed same as per specifications of item No. C-24 except that the light shade pigment with white cement in top layers shall be used.

### 3.0. Mode of measurements & payment

3.1. The skirting and dedo shall be measured in square metres correct to two places of decimals. The height shall be measured from the finished level of floor.

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

**14.4.(B) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : light shade pigment with white cement (In top layer only).**

#### 1.0. Materials & Workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed except that the light shade pigment with white cement in top layers only shall be used.

### 2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.4(A) shall be followed.

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

**14.4.(C) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : medium shade pigment with approximate 50% white cement and 50% ordinary cement (In top layer only).**

#### 1.0. Materials and workmanship

1.1. The relevant specifications of item No. 14.4(A) shall be followed except that the medium shade pigment with approximate 50% white cement and 50% ordinary cement in top layers only shall be used.

### 2.0. Mode of measurement & payment

2.1. The relevant specifications of item No. 14.4 (A) shall be followed.

2.2. The rate shall be for a unit fo one sq. metre.

**14.4.(D) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : White cement without any pigment (In top layer only).**

#### 1.0. Materials & Workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed except that the white cement without any pigment in top layers shall be used.

### 2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.4 (A) shall be followed.

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

**14.4.(E) Marble chips skirting (Terrazzo) or dedo rubbed and polished to granolithic finish top layer 6 mm. thick with white black or white and black marble chips of sizes from smallest to 4 mm. nominal size laid in cement marble powder mix 3:1 (3 cement : 1 marble by weight) in proportion of 4:7 (4 cement : marble powder mix 7 marble chips by volume) 20 mm. thick with under layer 14 mm. thick in cement plaster 1:3 (1 cement : 3 coarse sand) : light shade pigment with ordinary cement (In top layer only).**

#### 1.0. Materials & workmanship

1.1. The relevant specifications of item No. 14.4 (A) shall be followed and except that the light shade pigment with ordinary cement in top layers only shall be used.

### 2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.4 (A) shall be followed and except that the light shade pigment with ordinary cement in top layers only shall be used.

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

- 14.16 Providing and laying cushioning layer on R.C.C. slab consisting of 75 mm. thick lime concrete using brick aggregate of 20 mm. nominal size 50% mortar comprising of 1 lime : 2 fine sand.**

**1.0. Materials**

1.1. Water shall conform to M-1. Lime mortar or proportion 1:2 shall conform to M-10. Brick aggregate 20 mm. nominal size shall conform to M-14.

**2.0. Workmanship**

2.1. The relevant specifications of item No. 1.8 shall be followed except that the proportion of mix shall be 50% mortar comprising of 1 lime : 2 coarse sand and the size of brick aggregate shall be 20 mm. nominal size. The lime concrete work shall be carried out in 7.5 Cms. average thickness as a cushioning layer on R.C.C. slab.

**3.0. Mode of measurements and payment**

3.1. The lime concrete work shall be measured for visible area of work done.

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

- 14.19.(A) Precast terrazzo (Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of sizes up to 6 mm. laid in floors, treads of steps and landings on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty: 1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete with precast tiles of light shades, using white cement.**

**1.0. materials**

1.1. 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 precast terrazzo tiles of 20 mm. thick shall be light shade 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 : 1.5 fine sand) or cement mortar of proportion C.M. 1 : 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 terrazzo (Marble/Mosaic) 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 metres 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 dedo 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 atleast 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 metre 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 terrazzo tiles flooring shall be measured in sq. metres 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. metre.

**14.19.(B) Precast Terrazzo (Marble/Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of size up to 6 mm. laid in floors treads of steps and landing on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty :1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles, including rubbing and polishing complete with precast tiles of medium shades using approximately 50% white cement and 50% ordinary cement.**

## **1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No. 14.19(A) shall be followed except that the precast terrazzo (marble mosaic) tiles shall be of medium shades using approximately 50% white cement and 50% ordinary cement.

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

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

**14.19.(B) Precast Terrazzo (Marble/Mosaic) tiles 20 mm. thick with white, black or white and black marble chips of size up to 6 mm. laid in floors treads of steps and landing on a bed of 25 mm. average thickness of lime mortar 1:1.5 (1 lime putty :1.5 fine sand) or C.M. 1:6 jointed with neat cement slurry mixed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and polishing complete with precast tiles of dark shade using ordinary cement.**

## **1.0. Materials and Workmanship**

**1.1.** The relevant specifications of item No. 14.19 (A) shall be followed except that the precast tiles shall be of Dark shade using ordinary Portland cement.

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

**2.1.** The mode of measurement and payment shall be same as item No. 14.19 (A)

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

**14.21.(A) Precast terrazzo (Marble Mosaic) tiles; 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of steps not exceeding 30 cms. in height on 10 mm. thick cement plaster 1:3 C1 cement :3 coarse sand) jointed with neat cement slurry rubbing and polishing complete with tiles of light shades using white cement.**

**1.0. Materials**

Water shall conform to M-1. Cement Mortar shall conform to M-11. The precast terrazzo (Marble/Mosaic) tiles of light shades using white cement tiles 20 mm. thick shall conform to M-47.

**2.0. Workmanship****2.1. Laying :**

The work shall be carried out for skirting or dedo. Before fixing precast Terrazzo (Mosaic marble) tiles of shade and size as specified, the surface shall be prepared by heavy scraping, making joints etc. to the required line, level and plumb. The surface shall be thoroughly wetted before commencing the laying work. Thereafter about 10 mm. thick backing of cement mortar in specified proportion shall be applied on the surface in true line and level generally as per specifications of plaster item.

**2.2. Fixing :**

The back of each tile to be fixed shall be smeared with cement paste of matching colour and the mosaic tiles shall then be gently tapped against the surface, with a wooden mallet. The skirting shall be done only after the flooring is completed. Any pipes coming out of the wall through the dedo or skirting shall only be at the intersection of the horizontal and vertical joints. The tiles shall not have staggered joints. The joints shall be true to entire line both ways and vertical joints shall be in line with joints or flooring. Tiles shall be fixed as close as possible to the adjoining tiles and any difference in the thickness of the mosaic tiles shall be evened out in the cement paste so that all the tiles faces are set in conformity with one another. The skirting shall project uniformly and not more than 6 mm. thickness beyond the finished surface above. Top of skirting or dedo shall be truly horizontal. The risers of steps, skirting or dedo shall rest on top of treads of flooring. Wherever required the tiles shall be cut (sawn) and thin edges smoothed before use.

**2.3. Curing :**

Curing shall be done for 7 days continuously.

**2.4. Finishing :**

Skirting and dedo shall be hand polished to have an even smooth and shining surface. In case of skirting only 10 mm. x 10 mm. groove shall be provided at the junction of cement plaster and cement tiles.

**3.0. Mode of measurements & payment**

**3.1.** The terrazzo tiles with light shade using white cement base shall be paid under this item. The length shall be measured along finished surface of the riser, skirting or dedo, correct to a centimeter height measured from finished level of treads, or floor to the top (under side of treads in case of steps).

**3.2.** The rate shall include all materials and labour required for all the operations involved and described above.

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

**14.21.(B) Precast terrazzo tiles 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of strips not exceeding 30 cms. in height on 10 mm. thick cement plaster C.M. 1:3 (1 cement :3 coarse sand) jointing with neat cement slurry including rubbing and polishing complete with tiles of : medium shades using approximately 50% white cement and 50% ordinary cement.**

**1.0. Materials and workmanship**

**1.1.** The relevant specifications of item No. 14.21 (A) shall be followed except that the work is for using tiles of medium shades using approximately 50% white cement and 50% ordinary cement.

**2.0. Mode of measurements & payment**

**2.1.** The mode of measurements and payment shall be followed same as item No. 14.21 (A).

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

**14.21.(C) Precast terrazzo tiles 20 mm. thick with marble chips of sizes up to 6 mm. in skirting and risers of steps not exceeding 30 cms. in height on 10 mm. thick cement plaster in C.M. 1:3 (1 cement :3 coarse sand) jointing with neat cement slurry including and polishing complete, with tiles of Dark shade using ordinary cement.**

**1.0. Materials & Workmanship**

**1.1.** The relevant specifications of item No. 14.21 (A) shall be followed except that the tiles of dark shade using portland cement shall be used.

**2.0. Mode of measurements and payment**

**2.1** The mode of measurements and payment shall be followed as per item No. 14.21 (A).

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

- 14.25.(A) Chequered terrazzo tiles 22 mm. thick with marble chips of size up to 6 mm. in floor on 25 mm. thick bed of lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, light shade using white cement.**

**1.0. Materials**

Water shall conform to M-1. White cement shall conform to M-4. Lime mortar of proportion 1:1.5 shall conform to M-10. Cement mortar shall conform to M-11. Chequered tiles shall conform to M-47 D.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 14.21 (A) shall be followed except that chequered tiles of light shade using white cement shall be used.

**3.0. Mode of measurement & payment**

**3.1.** The relevant specifications of item No. 14.21 (A) shall be followed.

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

- 14.25.(B) Chequered terrazzo tiles 22 mm. thick with marble chips of size up to 6 mm. in floor on 25 mm. thick bed of lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, medium shade using approximate 50% white cement and 50% ordinary cement.**

**1.0. Materials and workmanship**

**1.1.** The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles of medium shade using approximate 50% white cement and 50% ordinary cement shall be used.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 14.25 (A) shall be followed.

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

- 14.25.(C) Chequered terrazzo tiles 25 mm. thick with marble chips of size up to 6 mm. in floor on 25 mm. thick bed of lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, : Dark shade using ordinary cement.**

**1.0. Materials and workmanship**

**1.1.** The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles of dark shade using ordinary cement shall be used.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 14.25 (A) shall be followed.

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

- 14.27.(A) Chequered terrazzo tiles 28 mm. thick with marble chips of size up to 6 mm. in treads of stairs and staircases in 12 mm. thick bed of lime mortar 1:5 coarse sand) to C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete, Dark shade using ordinary cement.**

**1.0. Materials and workmanship**

**1.1.** The relevant specification of item No. 14.25 (A) shall be followed except that chequered tiles 28 mm. thick of light shade using white cement shall be used in treads, stair cases etc.

**2.0. Mode of measurements & payment**

**2.1.** The relevant specifications of item No. 14.25 (A) shall be followed.

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

- 14.27 (B) Chequered terrazzo tiles 22 mm. thick with marble chips of size up to 6 mm. in floor in on 25 mm. thick bed of lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or C.M. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing etc. complete : Medium shade of using approximately 50% white cement and 50% ordinary cement.**

**1.0. Materials and Workmanship**

**1.1.** The relevant specifications of item No. 14.25(A) shall be followed except that the chequered tiles 28 mm. thick of medium shade using approximately 50% white cement and 50% ordinary cement shall be used in treads of stair, staircases etc.

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

2.1. The relevant specifications of item No. 14.25 (A) shall be followed.

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

**14.27.(C) Chequered terrazzo tiles 28 mm. thick with marble chips of sizes up to 6 mm. in treads of stairs and staircases in 12 mm. thick bed of lime mortar 1:1.5 (1 Lime putty: 1.5 coarse sand) or c.m. 1:6 jointed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and polishing complete : Dark shade using ordinary cement.**

## **1.0. Materials and Workmanship**

1.1. The relevant specifications of item No. 14.25 (A) shall be followed except that chequered tiles 28 mm. thick of dark shade using ordinary cement shall be used in treads of stair, staircase etc.

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

2.1. The relevant specifications of item No. 14.25 (A) shall be followed.

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

**14.29 White glazed tiles 6 mm. thick in flooring, treads of steps and landings laid on a bed of 12 mm. thick cement mortar 1:3 (1 cement : 3 coarse sand) finished with flush pointing in white cement.**

## **1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. White glazed tiles shall conform to M-55.

## **2.0. Workmanship**

### **2.1. Bedding :**

2.1.1. 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 monsoon to place wooden planks across and squat on it.

2.1.2. The white glazed tiles shall be laid on cement mortar bedding of 12 mm. thick in C.M. 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 10 mm. at any place and average 12 mm. thickness. The proportion of the cement mortar shall be as specified in the item.

### **2.2. Fixing tiles :**

2.2.1. 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.

2.2.2. The tiles shall not have staggered joints. The joints shall be true to centre line both ways. The Nanihi 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.

### **2.3. Cleaning :**

2.3.1. 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.

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

3.1. 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 nor 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.

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

**14.32. White glazed tiles 6 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.**

**1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. White glazed tiles shall conform to M-55.

**2.0. Workmanship**

**2.1. Preparation of Surface:**

In case of brick masonry wall, the joints shall be raked out to a depth of least 15 mm. while the masonry is being laid. In case of concrete wall the surface shall be chiselled and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

**2.2. Laying :**

**2.2.1.** The wall surface shall be covered with 10 mm. thick plaster of cement mortar 1:3 mix and allowed to harden. The plaster shall be roughend with wire brushes both way. The back of tiles shall be floated with grey cement slurry set and edges with white cement slurry in bedding mortar. The tiles shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting or dedo shall be truly horizontal and the joints vertical or as per required pattern.

**2.2.2.** Risers of steps, skirting and dedo shall rest on top of treads or flooring. Where full size tiles cannot be fixed, They shall be cut to the required size and the edges be smoothened.

**2.2.3.** The joints shall be cleaned and flush pointed with white cement. The surface shall be kept wet for seven days. After curing the surface shall be washed clean.

**3.0. Mode of measurements and payment**

**3.1.** The rate shall include the cost of all materials and labour required for various operations described above. Risers of steps, skirting and dedo shall be measured in square metres. Length and height shall be measured along the finished face of the skirting or dedo including curves. where special such as covers, internal and external angles, etc., used. The length and height shall be measured correct to the centimeter except in case of risers and skirting where height shall be measured correct to 3 mm.

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

**14.34. Providing and fixing 50 mm. internal or external angles of white glazed tiles.**

**1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform M-11. Glazed tiles shall conform to M-55.

**2.0. Workmanship**

**2.1.** The relevant specifications of item No. 14.32 shall be followed except that the internal or external angles of glazed tiles shall be of thickness not less than the tiles with which they are used. The fixing shall be done as per directions.

**3.0. Mode of measurements and payment**

**3.1.** Rate shall be including the cost of materials and labour involved in all the operation described above. Internal or external angles of glazed tiles shall be measured in running metres correct up to a centimeter, length being measured on the exposed face of the special at its centre line. No extra payment shall be made for corner places at angles junctions of cover beads and cornices for using cut length of special.

**3.2.** The rate shall be for a unit on one running meter.

**14.36.(A) Providing and laying marble stone slab flooring over 20 mm. (Average) base of cement mortar 1:6 (1 cement : 6 coarse sand) or L. M. 1:1.5 laid and jointed with gray cement slurry including rubbing and polishing compete : Marbles slab 25 mm. thick.**

**1.0. Materials**

Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11. Marble stone slab 25 mm. thick shall conform to M-51.

**2.0. Workmanship**

**2.1. Dressing of slabs :**

Every stone shall be cut to required size and fine chisel dressed to give a smooth and even surface on all sides to full depth. A straight edge laid along the sides of the stone shall be fully in contact with it. Chisel dressing shall also be done on top surface to remove any waviness. The sides and top surface of marble



slabs shall be machine rubbed or table rubbed with coarse sand before using. All angles and edges of slabs shall be true, square and free from chipping.

**2.2.** The thickness of stone shall be 25 mm. The allowable tolerance shall be 2 mm. allowable. The tolerance shall  $\pm 5$  mm. in length and breadth.

**2.3. Bedding :**

Bedding of marble slabs shall either be lime mortar 1:1.5 (1 lime putty : 1.5 coarse sand) or cement mortar 1:6 (1 cement : 6 coarse sand) of average thickness 20 mm. thick as given in description of item. Minimum thickness at any place shall not be less than 10 mm.

**2.4. Laying :**

The surface of sub-grade shall be cleared, wetted and mopped. Mortar of specified mix and thickness shall then be spread on an area sufficient to receive one marble slab. The slab be washed clean before laying. It shall be laid on top pressed and tapped gently to bring it in level with other slabs. It shall then be lifted and laid a side. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows, or depressions. The mortar shall then be allowed to harden it over this surface cement slurry or honey like consistency at 4.4 Kg. of cement per sq. metre. The edges of slabs already paved shall be buttered with gray cement. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly bedded in level with and close to the adjoining slab. The joints shall be as fine as possible. Surplus cement on the surface of the slab shall be removed. The slab fixed in the floor adjoining the walls shall enter not less than 10 mm. under the plaster skirting or dedo. The junction between the walls and floors shall be finished neatly. The finished surface shall be true to level and slopes as directed.

**2.5. Curing :** The floor shall be cured for a minimum period of seven days.

**2.6. Polishing and finishing :**

Unevenness at the meting edges of slab shall be removed by fine chiselling. Finishing etc. shall be done as per relevant specifications of item No. 14.21 (A) or terrazzo tiles flooring except that cement slurry with/without pigments shall not be applied on the surface before each polishing.

**3.0. Mode of measurements and payment**

**3.1.** Marbles stone flooring with various kinds of marble shall be measured in sq. metre. The length and breadth shall be measured between the finished face of skirting or dedo or wall plaster. No deduction shall be made nor extra shall be paid for nay opening in the floor or area up to 0.05 sq. mt. Nothing extra shall be paid for laying stone at different levels in the same room. Treads and steps of stairs paved with marble stone slabs shall be also be measured under flooring.

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

**14.43.(A) Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand, or lime mortar 1:1.5 laid over and jointed with gray cement slurry including rubbing and polishing complete 25 mm. thick.**

**1.0. Materials**

**1.1.** Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11. Polished kota stone shall conform to M-49.

**2.0. Workmanship**

**2.1.** Each slab shall be cut to the required size and shape and fine chisel dressed at all the edges. The sides trust dressed shall have a full contract if a straight edge is laid along. The sides shall be table rubbed with coarse sand before paving. All angles and edges of the slabs shall be true square and free from chippings and giving a plane surface. The thickness shall be 25 mm. (Average) as specified in the item but not less than 20 mm. at any place of the slab.

**2.2.** Bedding for the Kota stone slabs shall be of cement mortar 1:6 (1 cement : 6 coarse sand) or L.M. 1:1.5. of average thickness 20 mm. given in the description of the item. Sub grade shall be cleaned, wetted and mopped. Mortar of the specified mix and thickness shall then be spread on an area sufficient to receive one kota stone slab. The slab shall be washed clean before laying. It shall be laid on top, pressed, tapped gently to bring it in level with the other slabs. If shall then be lifted and laid aside. Top surface of the mortar shall then be corrected by adding fresh mortar at hollows or depressions. The mortar shall then be allowed to harden bit. Over this surface, cement slurry of honey-like consistency shall be applied. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly padded in level with and close to the adjoining slab. The joint shall be as fine as possible. The slabs fixed in the floor adjoining the

walls shall enter not less than 10 mm. under the plaster, skirting or dedo. The junction between the wall and floor shall be finished neatly. The finished surface shall be true to levels and slopes as directed.

2.3. The floor shall be kept wet for a minimum period of 7 days so that bedding and joints set properly.

2.4. Polishing shall be normally commenced after 14 days of laying the stone slab. First polishing shall be done with carborundum stones of 120 grade grit fitted in the heavy machine and then second polishing shall be done with carborundum stone of 220 to 350 grade grit fitted in heavy machine. Water shall be properly used during polishing. The stone shall then be washed clean with water. When directed by the Engineer-in-charge, wax polish of approved quality shall be applied on the surface with the help of soft cloth over a clean and dry surface. Then the polishing machine fitted with bobs shall be run over it.

2.5. The holes required for Nahni traps, pipes and any other fittings shall be made without any extra cost.

### 3.0. Measurement & payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above. The kota stone flooring shall be measured in square metres correct to two places decimal, length and breadth shall be measured correct to a centimeter and between the finished face of skirting dedo or wall plaster and no deduction shall be made nor extra paid for any opening in floor of areas up to 0.1 sq. mt.

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

**14.43.(B) Kota stone slab flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement :6 coarse sand) or L.M. 1:1.5 laid over and jointed with gray cement slurry including and polishing complete : 30 mm. thick.**

### 1.0. Materials and workmanship

1.1. The relevant specifications of item No. 14.43 (A) shall be followed except that the thickness of stone shall be 30 mm.

### 2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.43 (A) shall be followed.

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

**14.44. Kota stone slab 25 mm. thick in riser of steps dedo and pillars laid on 10 mm. thick cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with gray cement slurry including rubbing and polishing etc. complete.**

### 1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Kota stone slab 25 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 shall be fixed for risers of steps, dedo or skirting in C.M. 1:3 and the polishing shall be done manually instead of machine polishing.

### 3.0. Mode of measurements and payment

3.1. The risers of steps, skirting or dedo shall be measured in sq. metre. Length shall be measured along the finished faces of risers, skirting or dedo. Height shall be measured from finished level of treads of floor to top. Lining of pillars shall be measured under this item.

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

**14.46.(A) Rough chiselled dressed (Kota stone green) stone flooring over 20 mm. thick base of cement mortar 1:5 (1 cement :5 coarse sand), or L.M. 1:1.5 including pointing with cement mortar 1:2 (1 cement : 2 stone dust) etc. complete 25 mm. thick.**

### 1.0. Materials

Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11. Rough chisel dressed stone shall conform to M-48.

### 2.0. Workmanship

2.1. The relevant specifications of item No. 14.43 (A) shall be followed except that the rough chisel dressed stone of 25 mm. thickness of approved quality are to be fixed on cement mortar bedding in CM 1:5 or L.M. 1 :1.5 of 25 mm. average thickness.

### 2.2. Dressing of stone slab :

Every stone slab shall be cut to the required size and shape and rough chisel- dressed on top, if required, so that the dressed surface shall not be more than 6 mm. from straight edge placed on it. The sides shall