

**Name of work :** C.R. to Various Non Residential Building Under City (R&B) Sub Division, Bharuch (Under Section-1) (New Collector Office Campus), Dist. Bharuch.

### **SPECIFICATIONS**

**Item No.1 :** Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats architraves, holdfasts and other attachment etc. complete and stacking them within all lead and lift (i) Not exceeding 3 Sq.M. in area.

#### **1.0. Workmanship**

- 1.1.** The dismantling the door, windows, ventilators etc. (wood or steel) shutters including chowkhats, architraves, hold fasts and other attachments etc. are to be dismantled as specified or shown in the drawings. Dismantling implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown in the drawings.
- 1.2.** The dismantling the door, windows, ventilators etc. (wood or steel) shutters including chowkhats, architraves, hold fasts and other attachments etc. shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved form the Engineer-in-charge before starting the work. This however will not absolve the contractor from the responsibility of proper and safe demolition.
- 1.3.** Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining property.

- 1.4. Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.
- 1.5. Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.
- 1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.
- 1.7. Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc. shall be stacked as directed by the Engineer-in-charge.
- 1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

Dismantling implies carefully taking up or down or removing without damage. The articles shall be passed by hand where necessary and lowered and where these are fixed by nail, screws, bolts etc., these shall be taken out with proper tools.

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

- 2.1. Measurements of all work except hidden work shall be taken before dismantling tiled of stone floors laid in mortar and no allowance for increase in bulk shall be allowed. The dismantling tiled of stone floors laid in mortar of lime concrete shall be measured under this

item. Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work,

- 2.2. The doors, windows, ventilator etc. not exceeding 3 sq. mt. in area (each) including shutters and chowkhats, architraves, hold fasts and other attachments to frames etc. will be mantled and measured..
- 2.3. The rate includes stacking the serviceable materials as and where directed with all leads and lifts.
- 2.2. The rate shall be for a unit of **One number**.

**Item No.2** : Dismantling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.

**1.0. Workmanship**

- 1.1.** The dismantling tiled of stone floors laid in mortar shall consist of dismantling of one or more parts of the building as specified or shown in the drawings. Dismantling implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown in the drawings.
- 1.2.** The dismantling tiled of stone floors laid in mortar shall always be planned before hand shall be done in reverse order to the one in which the structure was constructed. This scheme shall be got approved from the Engineer-in-charge before starting the work.  
This however will not absolve the contractor from the responsibility of proper and safe demolition.
- 1.3.** Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining property.
- 1.4.** Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.
- 1.5.** Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.

- 1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.
- 1.7. Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc. shall be stacked as directed by the Engineer-in-charge.
- 1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

Dismantling implies carefully taking up or down or removing without damage. The articles shall be passed by hand where necessary and lowered and where these are fixed by nail, screws, bolts etc. these shall be taken out with proper tools.

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

- 2.1. Measurements of all work except hidden work shall be taken before dismantling tiled of stone floors laid in mortar and no allowance for increase in bulk shall be allowed. The dismantling tiled of stone floors laid in mortar of lime concrete shall be measured under this item. Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work,
- 2.2. All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter (a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out to the nearest 0.01 sq. mt. (c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.
- 2.3. The rate shall include cost of all labour involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the

serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the safety of the portion not required to be pulled down or of adjoining property and providing temporary enclosures or portions where considered necessary.

The rate shall include staking the unserviceable materials as directed with all lead and lift.

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

**Item No.3** : Dismantling sanitary fittings like wash basin . W.C. pan Indian and European type, flushing tank etc. including stacking the materials with all lead and lift.

**1.0. Workmanship**

The relevant specifications of **Item No. 1** shall be followed except that the dismantling work of sanitary fittings such as wash basin, W.C. Pan (all type of pans), Flushing tanks etc. shall be carried out.

**2.0. Mode of measurements & payment**

- 2.1.** Measurements of all work except hidden work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed. The demolition of lime concrete shall be measured under this item. Specification for deduction for voids, openings etc. shall be on same basis as that employed for construction of work.
- 2.2.** All work shall be measured in decimal system as fixed in its place subject to the following limits; unless otherwise stated hereinafter :  
(a) Dimensions shall be measured to the nearest 0.01 mt. (b) Area shall be worked out to the nearest 0.01 sq. mt.(c) Cubical contents shall be worked out to the nearest 0.01 Cu.m.
- 2.3.** The rate shall include cost of all labour involved and tools used in demolishing and dismantling including scaffolding. The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift. The rate also includes for temporary shoring for the safety of the portion not required to be pulled down or of adjoining property and providing temporary enclosures or portions where considered necessary.
- 2.4.** The rate shall be for a unit of one **number**.

**Item No.4 :** Removing and Scrapping old plaster laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.

1. This work shall consist of removing, as here in after set forth, **old deteriorated plaster of any thickness from wall / R.C.C. member** etc. which are in place but interfere with the new construction or are not suitable to remain in place, and of salvaging and disposing of the resulting materials and backfilling the resulting trenches and pits.
- 2 Existing **old deteriorated plaster of any thickness from wall / R.C.C. member** which are within the **building** and which are designed to be removed shall be removed upto the limits and extent specified in the drawings or as indicated by the Engineer-in-charge.
3. Dismantling and removal operations shall be carried out with equipment and in such a manner as to leave undisturbed, adjacent pavement, structure and any other work to be left in place.
4. All operations necessary for the removal of any existing structure which might endanger new construction shall be completed prior to the start of new work.
5. The structures shall be dismantled carefully and the resulting materials so removed as not to cause any damage to the serviceable materials to be salvaged, the part of the structure to be retained and any other properties or structures nearby.
6. Unless otherwise specified, the superstructure portion of culverts/ bridges shall be entirely removed and other parts removed to below the ground level or as necessary depending upon the interference they cause to the new construction. Removal of overlying or adjacent



materials if required in connection with the dismantling of the structures shall be incidental to this item.

7. Where existing culverts/ bridges are to be extended or otherwise incorporated in the new work, only such part of the existing structure shall be removed as are necessary to provide a proper connection to the new work. The connecting edges shall be cut, chipped and trimmed to the required lines and grades without weakening or damaging any part of the structure to be retained. Reinforcing bars which are to be left in place so as to project into new work as dowels or ties shall not be injured during removal of concrete.
8. Steel structures shall unless otherwise provided be carefully dismantled in such a manner as to avoid damage to members thereof. If specified in the drawing or directed by the Engineer-in-charge that structure is to be removed in a condition suitable for re-erection, all members shall be match marked by the contractor with white lead paint before dismantling end pins, nuts, loose plates, etc. shall be similarly marked to indicate their proper location, all pins, pin holes and machined surface shall be painted with a mixture of white lead and tallow and all loose parts shall be securely wired to adjaced members or packed in boxes.
9. Timber structures shall be removed in such a manner as to avoid damage to such timber or lumber as is designated to be salvaged by the Engineer-in-charge.
10. In removing pavements, kerbs, gutters and other structures like guard rails, fences, manholes, catch basines, inlets, etc. where portions of the existing construction are to be left in the finished work the same shall be removed to an existing joint or out and chipped to a true line

- with a face perpendicular to the surface of the existing strata. Sufficient removal shall be made to provide for proper grades and connections with the new work as directed by the Engineer-in-charge.
12. All concrete pavements, base course in carriage way and shoulders etc. designed for removal shall be broken to pieces whose volume shall not exceed 0.02 cubic meter and stockpiled at designated locations if the material is to be used later or otherwise arranged for disposal as directed.
  13. Where directed by the Engineer-in-charge holes and depressions caused by dismantling operations shall be backfilled with excavated or other approved materials thoroughly compacted in line with surrounding area.
  14. All materials obtained by dismantling shall be the property of Government. Unless otherwise specified, materials having any salvage value shall be placed in neat stacks of like material with the right-of-way as directed by the Engineer-in-charge, for which Contractor will remain responsible for its safe custody and preservation for 60 days after recording measurements of the salvaged materials.
  15. Pipe culverts that are removed shall be cleared and neatly piled on the right-of way at points designated by the Engineer-in-charge.
  16. Structural steel removal from old structure shall, unless otherwise specified or directed, be stored in a neat and presentable manner. Structures or portions thereof which are specified in the contract for re-erections shall be stored in separate piles.

17. Timber or lumber from old structure which is designated by the Engineer-in-charge as materials to be shall have all rails and bolts removed there from and shall be stored in neat piles locations suitable for loading.
18. All the products of dismantling operations which in the opinion of the Engineer-in-charge cannot be used or auctioned shall be disposed as directed, within 100 metres.
19. The work of dismantling structures shall be paid for in units indicated below by taking measurements before and after as applicable.

(i)	Dismantling Stone/brick/concrete (Plain and Reinforced) masonry	Cubic Metre
(ii)	Dismantling flexible and cement concrete pavement./RCC pipes	Cubic Metre
(iii)	Dismantling steel structure.	Tonne
(iv)	Dismantling timber structure	Cubic Metre
(v)	Dismantling pipes, guard rails, kerbs, gutters and fencing Linear	Metre
(vi)	Utility poles.	Nos.
20. The contract unit rates for the various items of dismantling shall by payment in full for carrying out the required operations including full compensation for all labour, materials, tools, equipment, safeguards and incidentals necessary to complete the work. These will also include excavation and backfilling where necessary and for handling, salvaging, piling and disposing of the dismantled materials within all lifts and upto all lead and lift.
21. Payment shall be made on **Square Meter** basis.

**Item No.5** : Excavation for foundation upto 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead.(A) Loose or soft soil.

**1.0. General**

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

**2.0. Clearing the site**

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

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

**3.0. Setting out**

After clearing the site the centre lines will be given by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all 'parts of the work. Contractor shall supply labours materials, etc. required for setting out the reference marks and bench 'marks and shall maintain them as long as required and directed.

**4.0. Excavation**

The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as

directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be leveled both longitudinally and transversely as directed by removing and watering as required. No earth filling will be allowed for bringing it to level, if by mistake or any excavation is made deeper or wider than that shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation **up to 1.5 m depth** shall be measured under this item.

**5.0. Disposal of the excavated stuff**

- 5.1.** The excavated stuff of the selected type shall be used in filling the trenches and plinth or leveling the ground in layers including ramming and watering etc.
- 5.2.** The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to all lead and lift.

**6.0. Mode of measurements & payment**

- 6.1.** The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer-in-charge. No payment shall be made for surplus excavation made in excess of above requirements or due to stopping and sloping back as found necessary on account of conditions of soil and requirements of safety.
- 6.2.** The rate shall be for a unit of **one cubic meter**.

**Item No.6** : Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:5. (1- Cement : 5 -fine sand)(B) Conventional.

## **1.0. Materials**

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

## **2.0. Workmanship**

### **2.1. Proportion:**

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

### **2.2. Wetting of bricks:**

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

### **2.3. Laying:**

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

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

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

**2.3.4.** The brick shall be laid with frog up wards. A set of tools comprising of wooden straight edges, man son's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.

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

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

## **2.4. Joints:**

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

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

## **2.5. Curing:**

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

## **2.6. Preparation of foundation bed:**

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

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

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

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

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

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

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

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

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



- (6) Forming charges of section not exceeding 350 sq.cm. in masonry.
- 3.3** 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**.

**Item No.7 :** Providing 15mm thick cement plaster in single coat on Rough (Similar)side of single or half brick walls for interior plastering upto floor two level and finished even and smooth in (ii) Cement mortar 1:4 (1-cement :4-sand) including finishing with a floating coat of neat cement slurry (upto 10 ton).

## **1.0. Materials**

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

## **2.0. Workmanship**

### **2.1. Scaffolding:**

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

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

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

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

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

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

**2:3. Application of plaster :**

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

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

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

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

**2.3.5.** The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level finished even and smooth in C.M. 1:3.

➤ **Water proofing materials in cement mortar**

The water proofing materials of Recrons S5 or other approved made shall be added to the cement at the rate specified or as directed by the Engineer-in-charge. The proportion proofing materials of water to be

mixed with 50 kg. bags shall be as recommended by the manufacturers of the water proofing material.

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

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

**3.2.** All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.

**3.3.** Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 20 mm at any point on this surface.

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

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

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

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

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

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

- 3.8. For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.
- 3.9. In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.
- 3.10. The payment shall be made extra for this work over and above the plaster work
- 3.11. The rate shall be for a unit or 1 Kg of water proofing materials used in 1 bag of weighing 50 Kg. cement used extra over the rate of plastering work.
- 3.12. The rate shall be for a unit of **One sq. meter.**

**Item No.8 :** Providing 10mm. thick cement plaster in single coat fair side of brick/ concrete wall for interior plastering and finished even and smooth in cement mortar 1:3(1 cement : 3 fine sand) with finishing with a floating coat of neat cement slurry. For All floors.

**1.0. Materials**

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

**2.0. Workmanship**

**2.1. Scaffolding:**

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

**2.2. Preparation of back ground :**

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

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

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

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

**2:3. Application of plaster :**

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

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



- 2.3.3.** In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.
- 2.3.4.** Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags oh the outside of the plaster and keeping them wet.
- 2.3.5.** The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level finished even and smooth in C.M. 1:4.
- 2.3.6.** The smooth concrete surface shall be suitable roughened to provide bond before plastering.

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

- 3.1. The payment shall be made for a unit of One sq.meter of work done extra over and above the payment of plaster work on wall surfaces.
- 3.2. The rate shall be for a unit of **One sq. meter.**

**Item No.9 :** 20mm thick sand faced cement plaster on walls upto height 10 metres above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1-cement : 3-sand) and 8mm thick finishing coat of CM. 1:1 (1-cement: 1-sand) etc. complete.

**1.0. Materials**

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

**2.0. Workmanship**

**2.1. Scaffolding:**

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

**2.2. Preparation of back ground :**

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

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

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

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

**2:3. Application of plaster :**

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

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

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

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

**2.3.5.** The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:3.

**2.3.6.** The finishing shall be gutkha finishing with 1 cm x 1 cm grooves shall be done as directed.

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

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

- 3.2.** All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.
- 3.3.** Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 20 mm at any point on this surface.
- 3.4.** This item includes plastering up to floor two level.
- 3.5.** The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.
- 3.6.** Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.
- 3.7.** For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq.mt each in area and for openings exceeding 0.5 sq.mt and not exceeding 3.00 sq.mt. in each area deductions and additions shall be made in the following manners.
- (a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings, for finish to plaster around ends of joints, beams posts etc.
- (b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for ravel, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with

different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all are equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.

- 3.8.** For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.
- 3.9.** In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits and sills shall be measured.
- 3.10.** The rate shall be for a unit of **One Sq. meter.**

**Item No.10** : Providing and fixing wooden flush door shutter with alluminium framing using 70 mm x 40 mm alluminium box section in shutter outer framing, with 35 mm thick waterproof flush door shutter with 1 mm thk. Laminated sheet on both side of the shutter with S.S. mortice lock, S.S. heavy duty hinges, S.S. door closer and S.S. stopper with necessary fixtures and fastenings including polishing work etc. complete.

## **1.0 Material**

### **1.1 Alluminium colour anodized section**

Alluminium used in the manufacture of wooden flush door section shall confirm to IS designation HEA-WP of IS 733-1975 and also designation W.V.G. WP of IS 1285-1975 section shall be as specified in the drawing and design. All section shall be free from any scratches or eny damages on surface. All section shall have finished luister surface on wall sides.

1.1.1 The work includes standard wooden flush door shutter with coloured anodized Alluminum framing with using 63.5 x 38.10mm (0.643 Kg/Rmt) Alluminum box section pipe in shutter outer framing filled with teak wood in frame with 35mm thick W.P. flush door shutter with 0.8mm thick laminate sheet on both sides of the shutters as directed by Engineer in change.

**1.2 Glazing clips:** Glazing clips shall be free from any scratches or holes or any damage of on surface all section shall have finished luster surface on all sides.

**1.4 Rubber Gasket:** Rubber gasket shall be approved make shall be free from any scratches or holes or any damage on surface and shall have finished luster surface on all sides.

**1.5. Fixtures**



- 1.5.1. Hinges shall be of approved make shall be free from any scratches or holes or any damage on surface and shall have finished luster surface on all sides.
- 1.5.2. **Handles:** S.S. Handles shall be of approved make shall be free from any scratches or holes or damages on surface and shall have finished luster surface on all sides.
- 1.5.3 **Bolts :** All bolt shall be approved make shall be free from any scratches or holes or damages oh surface and shall have finished luster surface on all sides.
- 1.5.4. **Door closer screws :** S.S. Door closer shall be of approved make shall be free from any scratches or holes or damages on surface and shall have finished luster surface on all sides.
- 1.5.5. Mortise lock etc. Mortise lock shall be of approved make shall be free from any scratches *or* holes or damages on surface and shall have finished luster surface on all sides.

## **1.6 Laminated sheet**

The laminated sheet shall be 0.8 mm thick of approved quality on both sides of the shutters as per instruction of Engineer in charge.

## **1.7 Workmanship**

The work of wooden flush door with coloured anodized Alluminum framing shall be done with extreme finishing. The 0.8mm thick laminated sheet shall be fixed on both sides of the shutters as directed by Engineer-in-charge using glazing clips and rubber gasket as required. All the fixtures and fastenings shall be fixed at right place and as directed by Engineer-in-charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly. The complete alluminium

structure shall be fixed on colour marble sill / jambs fixed on the way with oxoldite or other adhesive.

### **1.8 Mode of Measurement and Payment**

The unit rate of wooden flush door with coloured anodized Alluminum framing shall include the cost of all material, cost of anodizing. Cost of all necessary fixture and fastening & marble jambs & sills with moulding. Labour charge for fixing frame, doors and fixing door in wall at the place shown drawing and instructed by engineer in charge, all tools and plant required for assembling and fixing in position, finishing as per direction of Engineer in charge and all other incidental expenses for preparing door frame and shutter of specified size complete the door structure or its components as shown on the drawing and according the these specification. They shall include the cost of making, fixing and making walls good by plaster colour etc. as directed.

The wooden flush door with coloured anodized Alluminum framing shall be measured for its width and height, limiting dimension to those specification on plan or as directed.

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

**Item No.11** : Providing and fixing FRP frame size 100x50 mm and 28mm thick FRP depress panel shutter having extra reinforcement on sides & edges in Gel coat finish. The core of the shutter & frame is to be filled up with injected fire retardant grade polyurethane foam done in situ alongwith embedded wooden pieces for stiffening and also taking hinges and fixtures. The whole FRP frame and shutter is to be water proof weather proof termite proof and resistance to mild acid/alkali. Rates are to be inclusive of S.S. hinges with necessary screws and alluminium fixtures and fastenings and fastener sleeve.

### **1.0 SHUTTER MATERIAL :**

28 mm thick FRP shutter in depress panel design shall be having 100 x 50 mm FRP thickness fire retardant grade FRP skin and embedded wooden pieces for stiffening as well as holding hinges and fixtures all moulded into one piece shutter. Core material shall be injected fire retardant grade rigid polyurethane foam done in situ having density 32 to 36 Kg/m<sup>3</sup>, compressive strength 1.8 to 2.0 kg/cm<sup>2</sup>, flexural strength 3.5 to 4.5 kg/cm<sup>2</sup>. Whole shutter shall be water proof, weather proof, termite proof and mild acid / alkali resistance.

### **2.0 SHUTTER :**

28 mm thick depress panel FRP shutter shall be jointless. It shall be straight and smooth and of standard shape finished in gel coat. All necessary fixtures and fastening shall be fixed where wooden piece provided.

### **3.0 SHUTTER WORKMANSHIP :**

Shutter shall be fixed in line, level and proper manner having 2.0 to 3.0 mm play i.e. air space for smooth and easy working. Three S.S. hinges shall be fixed properly with necessary screws.

#### **4.0 SHUTTER TOLERANCE :**

1.5 mm tolerance will be allowed in thickness of shutter.

#### **5.0 SHUTTER FIXTURES AND FASTENING :**

All fixtures & fastening like S.S. aldrop, tadi or baby-latch, stopper, handle shall be fixed with shutter in usual manner.

The shutter shall be fixed to frame using fixing necessary Khila or screws including drilling in granite frame as directed.

During fixing of shutter if the granite frame is damage the same will be replaced by contractor's own cost without any extra payment.

Product is from reputed company having ISO 9001-2000 certificate and with three years performance guarantee.

#### **6.0 MODE OF MEASUREMENT AND PAYMENT :**

Rate includes the cost of all materials, S.S. fixtures and fastening with necessary screws for fixing in position, labour, tools, equipments etc. required for satisfactory completion of item as directed by the Engineer in charge with all lead and lift. The payment shall be made on unit of smt. basis.

**Item No.12** : P & L 24" x 24" vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 ( 1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finished with flush pointing & cleaning the surface etc. complete for light shade.

## **1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. **24" x 24" vitrified tiles** (Kajeria, Asian, Bell ceramic, Somani or equivalent standard quality) **10 mm thick** shall conform to relevant Indian standard. The size & colour of vitrified tiles shall be approved by Engineer in charge.

## **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 mason to place wooden planks across and squat on it.

**2.1.2.** The **vitrified flooring tiles** shall be laid on cement mortar bedding of 12 mm. thick in CM. 1:6. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall be cleared and well wetted. The mortar shall then be spread in thickness not less than 8 mm. at any place and average 20 mm. thickness. The proportion of the cement mortar shall be as specified in the item.

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

### **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 dedos or plastered face of wall as the case may be. The paving under dedo or skirting shall not be measured. No deduction shall be made not extra paid for any opening in the floor of area upto 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the same rooms.

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

**Item No.13** : Providing and laying Ceramic tiles (plain or designed) of approved size 6 mm. thick in skirting risers of steps and dado on 10 mm. Thick cement plaster 1:3 (1 cement : 3 coarse sand) finishing with flush pointing in white cement slurry (B) Ceramic tiles 6 mm to 8 mm.

## **General**

This work shall consist of furnishing and placing **Ceramic tiles skirting** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

### **1.0** Vitrified joint less tiles **6 mm** thick

Vitrified tiles Skirting tiles shall be of approved brand and make as approved by Engineer in charge.

**1.1** The size of Vitrified tiles Skirting tiles shall generally be square shape 60 Cm x 60 Cm and **6 mm.** thick or as directed by the Engineer in charge and Architect.

**1.2** Tolerance if length and breadth shall be plus or minus one millimeter. Tolerance on thickness shall be plus 5 mm The maximum variation from the stated size other than thickness of tile shall be plus or minus 1.5 mm. The thickness of the shall be **6 mm.** Except as above the tile shall conform to IS 777-1970.

**1.3** The Vitrified tiles Skirting tiles shall satisfy the tests as regards traverse strength resistance to wear and water absorption.

**1.4** The colour of the Vitrified tiles Skirting tiles shall be directed by Engineer Or Architect.

**1.5** The Vitrified tiles Skirting tiles shall be of best quality as approved by the Engineer In charge. They shall be flat and true to shape. They



shall be free from cracks, crazing spots, chipped edges and corners.  
The glazing shall be of uniform shade.

## **1. 1. WATER**

- 1.1** Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall conform to the standard specified in I S 455 -1978.
- 1.2.** If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness change in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.
- 1.3** Water for curing mortar concrete or masonry should not be too acidic or too alkaline.
- 1.4** It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.
- 1.5** Hard and bitter water and sea water shall not be permitted for curing.

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

**1.7.** Storage Water shall be stored in containers/ tanks covered at top and cleaned at regular intervals in order to prevent intrusion by foreign matter or growth of organic matter Water from shallow muddy or marshy surface shall not be permitted The intake pipe shall be enclosed to exclude silt, mud grass and other solid materials and there shall be a minimum depth of 0.60 m on water below the intake at all times.

**1.8.** As a guide following concentrations represent the maximum permissible values.

- (a) To neutralize 200 ml sample of water using phenolphthalein as indicator, it should not require more than 2 ml of 0.1 normal NaOH.
- (b) To neutralize 200 ml of water using methyl orange as an indicator, it should not required more than 10 ml of 0.1 normal HCl.
- (c) The permissible limits for solids shall be as follows when tested in accordance with IS 3025.

	Permissible limits (Max)
Organic	200 mg/lit
Inorganic	3000 mg/lit
Sulphates (SO <sub>4</sub> )	500 mg/lit
Chlorides (Cl)	500 mg/lit
Suspended matter	2000 mg/lit
In case of structures of length 30 m and below, the permissible limit of chlorides may be increased up to 1000 mg/lit.	

All samples of water (including potable water shall be tested and suitable measures taken where necessary to ensure conformity of the water to the requirements stated herein.

(d) The pH value shall not be less than 6.

## **2.0 CEMENT**

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

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

## **3.0 SAND**

**3.1** Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules.

**3.2.** For masonry works sand shall confirm to the requirements of IS: 2116.

**3.3.** For plain and reinforced cement concrete (PCC and RCC) or pre stressed concrete (PSC) works fine aggregates shall consist of clean, hard strong and durable prices of crushed stone, crushed gravel or suitable combination of natural sand crushed stone or gravel, They shall not contain dust lumps soft or flaky materials mica or other

deleterious materials in such quantities as to reduce the strength and durability of concrete, or to attack the embedded steel. Motorized sand washing machines should be used to remove impurities from sand. Fine aggregate having positive alkali-silica reaction shall not be used. All fine aggregates shall conform to IS L 383 and tests for conformity shall be carried out as per IS : 2386 (Part I to VIII) The contractor shall submit to the Engineer in charge the entire information indicated in Appendix A of IS : 383. The fineness modulus of fine aggregate shall neither be less than 2.00 nor greater than 3.5.

**3.4.** Sand fine aggregates for structural concrete shall conform to the following grading requirements as shown in the table below

**3.5 Fine Sand:** The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:

IS. Sieve Designation	% by wt. passing		
	Zone I	Zone II	Zone III
10 mm	100	100	100
4.75 mm	90-100	90-100	90-100
2.3 6mm	60-95	75-100	85-100
1.110 mm	30-70	55-90	75-100
600 MC	15-34	35-59	60-79
300 MC	5-20	8-30	12-40
150 MC	0-10	0-10	0-10

**Coarse Sand:** The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:

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

## **5.0 WHITE CEMENT**

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

## **6.0 WORKMANSHIP**

**6.1** Vitrified tiles Skirting tiles of approved quality shall be laid evenly to level and slope as directed by Engineer in charge over a 10 mm thick bed of a base layer consisting of cement mortar 1:3 ( 1 cement: 3 coarse sand by volume) .

**6.2.** Cement and sand for base layer shall be mixed in proportions of 1:3 (1 cement : 3 coarse sand by volume) Cement and sand shall be proportioned by volume after making due allowance for bulking. The require quantity of water shall then be added and the mortar mixed to produce workable consistency before mixing platform shall be

thoroughly cleaned before changing from one type of cement to another.

- 6.3.** The mixing for base layer shall be done intimately, The operation shall be carried out on clean water tight platform, and cement sand shall be first mixed dry in the required proportion to obtain uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. In case of cement mortar, that has suffered because of evaporation of water the same shall be re-tempered by adding water as frequently as needed to restore the requisite consistency but its re-tempering shall be permitted only within thirty minute from the time of addition to water at the time of initial mixing.
- 6.4.** Joints of skirting shall be through and continuous throughout the building as directed by Engineer in charge and shall be finished with the use of white cement.

**7.0 MODE OF MEASUREMENT & PAYMENT :**

- 7.1.** The unit rate skirting shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, finishing, curing providing skirting all over the area of floors and corners and sill of doors etc, and all other incidental expenses for producing skirting work to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The rate of Vitrified tiles Skirting shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

- 7.2.** The Vitrified tiles Skirting work shall be measured for its **length and width**, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.
- 7.3.** The payment will be made on square Meter basis of the finished work.

**Item No.14** : Providing and laying Ceramic tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement: 3-coarse sand ) finishing with flush pointing in white cement.

## **1.0 Material**

### **WATER**

- 1.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil j\injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978.
- 1.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness charge in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.
- 1.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline.
- 1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.



- 1.5 Hard and bitter water shall not be used for curing.
- 1.6 Potable water will generally found suitable for curing mortar or concrete.

## **CEMENT**

- 2.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976.
- 2.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent intermixing the materials.

## **M-55. White glazed tiles**

- 55.1.** The tiles shall be of best quality as approved by the Engineer-in-charge. They shall be flat and true to shape. They shall be free from cracks, crazing, spots, chipped edges and corners. The glazing shall be of uniform shade.
- 55.2.** The tiles shall be nominal size of 150 mm. x 150 mm. unless otherwise specified. The maximum variation from the stated sizes, other than the thickness of tile, shall be plus or minus 1.5 mm. The thickness of tile shall be 6 mm. Except as above the tiles shall conform to I.S. 777-1970.

## **1.0 MODE OF MEASUREMENT & PAYMENT :**

- 1.1. The unit rate flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, compacting, finishing, curing mirror polishing, providing skirting of 7.5 cm high all over the length of walls and corners and sill of doors etc, and all other incidental expenses for producing flooring work to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

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

- 1.2. The plaster work shall be measured for its length and height, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.
- 1.3. The payment will be made on square Meter basis of the finished work.

**Item No.15** : Providing and fixing equivalent make standard superior colour CARAT 2036 EWC WALL HUNG pan including fixing seat cover (soft close) chair brackets, jet spray of best quality approved and making all required labour and material etc.Complete.

**1.0. Materials**

Wash down water closet (Wall hung W. C. pan) with integral "P" or "S" trap including jointing the trap with soil pipe shall conform to M-60. Cement mortar shall conform to M-11.

**2.0. Workmanship**

**2.1.** The closet shall be fixed to the floor by means of 75 mm. long 6.5 mm. diameter counter sunk bolts and nuts embedded in the floor concrete using rubber or before washers so as not to allow any lateral displacement. The joint between the trap of W.C. and soil pipe shall be made with C M. 1:1 (1 cement : 1 fine sand) including cutting holes in walls and making good the same connecting the flush bend with cistern and closet vitreous china.

**3.0. Mode of measurements and payment**

**3.1.** The rate shall includes the cost of all materials and labour involved in all the operations described under workmanship.

**3.2.** The rate includes cost of all labour for fixing pans and seat and cover, inlet, connections etc. complete including testing the same. The payment of seat and cover shall be made separately.

**3.3.** The rate shall be for a unit of One number.

**Item No.16** : Providing and fixing Wash Basin with single hole for pillar tap with C.I. or M.S. brackets painted white including cutting holes and making good the same including fixing C.P. Brass waste 32 mm dia, M.I. Fisher union 32 mm dia C.P. Bottle trap, Pillar cock L&K 15 mm dia stop cock L&K 150 mm dia and fixing supply pipe etc. complete as directed (A) Vitreous china (ii) flat back wash basin 550 mm x 400 mm size in colour.

**1.0. Materials**

**1.1.** The Vitreous China flat back wash basin shall be 550 mm. x 400mm. of 1st quality and make as approved by the Engineer-in-charge. The wash basin shall conform to M-59.

**2.0. Workmanship**

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

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

**2.3.** The C.P. brass trap and union shall be connected to 40 mm. dia. waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to a gully trap or direct in to gully trap on the ground floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where the surface drain or a floor trap is placed directly under the basin and the waste is discharged in to vertically.

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

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

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

**3.0. Mode of measurements & payment**

**3.1.** The rate includes cost of 40mm dia. C.P. brass waste, 40mm dia. M.I. fisher union, 15 mm brass screw down stop cock, 15mm pillar cock with all labour, materials, tools and plant etc. required for satisfactory completion of this item as specified in workmanship.

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

**Item No.17** : Providing and fixing concealed center point to wall ceiling & floor CPVC (SDR 13.5) PIPE having National Sanitation Foundation (NSF) seal for potable water of following dia. nominal bore tube fitting and clamps including making good the wall, ceiling and [A] 15 mm.

**1.0. Materials**

- 1.1.** The pipes shall be standard CPVC pipe of specified dia.
- 1.2.** The fittings, clamps etc. required for specified dia. bore pipes shall be of best quality and makes as approved by the Engineer-in-charge.

**2.0. Workmanship**

**2.1. Cutting, Laying & Jointing**

- 2.1.1.** When the tubes are to be cut or rethreaded, the ends shall be carefully filed out so that no obstruction to bore is offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner that it will not result in slackness of joints when the two pieces are screwed together.
- 2.1.2.** The taps and dies shall be used only for straightening screw threads which have become bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the water tight joint. The screw threads for tube and fitting shall be protected from edge until they are fitted.
- 2.1.3.** In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round the screwed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust and dirt during fixing. But from the joints shall be

removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreign matter.

- 2.1.4.** Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anti-corrosive paint to prevent corrosion.

**2.2. Fixing of tube fittings to wall, ceiling & floors.**

- 2.2.1.** In case of fixing of tubes and fittings to the walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed in ducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is passed through a wall or floor for expansion and contraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sand filling.

- 2.2.2.** All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard

pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made (1 cement : 3 coarse sand), and properly finished to match the adjacent surface.

### **2.3. Testing of joints :**

**2.3.1.** After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found liken shall be redone, and ail leaking pipes removed and replaced without extra cost.

**2.3.2.** The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during the testing.

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

**3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to



required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.

- 3.2.** The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc shall be measured and paid under this item.
- 3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.
- (i) Dimension shall be measured to the nearest 0.01 meter.
  - (ii) Area shall be worked out to the nearest 0.01 sq. meter.
- 3.4.** All measurements of cutting shall unless otherwise stated by held to include the consequent waste.
- 3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.
- 3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested and carrying out the tests.
- 3.7.** The rate includes CPVC pipe with screwed socket joints to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as

required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.

**3.8.** The rate shall be for a unit of one running meter.

**Item No.18** : Providing and fixing concealed center point to wall ceiling & floor CPVC (SDR 13.5) PIPE having National Sanitation Foundation (NSF) seal for potable water of following dia. nominal bore tube fitting and clamps including making good the wall, ceiling and [C] 25 mm.

**1.0. Materials**

- 1.1.** The pipes shall be standard CPVC pipe of specified dia.
- 1.2.** The fittings, clamps etc. required for specified dia. bore pipes shall be of best quality and makes as approved by the Engineer-in-charge.

**2.0. Workmanship**

**2.1. Cutting, Laying & Jointing**

- 2.1.1.** When the tubes are to be cut or rethreaded, the ends shall be carefully filed out so that no obstruction to bore is offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner that it will not result in slackness of joints when the two pieces are screwed together.
- 2.1.2.** The taps and dies shall be used only for straightening screw threads which have become bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the water tight joint. The screw threads for tube and fitting shall be protected from edge until they are fitted.
- 2.1.3.** In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round the screwed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust and dirt during fixing. But from the joints shall be

removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreign matter.

**2.1.4.** Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anti-corrosive paint to prevent corrosion.

**2.2. Fixing of tube fittings to wall, ceiling & floors.**

**2.2.1.** In case of fixing of tubes and fittings to the walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed in ducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is passed through a wall or floor for expansion and contraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sand filling.

**2.2.2.** All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard

pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made (1 cement : 3 coarse sand), and properly finished to match the adjacent surface.

### **2.3. Testing of joints :**

**2.3.1.** After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found liken shall be redone, and ail leaking pipes removed and replaced without extra cost.

**2.3.2.** The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during the testing.

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

**3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to

required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.

- 3.2.** The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc shall be measured and paid under this item.
- 3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.
  - (i) Dimension shall be measured to the nearest 0.01 meter.
  - (ii) Area shall be worked out to the nearest 0.01 sq. meter.
- 3.4.** All measurements of cutting shall unless otherwise stated by held to include the consequent waste.
- 3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.
- 3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested and carrying out the tests.
- 3.7.** The rate includes CPVC pipe with screwed socket joints to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as

required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.

**3.8.** The rate shall be for a unit of one running meter.

**Item No.19** : Providing and fixing concealed center point to wall ceiling & floor CPVC (SDR 13.5) PIPE having National Sanitation Foundation (NSF) seal for potable water of following dia. nominal bore tube fitting and clamps including making good the wall, ceiling and [E] 40 mm.

## **1.0. Materials**

- 1.1.** The pipes shall be standard CPVC pipe of specified dia.
- 1.2.** The fittings, clamps etc. required for specified dia. bore pipes shall be of best quality and makes as approved by the Engineer-in-charge.

## **2.0. Workmanship**

### **2.1. Cutting, Laying & Jointing**

- 2.1.1.** When the tubes are to be cut or rethreaded, the ends shall be carefully filed out so that no obstruction to bore is offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1955 with pipe dies and taps carefully in such a manner that it will not result in slackness of joints when the two pieces are screwed together.
- 2.1.2.** The taps and dies shall be used only for straightening screw threads which have become bent or damaged and shall not be used for turning of the threads so as to make them slack as the latter procedure may not result in the water tight joint. The screw threads for tube and fitting shall be protected from edge until they are fitted.
- 2.1.3.** In jointing the tubes, the inside of the socket and the screwed end of the tubes shall be oiled and smeared with white or red lead and wrapping around with a few turns of fine spun yarn round the screwed end of the tube. The end shall then be tightly screwed in the socket, tees, etc. with a pipe wrench. Care shall be taken that all times free from dust and dirt during fixing. But from the joints shall be



removed after screwing. After laying the open ends of the pipes shall be temperately plugged to prevent access of water, soil, or any other foreign matter.

**2.1.4.** Any threads exposed after jointing shall be painted or in the case of underground piping thickly coated with approved anti-corrosive paint to prevent corrosion.

**2.2. Fixing of tube fittings to wall, ceiling & floors.**

**2.2.1.** In case of fixing of tubes and fittings to the walls or ceilings, these shall run on the surface of the wall, or ceiling (not in chase) unless otherwise specified. The fixing shall be done by means of standard pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to pattern, holder clamps keeping the pipes about 15 mm. clear of the wall. When it is found necessary to conceal the pipes and when specified so, chasing may be adopted or pipe fixed in ducts or recesses etc. provided that there is sufficient space to work on the pipe with usual tools. The pipe shall not ordinarily be buried in walls or solid floors, where unavoidable, pipe may be buried for short distances provided that adequate protection is given against damage and where so required joints are not buried. Where required M.S. tube sleeve shall be fixed at a place a pipe is passed through a wall or floor for expansion and contraction and other movements. In case the pipe is embedded in walls or floors, it should be painted with anti-corrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under the floors, the pipe shall be laid in layer of sand filling.

**2.2.2.** All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard

pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made (1 cement : 3 coarse sand), and properly finished to match the adjacent surface.

### **2.3. Testing of joints :**

**2.3.1.** After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found liken shall be redone, and ail leaking pipes removed and replaced without extra cost.

**2.3.2.** The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during the testing.

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

**3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to

required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.

- 3.2.** The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc shall be measured and paid under this item.
- 3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.
- (i) Dimension shall be measured to the nearest 0.01 meter.
  - (ii) Area shall be worked out to the nearest 0.01 sq. meter.
- 3.4.** All measurements of cutting shall unless otherwise stated by held to include the consequent waste.
- 3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.
- 3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested and carrying out the tests.
- 3.7.** The rate includes CPVC pipe with screwed socket joints to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as

required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.

**3.8.** The rate shall be for a unit of one running meter.

**Item No.20** : Providing and fixing PVC SWR Nahni Trap IS 14735 for drain with jali of the following nominal diameter of self cleansing design with C.I. Scread down or hinged grating including the cost of cutting and making good the walls. [B] 75 mm.

**1.0. Materials**

- 1.1.** The PVC SWR Nahni trap shall conform to M-69. The C.I. hinged or screwed down cover shall be of best quality and approved by Engineer in charge.

**2.0. Workmanship**

- 2.1.** The Nahni trap with 100 mm. dia inlet and 50 mm. dia. outlet shall be fixed as per drawing or as directed.
- 2.2.** The Nahni trap shall be jointed with C.I. pipe, 75 mm. dia. with lead joints. The lead joints shall be done in conformation with I.S. 782-1976.

**3.0. Mode of measurements and payment**

- 3.1.** The rate includes cost of all labour, materials, tools and plants etc. required for satisfactory completion of this item including lead, jointing and testing.
- 3.2.** The rate shall be for a unit of one number.

**Item No.21** : Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm<sup>2</sup> working pressure poluthene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clips etc. including making good the wall ceiling and flo (C) 32 mm.

## **1.0. Materials**

**1.1.** The low density polythene pipe of specified diameter with **10.0 Kg./Sq.cm.** working pressure U.P.V.C. pipe shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.

## **2.0. Workmanship**

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

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

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

**2.4.** U.P.V.C. pipe shall be supported at the following intervals :

-20 mm. dia 500 mm.      -25 mm. dia 750.mm.      -32 mm. dia. 900 mm.

**2.5.** Closer support spacing shall be provided if recommended by the manufacture.

**2.6.** The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view during execution.

**2.7.** U.P.V.C. pipe shall be fixed on wall with wooden plugs and suitable plastic clamps.

**2.8. Jointing the pipes :**

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

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

**2.9. Laying pipes in Trenches :**

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

**2.9.2.** The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to

avoid any induced stressed due to deflection. Any deviation required shall be obtained by using proper type of rubber ring joints.

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

**3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.

**3.2.** The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc shall be measured and paid under this item.

**3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.

(i) Dimension shall be measured to the nearest 0 01 meter. (ii) Area shall be worked out to the nearest 0.01 sq. meter.

**3.4.** All measurements of cutting shall unless otherwise stated by held to include the consequent waste

**3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.

**3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested an carrying out the tests

**3.7.** The rate includes U.P.V.C. pipe with screwed socket joints. to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with



clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.

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

**Item No.22** : Providing and fixing to wall ceiling and floor 10.0 Kg. F/Cm<sup>2</sup> working pressure poluthene pipes of the following outside Dia. Low density, complete with special flange compression type fittings, wall clips etc. including making good the wall ceiling and flo (G) 110 mm.

## **1.0. Materials**

**1.1.** The low density polythene pipe of specified diameter with **10.0 Kg./Sq.cm.** working pressure U.P.V.C. pipe shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.

## **2.0. Workmanship**

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

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

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

**2.4.** U.P.V.C. pipe shall be supported at the following intervals :

-20 mm. dia 500 mm.      -25 mm. dia 750.mm.      -32 mm. dia. 900 mm.

**2.5.** Closer support spacing shall be provided if recommended by the manufacture.

**2.6.** The guide lines indicated by the manufacturer regarding handling, transportation, storing, laying and jointing of pipes shall be kept in view during execution.

**2.7.** U.P.V.C. pipe shall be fixed on wall with wooden plugs and suitable plastic clamps.

**2.8. Jointing the pipes :**

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

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

**2.9. Laying pipes in Trenches :**

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

**2.9.2.** The pipes laid underground shall not be less than one meter from the ground level. The pipe shall be positioned in the trenches so as to

avoid any induced stressed due to deflection. Any deviation required shall be obtained by using proper type of rubber ring joints.

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

**3.1.** The description of the item shall, unless otherwise stated be held to include where necessary conveyance and delivery, handling, unloading, storing fabrication, hoisting, all labour for finishing to required shape and size, setting, fitting in position straight, cutting and waste return of packing etc.

**3.2.** The length shall be measured on running meter basis of finished work. The length shall be taken along the centre line of the pipe and fittings. The pipes fixed to wall, ceiling, floors etc shall be measured and paid under this item.

**3.3.** All the work shall be measured in decimal system as fixed in its place, subject to tolerance given below unless otherwise stated.

(i) Dimension shall be measured to the nearest 0 01 meter. (ii) Area shall be worked out to the nearest 0.01 sq. meter.

**3.4.** All measurements of cutting shall unless otherwise stated by held to include the consequent waste

**3.5.** In case of fitting of unequal bore, the targets bore shall be measured for the test.

**3.6.** Testing of pipe lines fittings, and joints include for providing all plant appliances necessary for obtaining access to the work to be tested an carrying out the tests

**3.7.** The rate includes U.P.V.C. pipe with screwed socket joints. to gather with all fittings (such as bends, sockets springs, elbows, test, crosses, short pieces, clamps and plugs, unions etc.) and fixing complete with

clamping wall hooks, wooden plug etc. and also curing, screwing and waste and for making forged (or hand made) bends on piping as required. Connector shall be inserted where required or directed. The rate also includes cutting through walls, floors etc. and their making good and painting exposed threads with anti-corrosive paint as above and testing where tubes are to be fixed to wall, ceiling and flooring, the rates shall not include painting of pipes, providing sleeves and sand filling under floor for which separate payment shall be made.

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

**Item No.23** : Providing and laying Ceramic tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3-coarse sand ) finishing with flush pointing in white cement.

## **1.0. Materials**

Water shall conform to M-1. Cement mortar shall conform to M-11. **Ceramic tiles 6mm thick** shall conform to relevant Indian standard. The size & colour of **ceramic** tiles shall be approved by Engineer in charge.

## **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 mason to place wooden planks across and squat on it.

**2.1.2.** The Ceramic tiles shall be laid on cement mortar bedding of 12 mm. thick in C.M. 1:6. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall be cleared and well wetted. The mortar shall then be spread in thickness not less than 8 mm. at any place and average 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 approved by Engineer in charge.

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

### **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 dedos or plastered face of wall as the case may be. The paving under dedo or skirting shall not be measured. No deduction shall be made not extra paid for any opening in the floor of area upto 0.1 sq.mt. Nothing extra shall be paid for laying the floors at different levels in the same rooms. No extra payment shall be made for different pattern, different size & different colour in various rooms.

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

**Item No.24** : Providing and fixing Gun metal check or non-return fullway wheel valve. (C) 25mm dia.

**1.0. Materials :**

The gun metal check or not return full way wheel valve or specified dia. shall conform to I.S. : 778-1964. The non-return valve shall be of tested quality.

**2.0. Workmanship**

**2.1.** The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leak proof.

**3.0. Mode of measurements and payment**

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

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



**Item No.25** : Providing and fixing Gun metal check or non-return fullway wheel valve.(E) 40mm dia.

**1.0. Materials :**

The gun metal check or not return full way wheel valve or specified dia. shall conform to I.S. : 778-1964. The non-return valve shall be of tested quality.

**2.0. Workmanship**

**2.1.** The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leak proof.

**3.0. Mode of measurements and payment**

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

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

**Item No.26** : Providing and fixing screw down bib taps of following size.(B) Brass chromium plated screws down Bib Tap. (i) 15mm. dia.

**1.0. Materials**

The screw down bib taps of 15mm dia. shall conform to IS. : 781 - 1977. The stop tap shall be of tested quality.

**2.0 Workmanship**

The stop tap shall be fixed in position by means of Jam nut and socket. The stop tap shall be fixed near the inlet of the water meter or as directed. The joints shall be done with white zinc and spun yarn. The joint shall be tested for leak proofing.

**3.0. Mode of measurements and payment**

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

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

**Item No.27** : Applying two coats of acrylic lappy ( putty) and two coats of primer of approved brand and manufacture on new wall surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter.

**1.0. Materials**

Water shall be conform M-1. The acrylic emulsion paint shall conform to I.S.: 5411-1969 (Part-I).

**2.0. Workmanship**

The painting work shall be of Birla or Asian acrylic lappy (Putty) and two coats of primer of approved brand & manufactures on new wall surface to give an even shade.

**2.1. Scaffolding** : Wherever scaffolding is necessary it shall be erected in such a way that as far as possible on part of scaffolding shall rest against the surface to be white or colour washed A properly secured strong and well tied suspended platform (Zoola) may be used for white washing. Where ladders are used pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the floors and walls. For white washing of ceilings, proper stage scaffolding shall be erected where necessary.

**2.2. Preparation of surface** : The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications of distemper.

**2.2.1.** All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches.

The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S. 2395 (Part 01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

### **2.3. Preparation of Mix :**

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

### **2.4. Application:**

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

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

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

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

**2.5. Precautions:**

- (a) Old brushes if they are to be used with emulsion paints shall be completely dried of turpentine or oil paint by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water fusing break periods to prevent the paint from hardening on the brush.
- (b) In the preparation of wall for plastic emulsion painting, no oil base petals shall be sued in filling cracks, holes etc.
- (c) Splashes on floors etc. shall be cleaned out, without delay as they will be difficult to remove after hardening.
- (d) Washing or surfaces treated with emulsion paint shall not be done within 3 to 4 weeks of application.

**2.6. Protective measures :** The surface of doors, windows, floors, articles, of furniture etc. and such other parts of the building not to be white washed shall be protected from being splashed upon. Such surfaces shall be cleaned of white wash splashed if any.

**3.0. Mode of measurements and payment**

**3.1.** All the work shall be measured in the decimal system as under:

- (a) Dimensions shall be measured to the nearest 0.01 m.

- (b) Area in individual item shall be worked out to the nearest 0.01 sq.m. All the work shall be measured in sq.mt. Deductions for jambs, soffits, sills etc. for openings not exceeding 0.5 sq.mt. each in area, for ends of joists, posts, beams, girders, steps etc. not exceeding 0.5 sq.mt. each in area and for openings exceeding 0.5 sq.mt. and not exceeding 3.0 sq.mt. each in area,"deductions and additions shall be made as under.
- 3.2.** No deductions shall be made for ends of joists, beams, posts, etc. and openings not exceeding 0.5 sq mt. each. No addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.
- 3.3.** No deductions for openings exceeding 0.5 sq.mt. but not exceeding 3 sq.mt. each shall be made as follows and no addition will be made for reveals, jambs, soffits etc. of these openings:
- (a) When both the faces of walls are provided with finish, deduction shall be made for one face only.
- (b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for door, windows, etc. on which width of reveals is less than that of the other side. Where width of reveals on both faces of wall are equal, deduction of .50% of area of opening on each face shall be made from total area of finish.
- (c) When only one face of wall is treated and the other face is not treated, full deduction shall be made if the width of reveal on the treated side is less than that on the untreated side, but if the width of the reveal is equal or more than on the untreated

side neither deductions nor additions to be made for reveals, jambs, soffits, sills etc.

- 3.4 In case of area of openings exceeding 3 sq. mt. each, deductions shall be made for openings but jambs, soffits, sills shall be measured.
- 3.5 No deductions shall be made for attachment such as casing, conducts, pipe, electric wiring and the like.
- 3.6 Corrugated surfaces shall be measured flat as fixed and not girth. The quantities so measured shall be increased by the following percentage and the resultant shall be included with the general areas:
- (a) Corrugated steel sheets..... 14%
  - (b) Corrugated A.C. sheets ..... 20%
  - (c) Semi corrugated A.C. Sheets.... 10%
  - (d) Naintial pattern roof (Plain sheeting sheets)..... 10%
  - (e) Naintial pattern roof (with corrugated sheets) ..... 25%
- 3.7 Cornices and other wall features, when they are not picked out in a different finish/colour shall be girthed and included in the general area.
- 3.8 Extra payment shall be done on ceiling and sloping roofs.
- 3.9 The rate shall include the cost of ail materials, labour, scaffolding, protective measures etc. involved in all the operations described above.
- 4.0 The rate shall be for a unit of One sq. meter.

**Item No.28** : Wall painting (two coats) with plastic emulsion paint of approved brand and manufacture on undecorated wall surface to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth.

**1.0. Materials**

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

**2.0. Workmanship**

The painting work shall be for subsequent coat of weather proof plastic emulsion paint of approved brand & manufactures.

**2.1. Scaffolding** : Wherever scaffolding is necessary it shall be erected in such a way that as far as possible on part of scaffolding shall rest against the surface to be white or colour washed. A properly secured strong and well tied suspended platform (Zoola) may be used for white washing. Where ladders are used pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the floors and walls. For white washing of ceilings, proper stage scaffolding shall be erected where necessary.

**2.2. Preparation of surface** : The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications of distemper.

**2.2.1.** All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of



distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part 01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

### **2.3. Preparation of Mix :**

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

### **2.4. Application :**

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

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

**2.4.3.** The paint shall be applied with brush or rollers. For undecorated surfaces, the surface shall be treated with minimum two coats of cement water proofing paint. The second or subsequent coat shall not

be started until the proceeding coat as become sufficiently hard to resist marking by brushing being used.

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

**2.5. Precautions :**

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

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

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

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

**2.6. Protective payment :** The surface of doors, windows, floors, articles, of furniture etc. and such other parts of the building not to be white washed shall be protected from being splashed upon. Such surfaces shall be cleaned of white wash splashed if any.

**3.0. Mode of measurements and payment**

**3.1.** All the work shall be measured in the decimal system as under:

(a) Dimensions shall be measured to the nearest 0.01 m.

(b) Area in individual item shall be worked out to the nearest 0.01 sq.m.

All the work shall be measured in sq.mt. Deductions for jambs, soffits, sills etc. for openings not exceeding 0.5 sq.mt. each in area,

for ends of joists, posts, beams, girders, steps etc. not exceeding 0.5 sq.mt. each in area and for openings exceeding 0.5 sq.mt. and not exceeding 3.0. sq.mt. each in area, deductions and additions shall be made as under.

**3.2.** No deductions shall be made for ends of joists, beams, posts, etc. and openings not exceeding 0.5 sq mt. each. No addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.

**3.3.** No deductions for openings exceeding 0.5 sq.mt. but not exceeding 3 sq.mt. each shall be made as follows and no addition will be made for reveals, jambs, soffits etc. of these openings :

(a) When both the faces of walls are provided with finish, deduction shall be made for one face only.

(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for door, windows, etc. on which width of reveals is less than that of the other side. Where width of reveals on both faces of wall are equal, deduction of .50% of area of opening on each face shall be made from total area of finish.

(c) When only one face of wall is treated and the other face is not treated, full deduction shall be made if the width of reveal on the treated side is less than that on the untreated side, but if the width of the reveal is equal or more than on the untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sills etc.

**3..4** In case of area of openings exceeding 3 sq. mt. each, deductions shall be made for openings but jambs, soffits, sills shall be measured.

**3.5.** No deductions shall be made for attachment such as casing, conducts, pipe, electric wiring and the like.

- 3.6.** Corrugated surfaces shall be measured flat as fixed and not girth. The quantities so measured shall be increased by the following percentage and the resultant shall be included with the general areas:
- (a) Corrugated steel sheets..... 14%
  - (b) Corrugated A.C. sheets..... 20%
  - (c) Semi corrugated A.C. Sheets..... 10%
  - (d) Nainital pattern roof (Plain sheeting sheets)..... 10%
  - (e) Naintial pattern roof (with corrugated sheets)..... 25%
- 3.7.** Cornices and other wall features, when they are not picked out in a different finish/colour shall be girthed and included in the general area.
- 3.8** Extra payment shall be done on ceiling and sloping roofs.
- 3.9.** The rate shall include the cost of ail materials, labour, scaffolding, protective measures etc. involved in all the operations described above.
- 4.0** The rate shall be for a unit of **One sq.** meter.

**Item No.29** : Constructing brick masonry chamber for underground C.I. Inspection chamber and bends with bricks having crushing strength not less than 35Kg/Cm<sup>2</sup> in CM. 1:5 C.I. cover with frame (Light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38Kg. (Wt. of cover 23 Kg.) and Wt. of frame 15Kg. ) (R.C.C. top slab with 1:2:4 mix (1-cement :2- coarse sand :4-graded stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete.(ii) Inside dimensions 500mm x 700 mm and 450mm deep for pipe line with one or two inlets.

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

**2.0. Workmanship**

**2.1.** C.I. inspection chamber with provision of C.I. bends of specified size with bolts, nuts and felt washers for underground drain shall be enclosed in masonry chamber which shall be constructed as under:

**2.2.** The excavation shall be done true to dimensions and level shown in one the plans or as directed.

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

**2.4. Wetting of bricks:**

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

## **2.5. Laying:**

- 2.5.1.** Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond; closures in such case shall be cut to required size and used near the ends of walls.
- 2.5.2.** A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with handle of trowel or wooden mallet. Its inside face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joints shall be fully filled from the top with mortar.
- 2.5.3.** The walls shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joint shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of brick course shall be kept uniform.
- 2.5.4.** The brick shall be laid with frog up wards. A set of tools comprising of wooden straight edges, man son's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of work for frequent checking during the progress of work.
- 2.5.5.** Both the faces of walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brick work shall be kept not more than one meter over the rest of the work. Where this is not possible, the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.
- 2.5.6.** All futures, pipes, outlets of water, hold fasts of doors and windows etc. which are required to be built in wall shall be embedded in cement mortar.

## **2.6. Joints:**

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

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

**2.7. Curing:**

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

**2.8. Preparation of foundation bed:**

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

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

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

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

**2.12.** The cover slab of R.C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) 15 cms. thick reinforced with 10 mm. bars at 15 cms. C/C both ways, surface and edges finished fair. Full bearing equal to the width to the width of wall shall be given to the slab on all sides. The frame of manhole cover shall be embedded firmly in R.C.C. slab so that the top of the frame remains flush with the top of R.C.C. slab.

**2.13. Testing:**

**2.13.1** Manhole shall be tested by filling with water to a depth not exceeding 1.2 M. as directed.

**2.13.2** After completion of work, manhole cover shall be sealed by means of thick grease.

**3.0. Mode of measurements and payment**

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

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



**Item No.30** : Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and water tight C.I. cover with frame of 300mm x 300mm size (inside) with standard weight.(i) Square mouth traps. (A) 100mm x 100mm size P type.

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

**2.0. Workmanship**

**2.1.** Excavation for gulley trap shall be done true to dimensions and levels as indicated on plans or as directed. The excavation work shall generally be done as per relevant specifications of earth work.

**2.2. Fixing:**

**2.2.1.** The gully trap shall be fixed over cement concrete 1:5:10 (1 cement : 5 sand : 10 graded brick bats aggregate 40 mm nominal size) foundation. 650 square and 100 mm. thick. The depth of top of concrete below the ground level shall be 675 mm. The jointing of gulley outlet to the branch drain shall be done similar to jointing of S.W. pipe as described in item as under.

**2.2. Laying:**

**2.2.1.** The pipes shall be laid accurately and perfectly true to line, levels and gradients, Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two manholes shall be laid truly in a straight line without vertical or horizontal undulation. All junctions and changes in direction and diameter shall be made inside manholes by means of curved tapered channels formed in Cement concrete finished smooth and benched on both sides. The body of the pipe

shall rest for its entire length, on a even level bed grips being made or left on the bed to receive the sockets of the pipes.

### **2.3. Jointing:**

**2.3.1.** Tarred gask in or yarn soaked in neat cement slurry shall first be placed around the spigot to each pipe and the spigot shall then be placed well home into the socket of the pipe previously laid. The pipe shall then be adjusted and fixed in the correct position and gaskin caulked home so as to fill not more than 1/4th of the total depth or (13 mm. in depth) of the socket.

**2.3.2.** The remainder of the sockets shall be filled with stiff mixture of cement mortar in proportion of one part of cement and one part of sharp sand. When the socket is fillet, a filled shall be formed round the joints with a trowel, forming an angle of 45° with the barrel of the pipe.

**2.3.3.** The mortar shall be mixed as necessary for immediate use.

**2.3.4.** After the joint is made, any extraneous materials shall be removed from the inside of the joints with a suitable scraper or "badger". The newly made joints shall be protected, until set, from the sun, dry winds, rain or frost, sacking or other suitable materials which shall be used for the purpose.

**2.3.5.** The mortar shall be cured for 10 days.

### **2.4. Testing of Joints:**

**2.4.1.** If any leakage is visible the defective part of the work shall be made good at no extra cost. The pipe line shall be tested as directed.

**2.4.2.** A slight amount of sweating which is uniform may be overlooked, but excessive sweating from a particular pipe or joints shall be watched for and taken as indicating a defect to be made good.

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

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

**4.0. Mode of measurements & payment**

**4.1.** The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item as described above.

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

**Item No.31** : Providing and fixing 35 mm thick shutters for Doors, windows and clearstory windows including black enamelled M.S. butt hinges with necessary screws.  
(A) Indian teak wood (i) Fully Panelled.

## **1.0. Materials**

1. Wood for shutter shall conform to M-29.
2. Glass shall conform to M-38.
3. Stainless steel fixtures and fastenings shall conform to M-43.

## **2.0. Workmanship**

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

### **2.2. Frames:**

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

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

**2.2.3.** Frame shall have dovetail joints. When clerestory windows in included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10 cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10 mm. deep. Slight adjustment of

spacing as necessary shall be done to have the hold fasts in the joints of masonry course. The frame shall be erected in position and held plumb with strong support 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. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.
- 2.5.** The concrete surface of tenon and mortise shall be treated before putting together with an adhesive of approved make.
- 2.6.** Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 mm. from the top and bottom of the frames. In case of windows and ventilators frames. The size 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. Shutters:**

- 3.1.** Paneled shutters shall be constructed in the form of timber frame work of styles and rails with panel inserted of type as specified in the detailed drawings. Panel shall be fixed by providing grooves in the

style and rails. The styles and rails shall be joined to each other by mortise and tenon joints at right angles.

**3.2** 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.

**3.3.** 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.

**4.0. Timber paneling:**

**4.1.** 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.

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

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

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

**5.0 Fixtures and Fastenings:**

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

**6.1. Preparation of surfaces :** The surfaces painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool, scrapers, sand paper etc. This surface shall then be

wiped finally with mineral turpentine which shall also remove grease and perspiration of hand marks. The surface shall then be allowed to dry.

## **6.2. Application of primer :**

**6.2.1.** After the preparation of the surface, the priming coat shall be applied immediately. The brushing operations are to be adjusted to the spreading capacity advised by the manufacturer of the particular primer. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing alternately in opposite directions, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute one coat.

**6.2.2.** During painting, every time, after the priming coat has been worked out of the brush bristles or after the brush has been unloaded, the bristles of the brush shall be opened up by striking the brush against portion of the unpainted surface with the end of the bristles, held at right angles to the surface, so that bristles thereafter will collect the correct amount of paint when dipped again into a paint container. The primary coat shall be allowed to dry completely before painting is started.

**6.2.3.** No hair marks from the brush or clogging at paint puddles in the corner of panels angles of molding etc. shall be left on the work.

**6.2.4.** Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

**6.2.5.** The container when not in use shall be kept close and free from air so that paint does not thicken and also shall be kept guarded from dust.

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

**7.1.** The new wood and other wood surface shall be measured under this item.

**7.2.** All the work shall be measured net in the decimal system, as executed subject to the following limits unless otherwise stated hereinafter.

(a) Dimensions shall be measured to the nearest 0.01 meter.

(b) Areas shall be worked out to the nearest 0.01 sq. meter.

**7.3.** No deductions shall be made for openings not exceeding 0.5 sq. mt. each and no addition shall be made for painting to beddings, moldings, edges, jambs, soffits, sills etc. of such opening.

**7.4.** In case of fabricated structural steel and iron work, priming coat of paint shall be included with fabrication. In case of trusses if measured in sq. m. compound girders, stanchions, lattices, grader and similar work, actual area shall be measured in sq. m. and no extra shall be paid for painting on bolts heads, nuts, washers etc. No addition shall be made to be weight calculated for the purpose of measurements of steel and iron works for paint applied on shop or at site.

**7.5.** The different surfaces shall be grouped into one general item, areas of uneven surfaces being converted into equivalent plain areas in accordance with the table given as per Annexure-II for payment.

The both side laminated partial board shall be of good quality and approved make. It shall be of specified thickness.

The teak wood molding strips of good quality and approved make of specified sizes shall be used.

The rate includes the cost of labour, materials, equipment etc. required for satisfactory completion of the Item with all lead & lift.

The Rate shall be for a unit of one Sq. meter including cost of all materials, labour charges etc. complete.



**Item No.32** : Providing and fixing 35 mm thick shutters for Doors, windows and clearstory windows including black enamelled M.S. butt hinges with necessary screws. (A) Indian teak wood (ii) Fully Glazed.

## **1.0. Materials**

1. Wood for shutter shall conform to M-29.
2. Glass shall conform to M-38.
3. Stainless steel fixtures and fastenings shall conform to M-43.

## **2.0. Workmanship**

**2.1.** The item covers the requirement of frames for doors, windows, clearstory 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 joins. When clerestory windows in included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10 cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10 mm. deep. Slight adjustment of

spacing as necessary shall be done to have the hold fasts in the joints of masonry course. The frame shall be erected in position and held plumb with strong support 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. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.
- 2.5.** The concrete surface of tenon and mortise shall be treated before putting together with an adhesive of approved make.
- 2.6.** Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 mm. from the top and bottom of the frames. In case of windows and ventilators frames. The size 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. Shutters:**

- 3.1.** Paneled shutters shall be constructed in the form of timber frame work of styles and rails with panel inserted of type as specified in the detailed drawings. Panel shall be fixed by providing grooves in the

style and rails. The styles and rails shall be joined to each other by mortise and tenon joints at right angles.

**3.2** 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.

**3.3.** 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.

**4.0. Timber paneling:**

**4.1.** 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.

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

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

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

**5.0 Fixtures and Fastenings:**

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

**6.1. Preparation of surfaces :** The surfaces painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool, scrapers, sand paper etc. This surface shall then be

wiped finally with mineral turpentine which shall also remove grease and perspiration of hand marks. The surface shall then be allowed to dry.

## **6.2. Application of primer :**

**6.2.1.** After the preparation of the surface, the priming coat shall be applied immediately. The brushing operations are to be adjusted to the spreading capacity advised by the manufacturer of the particular primer. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing alternately in opposite directions, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute one coat.

**6.2.2.** During painting, every time, after the priming coat has been worked out of the brush bristles or after the brush has been unloaded, the bristles of the brush shall be opened up by striking the brush against portion of the unpainted surface with the end of the bristles, held at right angles to the surface, so that bristles thereafter will collect the correct amount of paint when dipped again into a paint container. The primary coat shall be allowed to dry completely before painting is started.

**6.2.3.** No hair marks from the brush or clogging at paint puddles in the corner of panels angles of molding etc. shall be left on the work.

**6.2.4.** Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

**6.2.5.** The container when not in use shall be kept close and free from air so that paint does not thicken and also shall be kept guarded from dust.

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

**7.1.** The new wood and other wood surface shall be measured under this item.

**7.2.** All the work shall be measured net in the decimal system, as executed subject to the following limits unless otherwise stated hereinafter.

(a) Dimensions shall be measured to the nearest 0.01 meter.

(b) Areas shall be worked out to the nearest 0.01 sq. meter.

**7.3.** No deductions shall be made for openings not exceeding 0.5 sq. mt. each and no addition shall be made for painting to beddings, moldings, edges, jambs, soffits, sills etc. of such opening.

**7.4.** In case of fabricated structural steel and iron work, priming coat of paint shall be included with fabrication. In case of trusses if measured in sq. m. compound girders, stanchions, lattices, grader and similar work, actual area shall be measured in sq. m. and no extra shall be paid for painting on bolts heads, nuts, washers etc. No addition shall be made to be weight calculated for the purpose of measurements of steel and iron works for paint applied on shop or at site.

**7.5.** The different surfaces shall be grouped into one general item, areas of uneven surfaces being converted into equivalent plain areas in accordance with the table given as per Annexure-II for payment.

The both side laminated partial board shall be of good quality and approved make. It shall be of specified thickness.

The teak wood molding strips of good quality and approved make of specified sizes shall be used.

The rate includes the cost of labour, materials, equipment etc. required for satisfactory completion of the Item with all lead & lift.

The Rate shall be for a unit of one Sq. meter including cost of all materials, labour charges etc. complete.

**Item No.33** : Distempering (two coats) with oil bound washable distemper of approved brand & manufacture & of required shade on wall surfaces to give an even shade over & including a primary coat with alkali resistance primer of approved brand after thoroughly brushing the surface free from mortar dropping & other foreign matter & also including preparing the surface even & smooth.

## **1.0. Materials**

**1.1.** Dry distemper and primer shall be of approved brand and manufacture. The distemper shall be of required colour and shade and the same shall conform to I.S. : 428-1969. The shade shall be approved by Engineer in charge.

## **2.0. Workmanship**

The distempering shall be carried out on ceiling/sloping roofs / walls.

### **2.1. Scaffolding**

Where scaffolding is required, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected where necessary.

### **2.2. Preparation of surface :**

**2.2.1.** The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications of distemper.

**2.2.2.** All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made

smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part 01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

### **2.3. Priming coat :**

**2.3.1.** A priming coat of distemper primer of approved manufacture and shade shall be applied over the papered surface in case of new work on undecorated surface. If the distemper priming is done after the wall surface dries completely, the distemper primer shall be applied.

**2.3.2.** Application of primer shall be done as under: The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper or paint is applied.

**2.3.3.** Oil bound distemper is not recommended to be applied within six months of the completion of wall plaster.

### **2.4. Preparation of oil bound distemper :**

**2.4.1.** The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of distemper required for a day's work shall be prepared.

### **2.5. Application of Distemper coat:**

**2.5.1.** For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub out priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the preceding coat. The finished surface shall be even and uniform without patches, brush marks, distemper drops etc.

**2.5.2.** Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be started in any room which cannot be completed on the same day.

**2.5.3.** 15 cm. double bristled distemper brush shall be used. After day's work brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

**2.6. Protective measurements :** The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the buildings as are not to be distempered shall be protected from being splashed upon. Such surfaces shall be cleaned of distemper splashes if any.

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

**3.1.** Priming coat of distemper primer, scraping of surface spoiled by struck roots, removal of oil and grease spots, treatment for infestation of efflorescences, mould moss, fungi, algae and lichen and patch repairs to plaster shall be included in this item for which nothing extra shall be paid.



- 3.2.** All the work shall be measured net in the decimal system as in place subject to the following limits unless otherwise stated hereinafter:
- (a) Dimensions shall be measured to the nearest 0.01 m.
  - (b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be made for ends of joints, beams, posts etc. and openings, not exceeding 0.5 sq.mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.
- 3.3.** Deductions of opening exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and net addition shall be made for reveals, jambs, soffits etc. of these openings :
- (a) When both the faces of wall are provided with same finish, deductions shall be made for one face only.
  - (b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for doors, windows etc. on which width of reveals is less than that of the other side but no deduction shall be made on the other side. Where the width of reveals on the both the faces of wall are equal, deduction of 50% of area of opening on each face shall be made from area of finish.
  - (c) When only one face of wall is treated and the other face is not treated, full deductions shall be made if the width of the reveal on treated side is less than that on untreated side but if the width of the reveal is equal or more than that on untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sills etc.
- 3.4.** In case of opening of area exceeding 3 sq.m. each deduction shall be made for openings but jambs, sills and soffits shall be measured.
- 3.5.** No deductions shall be made for attachments such as casings, conduits, pipes, electric wiring and the like.

- 3.6.** Item includes removing nails, making good holes, patches with materials similar in composition of distemper.
- 3.7.** The extra rate shall be paid for carrying out distempering work on ceiling/sloping roofs over and above.
- 3.8.** The rate includes cost of all materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, handling, unloading, storing work etc
- 3.9.** The rate shall be for a unit of one sq. meter.

**Item No.34** : Painting two coat (excluding priming coat) on previously painted steel and other metal surfaces with enamel paint, brushing to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.

**1.0. Materials**

**1.1.** The enamel paint shall conform to I.S. 133-1975.

**2.0. Workmanship**

**2.1. General :** The materials required for work of painting work shall be obtained directly from approved manufactures or approved dealer and brought to the site in maker's drums; kegs. etc. with seal unbroken.

**2.1.2.** All materials not in actual use shall be kept properly protected, lids of containers shall be kept closed and surface of paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin. The materials which have become state or flat due to improper and long storage shall not be used. The paint shall be stirred thoroughly in its container before pouring into small containers. While applying also, the paint shall be continuously stirred in smaller container. No left over paint shall be put back into stock tins. When not in use the containers shall be kept properly closed.

**2.1.3.** If for any reasons, things is necessary, the brand of thinner recommended by the manufacturer shall be used.

**2.1.4.** The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt and grease shall be thoroughly removed before painting is started. No painting on exterior or other exposed part o the work shall be carried out in wet, damp or otherwise unfavorable weather and all the surfaces shall be thoroughly dry before painting work is started.

**2.2. Application of paint:**

- 2.2.1.** Brushing operations are to be adjusted to the spreading capacity advised by the manufacture of particular paint. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite directions two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute one coat.
- 2.2.2.** Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand-paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved from Engineer-in-charge before next coat is started.
- 2.2.3.** Each coat the last shall be lightly rubbed down with sand paper of fine pumice stone and cleaned of dust before the next coat is applied. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of moldings etc. shall be left on the work.
- 2.2.4.** Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc. Approved best quality brushes shall be used.

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

- 3.1.** The **previously painted steel and other metal surface** shall be measured under this item.
- 3.2.** All the work shall be measured net in the decimal system, as executed subject to the following limits unless otherwise stated hereinafter.
- (a) Dimensions shall be measured to the nearest 0.01 meter.
  - (b) Areas shall be worked out to the nearest 0.01 sq. meter.

- 3.3.** No deductions shall be made for openings not exceeding 0.5 sq. mt. each and no addition shall be made for painting to beddings, moldings, edges, jambs, soffits, sills etc. of such opening.
- 3.4.** The different surfaces shall be grouped into one general item, areas of uneven surfaces being converted into equivalent plain areas in accordance with the table given as per Annexure-II for payment.
- 3.5.** The rate shall be for a unit of **One sq. meter.**

**Item No.35** : Providing and fixing C.P. brass waste for wash basin or sink  
(B) 40 mm dia.

**1.0. Materials**

**1.1.** The C.P. brass trap and unions shall be of 40 mm. dia. and of best quality and make as approved by the Engineer-in-charge

**2.0. Workmanship**

**2.1.** C.P. brass waste trap and union shall be connected to 32 mm dia waste pipe which shall be suitably bent towards the wall which shall discharge into drain through a floor trap The C.P brass waste trap shall be provided for wash basin or sink as the case may be.

**3.0. Mode of measurement & payment**

**3.1.** The rate includes all labours and providing C.P. brass waste trap and union including waste couplings of 32 mm fin. The rate excludes the cost of waste pipe of 32 mm. dia.

**3.2.** The Rate shall be for a unit of One number.

**Item No.36** : Providing and fixing M.I. fisher union for wash basin or sink (A) 32 mm dia.

**1.0. Materials**

**1.1.** The 32 mm dia M-1. Fisher union shall be of best quality and made as approved by the Engineer-in-charge.

**2.0. Workmanship**

**2.1.** The 32mm dia. M I. Fisher union shall be fixed to wash basin or sink in best workman like manner.

**3.0. Mode of measurements and payment**

**3.1.** The rate includes all labours .and materials, tools and plants etc. required for satisfactory completion of the item.

**3.2.** The Rate shall be for a unit of One number.

**Item No.37** : Providing and fixing Pillar tap capstan head, screw down high pressure with screws, shanks and backnuts (i) 15 mm dia.

**1.0. Materials :** The capstan head pillar tap of specified dia. of C.R over brass shall be best quality and shall conform to I.S. : 1975 - 1961. The pillar taps shall be tested quality & as approved by Engineer in charge.

**2.0. Workmanship**

**2.1.** The capstan head pillar tap of specified dia. shall be fixed as directed with required washers of selected leather or rubber asbestos composition or of plastic as directed. The cock shall fixed with pipe line white Zink end spun yarn, to make joint water tight. The work shall be carried out in best workman like manner.

**3.0. Mode of measurements and payment**

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



**Item No.38** : Providing and fixing brass screw down stop cock (A) 15 mm dia.

**1.0. Materials**

The **chromium plated** brass screw down **stop cock** of 15mm dia shall conform to IS. : 781 -1977. The **stop cock** shall be of tested quality.

**2.0 Workmanship**

The **stop cock** shall be fixed in position by means of Jam nut and socket. The **stop cock** shall be fixed near the inlet of the water meter or as directed. The joints shall be done with white zinc and spun yarn. The joint shall be tested for leak proofing.

**3.0. Mode of measurements and payment**

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

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

**Item No.39** : Providing and fixing chromium plated brass half turn flush cock of approved quality including fixing in pipe line etc. complete (ii) 25mm dia.

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

**2.0. Workmanship**

The half turn flush cock of specified diameter shall be fixed as directed. The flush cock shall be fixed in G.I. pipe line with necessary fittings. The joints shall be made leak proof by using spun yarn and white Zink.

**2.1** All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard pattern clamps of required size and shape, one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 (1 cement : 3 coarse sand) and the other tightened round the pipes to hold it securely. These clamps shall be spaced at regular intervals in straight lengths at 2 MC/C interval in horizontal run and 2.5 m. interval in vertical run. For pipe of 15 mm. dia. up to 25 mm. dia the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brick work or concrete. However for bigger diameter pipes the holes shall be carefully made cement : 3 coarse sand), and properly finished to match the adjacent surface.

**2.2. Testing of joints :**

**2.2.1.** After laying and jointing, the pipes and fillings shall be inspected under working conditions of pressure and flow. Any joints found liken shall be redone, and ail leaking pipes removed and replaced without extra cost.

**2.3.2.** The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg./Sq cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shocks and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping, the joints exposed for inspection during the testing.

**3.0. Mode of measurements and payment**

**3.1.** The rate includes cost of all materials and labour required for satisfactory completion of this item including fittings.

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

**Item No.40** : Providing and fixing cupboard shutters using 19 mm thick ply wood and fixing on 0.8 mm thick decorative lamination sheet 20mm x 6 mm T.wood facing batten and T.wood frame having a size 7 cm x 4 cm using necessary S.S. fixture & fastening, nsils, Fevicol, ball catch, magnet & innerside of cupboard oil painting two coats with primer coat etc. complete as per given detail drawing.

## **1.0. Materials**

1. Wood for shutter shall conform to M-29.
2. Glass shall conform to M-38.
3. Stainless steel fixtures and fastenings shall conform to M-43.

## **2.0. Workmanship**

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

### **2.2. Frames:**

- 2.2.1. All members of frames shall be exactly at right angles. The right angle shall be checked from inside surfaces of the-frames of the respective members.
- 2.2.2. All members of frames shall be straight without any warp of bow and shall have smooth surfaces well planed on the three sides exposed at right angles to each other. The surfaces touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall sizes within the tolerances as specified.
- 2.2.3. Frame shall have dovetail joints. When clerestory windows in included, it shall be provided by having full length one piece post for door or windows and clerestory window extending the frame on top at the head to the required extent. Horns shall not be provided in the

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

**2.3. Tolerance:**

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

- 2.4.** The tenons shall be closely fitting into the mortises and suitably pinned with wood dowels not less than 10 mm. dia. meter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.
- 2.5.** The concrete surface of tenon and mortise shall be treated before putting together with an adhesive of approved make.
- 2.6.** Minimum number of three hold-fasts shall be fixed on each side of door and windows frames, one at the center point and the other two at 30 mm. from the top and bottom of the frames. In case of windows and ventilators frames. The size 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. Shutters:**

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

- 3.2** 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.

- 3.3.** 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.

**4.0. Timber paneling:**

- 4.1.** 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.

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

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

- 4.4.** The thickness specified shall be finished thickness and no tolerance will be permitted.

**5.0 Fixtures and Fastenings:**

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

- 6.1. Preparation of surfaces :** The surfaces painting shall be cleaned of all rust, scale, dirt and other foreign matter sticking to it with wire brushes, steel wool, scrapers, sand paper etc. This surface shall then be wiped finally with mineral turpentine which shall also remove grease and perspiration of hand marks. The surface shall then be allowed to dry.

**6.2. Application of primer :**

- 6.2.1.** After the preparation of the surface, the priming coat shall be applied immediately. The brushing operations are to be adjusted to the spreading capacity advised by the manufacturer of the particular primer. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing alternately in opposite directions, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off wall constitute one coat.

- 6.2.2.** During painting, every time, after the priming coat has been worked out of the brush bristles or after the brush has been unloaded, the bristles of the brush shall be opened up by striking the brush against

portion of the unpainted surface with the end of the bristles, held at right angles to the surface, so that bristles thereafter will collect the correct amount of paint when dipped again into a paint container. The prima/y coat shall be allowed to dry completely before painting is started.

**6.2.3.** No hair marks from the brush or clogging at pain puddles in the corner of panels angles of molding etc. shall be left on the work

**6.2.4.** Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

**6.2.5.** The container when not in use shall be kept close and free from air so that paint does not thickness and also shall be kept guarded from dust.

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

**7.1.** The new wood and other wood surface shall be measured under this item.

**7.2.** All the work shall be measured net in the decimal system, as executed subject to the following limits unless otherwise stated hereinafter.

(a) Dimensions shall be measured to the nearest 0.01 meter.

(b) Areas shall be worked out to the nearest 0.01 sq. meter.

**7.3.** No deductions shall be made for openings not exceeding 0.5 sq. mt. each and no addition shall be made for painting to beddings, moldings, edges, jambs, soffits, sills etc. of such opening.

**7.4.** In case of fabricated structural steel and iron work, priming coat of paint shall be included with frabation. In case of trusses if measured in sq. m. compound girders, stanchions, lattices, grader and similar work, actual area shall be measured in sq. m. and no extra shall be



paid for painting on bolts heads, nuts, washers etc. No addition shall be made to be weight calculated for the purpose of measurements of steel and iron works for paint applied on shop or at site.

- 7.5.** The different surfaces shall be grouped into one general item, areas of uneven surfaces being converted into equivalent plain areas in accordance with the table given as per Annexure-II for payment.

The both side laminated partial board shall be of good quality and approved make. It shall be of specified thickness.

The teak wood molding strips of good quality and approved make of specified sizes shall be used.

The rate includes the cost of labour, materials, equipment etc. required for satisfactory completion of the Item with all lead & lift.

The Rate shall be for a unit of one Sq. meter including cost of all materials, labour charges etc. complete.

**Item No.41** : Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc complete.

## **General**

This work shall consist of painting the walls with **APEX ultima of Asian exterior emulsion paint** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge. Read and use apex ultima in place of apex.

## **MATERIALS**

### **1.0 APEX ultima exterior Emulsion Paint**

APEX exterior emulsion paint shall be of specified colour as approved by Engineer in charge the ready mixed APEX exterior emulsion paint shall not be allowed, If however ready mix APEX exterior emulsion paint of specified shade or tint is not available white ready mixed paint with approved Steiner will be allowed in such case the contractor shall ensure that the shade of the paint so allowed shall be uniform APEX exterior emulsion paint shall meet with the following general requirements

1. APEX exterior emulsion paint shall not show excessive setting in freshly opened full can and shall easily be redispersed with a paddle to a smooth homogeneous state. The APEX exterior emulsion paint shall show no curding, livering cracking or colour separation and shall be free from lumps and skins.

2. The APEX exterior emulsion paint as received shall brush easily possess good leveling properties and show no running or sagging tendencies.
3. The APEX exterior emulsion paint shall not skin within 48 hours in a three quarters filled closed container
4. The APEX exterior emulsion paint shall dry to a smooth uniform finish free from roughness grit unevenness and other imperfections
5. Ready mix APEX exterior emulsion paint if allowed for specified shade, shall be used exactly as received from the manufacturers and generally according to their instruction and without any admixtures whatsoever.

## **2.0 WORKMAN SHIP**

### **2.1 Scaffolding :**

Where scaffolding is required, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured strong and well tied suspended platform (joola) may be used for distempering. Where ladders are used, pieces of old gunny bags

### **3.0 Application coat :**

The APEX exterior emulsion paint shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of required for a day's work shall be prepared.

**3.1** For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the APEX exterior emulsion paint, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of the APEX exterior emulsion paint shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the preceding coat. The finished surface shall be even and uniform without patches, brush marks, distemper drops etc.

**3.2** Sufficient quantity of the APEX exterior emulsion paint shall be mixed to finish one room at a time.

**3.0 MODE OF MEASUREMENT & PAYMENT :**

**3.1.** The unit rate wall painting with APEX exterior emulsion paint shall include the cost of all materials, tools and plant required for mixing, cleaning brushing sand papering & painting with all required specials and Lapi compound, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for producing pipe line work of specified diameter to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

**3.2** The rate of Wall painting with APEX exterior emulsion paint shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

- 3.3.** The Wall painting with APEX exterior emulsion paint shall be measured for its length and Height limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.
- 3.4.** The payment will be made on **square Meter** basis of the finished work.

**Item No.42** : Providing erecting and fixing double coated Syntex or equivalent PVC. (ISI) mark water tank of reqd capacity each with all necessary fittings & connection etc. comp on terrace.

## **General**

This work shall consist of furnishing and placing providing and fixing I.S.I. mark PVC Water tank with necessary G.I. fittings of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

### **1.0 MATERIAL**

#### **1.1 PVC WATER TANK**

PVC Water tank of specified capacity and of I.S.I. mark of approved in liters of approved make and quality equivalent to syntax product.

Net capacity shall be net volume of water stored between the lowest level of overflow and lowest specified level.

#### **1.2 NIPPLE**

Galvanize pipe nipple shall be of approved make and of best quality. Relevant specification given in Booklet of Building specification shall be applied for the execution of this item.

#### **1.3 BALL VALVE**

Ball valve shall be of approved make and of best quality. Relevant specification given in Booklet of Building specification shall be applied for the execution of this item.

#### 1.4 **CONNECTIONS**

Connection shall be of approved make and of best quality. Relevant specification given in Booklet of Building specification shall be applied for the execution of this item.

#### 2.0 **WORKMANSHIP**

2.1 Tank shall be approved quality and as per IS standard make. Material used in manufacturing tank shall be confirmed to relevant IS code. The material of tank and lead and fittings which may come in contact of water should be such that it does not impart any taste, colour or odour. It does not have any toxic effect and it does not contaminate the water. Thereby making it unpotable.

2.2 The tank shall be fixed properly in a level position and making all required necessary correction like inlet outlet flushing overflow and air vent. Tank shall be satisfying the standards of public health.

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

3.1 The unit rate of **PVC Water tank** shall include the cost of all materials, tools and plant required for lifting to required height with all lead and lift, placing and fixing in position, all required specials and jointing adhesive compound, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for producing **PVC water tank** work of specified diameter to complete the structure

or its components as shown on the drawings and according to these specifications, they shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

The rate of PVC Water tank shall include the cost of all labour, materials, tools and plant scaffolding and all incidental expenses as described herein above.

3.2 The **PVC water tank** work shall be measured for its volume to specified capacity to those specified on plan or as directed. The rate shall be for a unit of one liter basis.

3.3 The payment will be made on litre basis of the finished work.



**Item No.43** : Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete.

## **General**

This work shall consist of providing and laying **precast Rubber Dyed/Steel Dye inter locking concrete block 60 mm thick** with grade of concrete M-200 as per approved design over a base layer of **75 mm thick layer** of sand of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

### **1.0 MATERIAL**

Water shall conform to M-1. Cement shall conform to M-3.

#### **1.0 Rubber Dyed/Steel Dye interlocking concrete block paving tiles**

Rubber Dyed interlocking concrete block paving tiles shall be of approved size brand and make as approved by Engineer in charge.

**1.1** The size shape and design of **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall generally be as per manufacturers product or as directed by the Engineer in charge and Architect.

**1.2** The **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall satisfy the tests as regards compress strength transverse strength resistance to wear and water absorption.

**1.3** The colour size shape and design of the **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall be directed by Engineer or Architect.

**1.4** The **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall be of best quality as approved by the Engineer In charge. They shall be flat and true to shape. They shall be free from cracks, crazing spots, chipped edges and corners. The glazing shall be of uniform shade.

## **2.0 SAND**

**2.1** Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules.

**2.2.** For masonry works sand shall confirm to the requirements of IS: 2116.

**2.3.** For plain and reinforced cement concrete (PCC and RCC) or pre stressed concrete (PSC) works fine aggregates shall consist of clean, hard strong and durable prices of crushed stone, crushed gravel or suitable combination of natural sand crushed stone or gravel, They shall not contain dust lumps soft or flaky materials mica or other deleterious materials in such quantities as to reduce the strength and durability of concrete, or to attack the embedded steel. Motorized sand washing machines should be used to remove impurities from

sand. Fine aggregate having positive alkali-silica reaction shall not be used. All fine aggregates shall conform to IS L 383 and tests for conformity shall be carried out as per IS : 2386 (Part I to VIII) The contractor shall submit to the Engineer in charge the entire information indicated in Appendix A of IS : 383. The fineness modulus of fine aggregate shall neither be less than 2.00 nor greater than 3.5.

**2.4.** Sand fine aggregates for structural concrete shall conform to the following grading requirements as shown in the table below.

**2.5 Fine Sand:** The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:

IS. Designation	Sieve	% by wt. passing		
		Zone I	Zone II	Zone III
10 mm		100	100	100
4.75 mm		90-100	90-100	90-100
2.3 6mm		60-95	75-100	85-100
1.18 mm		30-70	55-90	75-100
600 MC		15-34	35-59	60-79
300 MC		5-20	8-30	12-40
150 MC		0-10	0-10	0-10

➤ **Coarse Sand:** The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:

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

### 3.0 WORKMANSHIP

- 3.1** The **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall be laid on a layer **7.5 cm thick** layer of coarse sand. The slope in the floors shall be provided in the sub grade. The base layer shall be properly watered, rammed and consolidated. Before laying the pavers blocks, it shall be moisture. Plinth masonry offset shall be depressed so as to allow the sub grade concrete to rest on it.
- 3.2** **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** of approved quality shape and design and shall be laid evenly to level and slope as directed by Engineer in charge over a bed of a base layer consisting of **35mm thick sand layer**.
- 3.3 Laying:** The **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** shall be laid in plain, diagonal or other pattern as directed. The cement concrete blocks shall be laid properly and set home by gentle tapping.

- 3.4 End portion of pavement shall be finished with C.M. 1:3 as per detailed drawing etc. complete.

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

- 4.1 The unit rate **Rubber Dyed/Steel Dye interlocking concrete block paving tiles** flooring shall include the cost of all materials, tools and plant required for supplying and laying material like brick bats sand pavers blocks, laying of base layer in true level and slope as required applying & placing pavers blocks in position, compacting, finishing, curing.
- 4.2 The length and breadth shall be measured correct to a Square meter correct to 2 places of decimal. Length and breadth shall be measured to correct to a centimeter and between the finished the finished face of the skirting, dado or wall plaster and no deduction shall be made nor extra paid for any opening in floors or areas up to 0.1 square meter.
- 4.3 The rate shall be for a unit of **one Square meter**.

**Item No.44** : Labour charges - Mazdoor (Male).

The work shall consist of Labour charges - Mazdoor (Male).

**Mode of Measurement & Payment:**

The rate shall include the cost of all tools and equipments and labour to complete the work satisfactorily as per instructions of consultant/engineer in charge.

The rate shall be for a unit of one **Labour** basis.

**Item No.45** : Labour charges - Carpenter 1st Class.

The work shall consist of Labour charges - Carpenter 1st Class.

**Mode of Measurement & Payment:**

The rate shall include the cost of all tools and equipments and labour to complete the work satisfactorily as per instructions of consultant/engineer in charge.

The rate shall be for a unit of one **Labour** basis.

**Item No.46** : Labour charges - Plumber (Fitter).

The work shall consist of Labour charges - Plumber (Fitter).

**Mode of Measurement & Payment:**

The rate shall include the cost of all tools and equipments and labour to complete the work satisfactorily as per instructions of consultant/engineer in charge.

The rate shall be for a unit of one **Labour** basis.