required up to 25 mm. radius. Flooring in lavatories and bath rooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage done to water supply or sanitary fittings during execution of work shall be made good.

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

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

3.0. Mode of measurements & payment

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

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

14.71.(B) Cement concrete flooring (Indian patent stone) 1:2:4 coarse sand 4: graded stone aggregate 20 mm. nominal size) laid in one layer finished with floating coat of neat cement : 50 mm. thick.

1.0. Materials & Workmanship

1.1. The relevant specifications of item No. 14.71 (A) shall be followed except that the thickness of concrete flooring shall be50 mm.

2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.71. (A) shall be followed.

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

14.74. Cement concrete payment (25 mm. to 50 mm. thick) with 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 20 mm. nominal size) including finishing with a floating coat of neat cement complete.

1.0. Materials and workmanship

1.1. The relevant specifications of item No. 14.71 (A) shall be followed except that the thickness of concrete flooring vary form 25 mm. to 50 mm.

2.0. Mode of measurements & payment

2.1. The relevant specifications of item No.14.71 (A) shall be followed except that thickness shall be measured correct up to 1 mm. flooring laid in boarders, margins and treads of steps, shall be measured under item of flooring in respective of width.

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

14.81.(C) 20 mm. thick precast concrete tile with aggregate of sizes up to 6 mm. laid in floors, treads of steps and landings on 20 mm. thick bed of cement mortar 1:6 (1 cement : 6 coarse sand) or L.M. 1:1.5 jointed with neat cement slurry with pigment to match the shade of the titles complete with precast tiles of Dark Shades ordinary cement.

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-2. Sand shall conform to M-6. Lime mortar 1:1.5 shall conform to M-10. Cement shall conform to M-11. Tiles shall conform to M-47 (A) cement concrete tiles shall conform to I.S. 1237-1959 and pigments to be admixed with mortar or for grouting shall conform to I.S. 2114-1962

2.0. Workmanship

2.1. The tiles shall be laid on the sub-grade of concrete of the R C.C. slab. Bedding shall be in the mortar 1:1.5 or cement mortar (1:6). The amount of water added shall be minimum required for sufficient plasticity and workability C.M. or lime mortar where the ingredients shall be thoroughly mixed dry hard lumps removed and water added to give a good workability.

2.2. The base shall be cleaned of all dust, dirt and scum and properly wetted without allowing water pools. For a bedding of cement mortar shall be then spread evenly over the base of two rows of tiles and three to five meters in length. The top shall be kept rough so that cement slurry can be absorbed. The thickness of the bedding shall be not less than 10 mm. at any place. The laying of tiles shall be commenced with neat cement slurry of honey-like consistency and shall be spread over the mortar bed over an area sufficient to receive about 20 tiles. The tiles shall then De fixed in this grout one after the other, each tile being gently tapped and properly bedded in line and level with the adjoining tiles. The joints shall be as narrow as possible and normally shall not exceed 1.5 mm. After the day's work the excess cement slurry on top shall be cleaned as also the joints with a broom struck and washed before the slurry sets hard. Next day the joints shall be filled with the cement grout of the same shade as the matrix of the tiles. Tiles which are fixed in the floor adjoining the wall shall go a minimum of 10 mm. under the wall plaster, skirting or dedo. For the purpose, plaster etc. may be left unfinished by about 50 mm. above the proposed finished level of the floor. The unfinished strip shall be plastered after laying the floor tiles. Where full tile cannot be used, tile shall be cut to the size to be used.

2.3. The flooring shall be cured for 7 days.

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above.

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

14.86. Chequered precast cement concrete tiles 22 mm. thick with aggregate of sizes up to 6 mm. in floors, treads of steps and landings on 20 mm. thick bed of C.M. of 1:6 (1 cement : 6 sand) or lime mortar 1:1.5 (1 Lime putty : 1.5 coarse sand) jointed with cement slurry with pigment to match the shade of tiles.

1.0. Materials

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

2.0. Workmanship

2.1. The relevant specifications of item No 14.21 (A) shall be followed except that chequered precast cement concrete tiles 22 mm. thick shall be used in floors, treads of steps and landings on average 20 mm. thick bed of C.M. 1:6 or L.M. 1:1.5.

3.0. Mode of measurements and payment

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

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

14.87. Extra for polishing and polishing the precast cement concrete tiles in flooring, skirting or dedo.

1.0. Workmanship

1.1. Grinding and rubbing shall normally be commenced after 14 days of laying the tiles, except for skirting or small areas, machine shall be used for the purpose.

1.2. First grinding shall be done with carborundum stones of 48 to 60 grade grit fitted in machine. Water shall be properly used during grinding. When the chips show up and the floor has been uniformly rubbed, it shall be cleaned with water baring all pin holes It shall then be covered with a thin coat of gray or white cement mixed with or without pigments to match the colour of the topping of the tiles Pin holes if any shall thus be filled. This grout shall be kept moist for sufficient period as directed. Thereafter, second grinding shall be started with carborundum of 120 grit. Grouting and curing shall be followed again. Final grinding shall be done when other works are finished. The machine shall be fitted with carborundum of grit 220 to 350 using water in abundance. The floor shall then be washed clean with water Oxalic acid powder shall then be dusters as needed on the surface and the surface rubbed with machine fitted with Hessian bobs 01 rubbed hard with pad of woolen rags. The floor shall then be washed, cleaned and dried with a soft cloth of linen. The finished floor shall not sound hollow when tapped with a mallet.

1.3. If any tile is disturbed or damaged it shall be refitted or replaced properly jointed and polished. 1,4. For skirting, dedo or small areas where it is not possible to do machine polishing all the above operations are to be done manually.

2.0. Mode of measurements and payment

2.1. The rate shall include the cost of all materials and labour involved to all the operations as described above.

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

14.90. Providing and laying brick on edge flooring laid dry, grouted with C.M. 1:6 (1 cement : 6 coarse sand) including finishing the joints flush, curing etc. complete.

1.0. **Materials**

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

2.0. **Workmanship**

2.1. The flooring shall be laid on concrete sub grade where so provided. The slope in the floor shall be provided in the sub-grade. Where sub-grade is not provided, the earth below shall be properly sloped, watered, rammed and consolidated. Before laying the flooring it shall be moisture. Plinth masonry off-eta shall be depressed so as to allow the sub grade concrete to rest on it.

2.2. **Laying :**

The brick shall be laid in plain, diagonal herring bond, or other pattern as directed. The bricks shall be dry laid properly and set home by gently tapping. On completion of the portion of flooring the vertical joints shall be grouted with C.M. 1:6 and all joints shall be finished flush. The joints shall be as fine as possible and not exceeding 5 mm. These joints shall be filled with cement mortar 1:6.

2.3. **Curing :**

The brick paving shall be cured for 7 days.

3.0. **Mode of measurements and payment**

3.1. The length and breadth shall be measured correct to a centimeter between skirting dedo or wall plaster. No deductions shall be made nor extra paid for any opening up to 0.1 sq.mt. in area in the floor Nothing extra shall be paid for laying the floors at different levels in the same room or courtyard.

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

SECTION-15
Roof Covering

15.1. Providing corrugated G.I. sheets roofing fixed with galvanized iron 1J' or 1L' hook bolts and nuts 8 mm. dia. with bitumen and G.I. limpet washers filled with white lead complete excluding the cost of purline, rafters and trusses (1) 0.8 mm. thick sheet.

1.0. Materials :

Corrugated G.I. sheets shall conform to M-23.

2.0. Workmanship

2.1. Spacing of purlines : One purline shall be provided at the ridge and one at the eaves. The spacing of other purlines for 0.8 mm. thick G.I. sheets shall not exceed 1.80 meters. The purline shall coincide with the centre line of the end lap. The ridge purlines shall be placed in such a way that the ridges can be fixed properly. The portion overhanging the wall support shall not be more than one fourth of the spacing of purlins.

2.2. The top surfaces of the purlines shall be painted before the sheets are fixed over them. Embedded portions of purlins shall be finished with tow coats of coal-tar.

2.3. Laying of sheets :

2.3.1. The sheets shall be laid in purlins to a true plane with the line of corrugations truly parallel or normal to the sides of area to be covered. The sheets shall not generally be built into gables and parapets. They shall be bent up along their side edges close to the wall, and the junction shall be protected by suitable flushing or by projecting drip course.

2.3.2 The laps at end shall be provided 150 mm. minimum for roof slopes 1 in 2 (1 vertical : two horizontal) and steeper but 200 mm. shall be provided for flatter slopes than those above. The side lap shall be provided two ridges of corrugations at each side.

2.3.3. The sheets shall be cut to the dimensions or the shape of the roof either along their lengths or their width or in slant across the line of corrugations at hips and valleys. The sheets shall be cut carefully with a straight edge and chisel to give straight finish. The sheets shall be laid such that the laps are turned away from the usual direction of local heavy rain.

2.3.4. Fixing of sheets :

2.3.4.1. Sheets shall be fixed to the purlins or other roof members such as hips or valley rafter etc. with 1J' or 1L' galvanized hook bolts, and galvanized nuts 8 mm. dia. with bitumen limpet washers and G.I. washers. Limpet washers with white lead shall be used. Length of hook bolt shall be varied to suit the site requirement. Bolts shall be sufficiently long so that after fixing the project above the top of their nuts by not less than 12 mm the grip of 1J' or 1L' book bolts on the sides of purlins shall not be less than 25 mm. There shall be minimum of three hooks bolts placed at the ridge of corrugations in each sheet in every purlin and their spacing shall not exceed 300 mm. Coach screw shall not be used for fixing the sheets to purlin, where the slopes of roof are not less than 2.1/2 degree (1 vertical and 2.1/2 horizontal). Sheets shall be jointed together at the side laps by galvanized iron bolts and nuts 25 mm. x 6 mm. size each bolt with a bitumen and G.I. limpet washer filled with white lead. Where the overlaps at the sides extend to two corrugations, these bolts shall be placed zigzag over lapping corrugations, so that the ends of the overlapping sheets are drawn tightly towards each other. The spacing of same bolts shall not exceed 600 mm. along each of the staggered rows.

2.3.5. Holes for all bolts shall be drilled and not punched in the ridges of the corrugations from the under side, while the sheets are on the ground. The holes in the sheets shall be at least 50 mm. from the edge. ' Sheets drilled wrongly shall be rejected. The holes in the washers shall be of the exact diameter of the hook bolts or the beam bolts. The nuts shall be tightened from above to give a leak-proof roof

3.0. Mode of measurements and payment

3.1. The measurements of the C.G.L sheet roof shall be taken for finished work in superficial area in general plane (not girthed on the roof). The laps between the C.G.I. Sheets both at their ends and along the side edges shall not be measured. The overlaps of C.G.I, sheets over the valley piece and their under lap under the ridge, hip and flashing piece shall be included in the measurements.

3.2. No deductions in measurements shall be made for openings for chimney stacks, sky light etc., of area up to 0.40 sq. mt. nor extra be paid for labour in cutting and for wastage etc. in forming such openings.

3.3. The rate of roof shall include the cost of all materials and labour involved in all operations described above. The rate also includes the cost of provision, erection and removal of the .scaffolding, benching, ladders, templates and tools required for the proper execution and erection of the work. The rate includes the cost of purlins, rafters and trusses.

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

15.7. **Providing ridges of hips 600 mm. overall in plain G.I. sheets fixed with G.I. 'J' or 'L' hooks bolts and nuts 8 mm. dia. G.I. limpet and bitumen washer etc. complete. 0.80 mm. thick sheet.**

1.0. **Material**

The G.I. valley gutters and ridges shall conform M-23 A.

2.0. **Workmanship**

2.1. The relevant specification of item No. 15.1 shall be followed excepi that the work shall be carried out for ridges or hips. The overlaps for ridges and hips or either side over the C.G.I, sheets and end legs shall be minimum 225 width of the ridges and hips shall be as described in the item.

2.2. Ridges shall be fixed to the purlins with same 8 mm. dia. G.I. hook bolts and nuts and bitumen and G.I. limpet washers, which fix the sheets for the pureline. Hips shall be fixed to the roof members with the same 8 mm. dia G.I. hook bolts and nuts and bitumen and G.I. limpet washers which fixed the sheets. At least one of the fixing bolts shall pass through the end laps of the ridges and hips on other sides. If this is not possible, extra hook bolt shall be provided. End laps of ridges and lips shall be jointed together by galvanized iron seam bolts and G.I. Washers. There shall be at least two such bolts in each end lap.

2.3. Ridges and hips shall fit in squarely on the sheets.

3.0. **Mode of measurements and payment**

3.1. The measurements of ridges or hips shall be taken for finished work in length along their centre lines.

3.2. No laps shall be measured.

3.3. The payment for ridges and hips shall be made in a similar way as in case of C.G.I, sheet roofing.

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

15.8. **Providing valleys 900 mm. overall in plain 1.6 mm. thick G.I. Class-3 fixed with 'J' or 'L' hook bolts and nuts galvanized from 'J' or 'L' hook bolts and 8 mm. dia. G.I. limpet and bitumen washers complete.**

1.0. **Materials**

1.1. The G.I. valleys 900 mm. overall in galvanized plain sheet of 1.6 mm. thickness shall be of class-3. The valleys shall be 900 mm. wide overall and flashing shall be 380 mm. wide overall. There shall be bent to the required shape without damage to the sheets in the process of bending.

2.0. **Workmanship**

2.1. The relevant specifications of item NO. 15.1. shall be followed except that the work shall be carried out for G.I. valleys 900 mm. overall with G.I. sheets 1.6 mm. thickness.

2.2. Wherever the edge of a roof sheeting or valley gutter is turned up against a wall, the edge shall be weather proofed with a flashing. Flashing shall be bent to shape and fixed. Lap over the sheet shall be not less than 150 mm. over the roofing sheets. The end between the flashing sheets shall not less than 225 mm.

2.3. The flashing shall be inserted into brick work or masonry joints to a depth of 50 mm. These joints shall be filled with cement mortar (1:3). The flashing shall be well secured to the masonry. Whenever flashing has to be laid at a slope, it shall be stepped at each course of masonry, the step being out back at angle or not less than 30 degrees to the vertical.

2.4. Valleys shall be bent to shape and shall have end lap projection on either side under C.G.I, sheet not less than 225 mm. Valleys shall be fixed to the roof member below, with same 8 mm. dia. G.I. hook, bolts and nuts and bitumen and G.I. limpet washer which fix the sheets to these members. At least one of the fixing bolts shall pass through the end laps of the valley piece. If necessary extra bolts shall be provided for this purpose.

3.0. **Mode of measurements and payment**

3.1. The measurements for valley shall be taken for finished work in length along their centre lines.

3.2. No laps shall be measured.
3.3. The rate excludes the cost of boarding underneath which shall be paid separately.
3.4. The rate of flashing includes the cost of mortar for fixing in wall and other labour and materials required for it.
3.5. The rate shall be for a unit of one running meter.

15.10.(I) Providing and fixing 150 mm. wide 450 mm. overall semicircular plain, G.I. sheets clas-3 Gutter with iron brakes 40 mm. x 3 mm. size bolts nuts, washers etc. including making necessary connections with rain water pipes : 0.80 mm. thick.

1.0. **Materials**
1.1. These shall be of plain galvanized sheets Class-3 of 0.80 mm. thickness. The gutter shall be designed to carry the maximum discharge from the roof without flowing over and shall be constructed wherever possible with sunk channel or gutter.
2.0. **Workmanship**
2.1. The longitudinal edges shall be turned back to the extent of 12 mm. and beaten to form a rounded edge. The ends of the sheets at junctions of pieces shall be hooked into each other and beaten flush to avoid leakages.
2.2. The size of gutters shall be as specified in the item.
2.3. The gutter shall be laid with a minimum fall in 120. Gutter shall be true to line and slope and shall be supported on fixed M.S. Flat iron brackets bent to shape or any other suitable bracket.
3.0. **Mode of measurements and payment**
3.1. The measurements of gutters shall be taken for finished work in length along their centre lines. No. laps shall be measured.
3.2. The rate gutter shall include the cost of all labour and materials specified above including all specials such as angles, junctions, drop ends or funnel shaped connecting pieces, stop ends etc. flat iron brackets and bolts and nuts required for fixing the latter to the roof members.
3.3. The rate shall be for a unit of one running meter.

15.20.(A)(I) Providing asbestos cement sheets, roofing fixed with G.I. plain and bitumen, washers complete excluding cost of purlins, fakers and trusses : 7 mm. thick, corrugated sheet.

1.0. **Materials :**
1.1. Asbestos cement sheets shall conform to M-24.
2.0. **Workmanship**
2.1. The maximum spacing of purlins shall be 1.6 meters in case of 7 mm. thick A.C. sheets and 1.4 meters for 6 mm. thick A.C. sheets.
2.2. **Laying & fixing of Sheets**
The sheets shall be laid on the purlins and other roof members as per cods practice. The top bearing surfaces of all purlins and other roof members shall be is one plane so that the sheets when being fixed shall not be required to be forced down to rest on the purlins. The finished roof shall present uniform slope and the line of corrugation shall be straight and true. The sheets shall be laid with smooth side upwards. Corrugated sheets shall be valid starting at the eaves either from left to right or right to left depending upon the direction of wind. Before actual laying of the sheets is started, the purlins spacing and the size of sheets shall be checked to ensure that the arrangements shall provide the laps required and the specified overhang at the eaves. In case the sheets are laid from right to left, the first sheet shall be laid uncut but the remaining sheets in the bottom row shall have the top left hand corners cut or mitered. The sheets in the second and other immediate rows shall have bottom right and corner of the first sheet cut. All other sheets except the last sheets shall have both bottom right hand corner of the first sheet cut. All other last sheet shall have only top left hand corner cut. The last of the top row sheets shall have the bottom right hand corner cut with exception of the last sheet which shall be left uncut. If the sheets are laid from left to right, the first sheet shall be laid and cut and the remaining procedure shall be reversed.
2.3. The free overhang of the sheets at the eaves shall not exceed 400 mm. in case of 7 mm. thick sheets and 300 mm. in case of 6 mm. thick sheets.
2.4. The meter described above is necessary to provide snug fit. Where 4 sheets meet at a lap the length of meter shall be 150 mm. and the width of miter shall be equal the width of the side lap. The cutting may be done with ordinary wood-saw at site.

2.5. Laps :
The sheets shall be laid with an end lap of 150mm. minimum. In case of roof with a' pitch flatter than 1 vertical to 2.1/2 horizontal (Approx. 22) or in the case of very exposed situations appropriate larger Taps may be provided. The sheets shall be laid with side lap of half a corrugation.

2.6. Fixing Accessories : The sheets shall be secured to the purlins and other roof members by means of 8 mm. dia galvanized iron bolts (J) type hook bolts in case of angle iron purlins and 'L' type bolts in case of R.S. joints, precast concrete, or timber purelin, and nuts bearing on galvanized iron washers .and bitumen washers. The grip of 'J' or 'L' bolts on the side of purlins shall not be less than 25 mm, Each galvanised iron 'J' or 'L hook bolts shall have bitumen washer and galvanised iron washer placed over the sheets before the nuts is screwed down from above. On each purelin there shall be one hook bolt on the crown adjacent to the side lap on either side bitumen washer shall be of approved quality. The G.I. flat washer shall be 25 mm. in diameter and 1.60 mm. thick and bitumen water shall be 35 mm. in dia. and 1.5 mm. thick with hole to suit the required size of fixing accessory. Each nut shall be screwed lightly at first. After a dozen or more sheets are laid, the nuts shall be tightened to ensure a leak proof joint and also nuts tightened only to extent so as to prevent damage 1o the sheets. The length of the 'J' bolts or crank bolts shall be 75 mm. more than the depth or purlins for single sheet fixing and 90 mm. more where two sheets overlap or where ridges or other accessories are to be fixed. The minimum length of coach screw for timber purlins shall be 110 mm.

2.7. Holes :
The holes fo fixing the sheet shall be drilled in the centre of end lap to sheets to suit the purlins i.e. on the centre line of the purline, if these are of timber and square head coach screws are used, or as close as possible to the back of purlins if 'J' or 'J' bolts are used as with steel angles or precast concrete or timber purlins. Holes for hook bolts etc. shall be 2 mm. more than diameter of the fixing bolts. No holes shall be nearer than 40 mm. to any edge of sheet or accessory.

3.0. **Mode of measurement & payment**

3.1. The relevant specifications of item 15.1 shall be followed, except that the over lap of the corrugated sheets over valley gutters, roof lights, caves, filler piece sand underlay of the corrugated sheets below ridges, hips north light curves, flashing pieces, roof light sheets and large board shall be included in the measurement. No deduction shall be made for holes cut for extractor or cowl type ventilators. Deductions shall be made for roof light sheets.

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

15.20.(A)(III) **Providing asbestos cement sheets roofing fixed with G.I. plain and bitumen washers complete excluding the cost of purlins, rafters and trusses: 6 mm. thick corrugated sheets.**

1.0. **Materials and Workmanship**

The relevant specifications of item No. 15.20 (A)(I) shall be followed except that the thickness of A.C. sheets shall be 6 mm.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 15.20 (A)(I) shall be followed.

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

15.25.(D) **Providing and fixing ridges and hips in asbestos cement sheets roofing with G.I. 'J' or 'L' hook, bolts and nuts 8 mm. dia. G.I. plain and bitumen washers complete. North tight adjustable ridges.**

1.0. **Materials**

1.1. The ridges and hips of Asbestos cement sheets roofing shall conform to M-24.

2.0. **Workmanship**

2.1. The relevant specifications of item 15.20 (A) (I) shall be followed except that the work is to be carried out for ridges and hips in A.C. sheet roofing.

2.2. The ridges shall be laid as per manufacturer's instructions with rolls of the two wings in case of adjustable ridges, fitting closely and with a separation of serrated ridges registering correctly with the sheet underneath. The staggered lapping of two wings of adjustable ridge section and the lap between the adjustment pieces on the same wing of ridges shall be as per manufacturer's instructions. The end portion of the wing of the adjustable ridges which project beyond the verges of the roof shall be cut and trimmed off neatly.

2.3. Hips :

In laying hip pieces, serrations to suit the corrugations in the sheets below should be cut in them so that they shall be snug fit over the sheets. The wings of ridges shall be fixed to the sheet below with seam bolts and nuts 8 mm. dia. G.I. 'J' or 'L' hook bolts and bitumen and G.I. washers which fix the sheets to the purlins. In addition, in north light adjustable ridges, the roll of the two wings shall be jointed together at their crown, with 8 mm. dia G.I. seam bolts and nuts at the rate of two numbers per pair wings. Each seam bolt shall be provided with one bitumen and a pair of G.I. washers. Where the plain wing angular or plain C.C. (1.2:4) up to a full length of the overlaps. The exposed face shall be finished perpendicular to the sheeting. Wings of hips shall be fixed to the roof members below with the same 8 mm. dia. G.I. 'J' or 'L' bolts end nuts which fix the sheets to the member. In addition, they shall be secured to the sheet below with 8 mm. dia G.I. seam bolts, nuts and washers so that taken together with hook bolts, there shall be bolt on each wing at least at every fifth Corrugation of the sheets below in case of corrugated and at least every second corrugation of the sheet below in case of semi corrugated sheets. Each seam bolt shall be provided with one bitumen and pair of G.I. washers.

3.0. **Mode of measurements & payment**

3.1. Measurements of ridges, hips and other accessories shall be for finished work and the length shall be taken along the centre line. The lap shall not be measured. The under lap of ridges under expansion joint pieces shall be measured.

3.2. The rate of ridges and hips shall not include the cost of expansion joint pieces, closing of gap, between plain ridge and the sheet corrugation with concrete.

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

15.26. Filling cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm. nominal size) in gaps of A.C. sheet corrugation and wing of ridges.

1.0. **Materials**

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

2.0. **Workmanship**

2.1. The relevant specifications of item No. 5.4.1 of C.C. shall be followed except that the work shall be for filling gaps of A.C. sheet corrugation and wings of ridges.

3.0. **Mode of measurements & payment**

3.1. The measurements of filling gaps in ridges, hips of A.C. sheet corrugation and wings of ridges shall be for finished work. The length shall be measured along the centre line.

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

15.27 (III) Providing and fixing asbestos cement roofing accessories with galvanised iron 'J' or 'L' hook bolts and nuts, G.I. plain and bitumen washer etc. complete : North light and ventilator curves.

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 15.10 (I) shall be followed except that the work is carried out for accessories for asbestos cement roofing north light and ventilator curves.

1.2. The accessories such as north light and ventilator curves shall be laid and secured with same G.I. hook bolt to secure the sheets to the roof, or with separate G.I. hook bolts to the roof members below and/ or with 8 mm. dia. G.I. bolts nuts and washers to the sheeting, generally as per manufacturer's written instructions.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 15.25 (D) shall be followed.

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

15.29.(I) Providing and fixing asbestos cement socketed half eaves gutter with bolts, nuts, bitumen washer etc. and flat iron brackets 40'mm. x 3 mm. size including asbestos rope and plastic roofing compound in joints complete : 150 mm. nominal size.

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 15.10(I) shall be followed except that the asbestos cement socketed half round eaves gutter shall be provided. The size of gutter shall be 150 mm. nominal.

1.2. Gutters shall be laid with a minimum fall of 1 in 120 which should be increased where possible. Gutters shall be true to line and slope and shall be laid with requisite accessories such as drop ends, stop ends, nozzles, m angles and union slips, as directed. The size of outlet of drop ends and nozzles shall be the same as the size of rain water pipe into which they discharge water. Gutters and their accessories shall be supported by m.s. flat/ iron bracket. Where these are required to be fixed to the side of rafter they shall be fixed with 40 mm. by 3 mm. section bent to shape and fixed rigidly to the sides of the rafter with 3 Nos. of 10 mm. dia. bolts, nuts and washers. The brackets shall overlap the rafter not less than 300 mm. sand connecting bolts be 115 mm. centers.

1.3. Where the brackets are to be fixed with purlins, these shall consist of 40 x 3 mm. M.S. flat iron bent to shape with one/and turned at a right angle and fixed to the purlins face with a 10 mm. dia bolt, nut and washer. The perpendicular overhang portion of 40 mm. x 3 mm. bracket shall be stiffened by another 40 x 3 mm. flat bent to right angle shape with its longer leg connected to the bracket with two numbers of 6 mm. dia. M.S. Bolts nuts and washers and its shorter legs fixed to the face of purlins with one number 10 mm. dia bolt nuts and washers. The overhang of the vertical portion of the flat iron bracket from the face of the purlin shall not exceed 225 mm.

1.4. Requisite slope in the gutter shall be given in the line of bracket. The brackets shall be places at not more than 900 mm. centers.

1.5. The gutters shall be fixed to the brackets with 2 Nos. 8 mm. G.I. seam bolts and nuts, each bolt and nut being equipped with a pair of bitumen and G.I. washers. These connection bolts shall normally be above the water line of the gutter..

1.6. Spigot and socket end of gutters of socketed hall round gutter and their accessories shall be connected together at their laps with one row of 8 mm. dia. G.I. bolts and nuts. Each of the bolts and nuts shall be provided with a pair of bitumen and a pair of G.I. washers. The gap between socket and spigot shall be packed with approved plastic roofing compound and flanked on the both sides with 6.35 mm. dia asbestos rope. The connecting G.I. Bolt shall be then tightened so that the lapped joint becomes leak-proof. The outer face of packed asbestos rope shall not be further than 6 mm. from the edges of the spigot and socketed ends. Where both ends of gutters and / or their accessories to be connected together are spigot ends, they shall be laid as butt jointed with 1.5 mm. gap in between over union clips. The union clips connected to the two butt ends of the gutter or other sections with two rows. The gap between union clips and ends of gutter sections or accessories shall be packed with plastic roofing compound flanked with edges of 6.35 mm. dia asbestos ropes as before. The whole joint shall be made leak-proof by tightening the bolts.

2.0. **Mode of measurements & payment**

2.1. The asbestos socketed hall round eaves gutter shall be measured for finished work and the length shall be measured along the centre line.

2.2. The rate of gutters shall include the cost of providing and fixing accessories such as drops ends, stop ends, nozzles, and fixing union clips together with bolts, nuts and washers.

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

15.29.(II). Providing and fixing Asbestos cement socketed half round eaves gutters with bolts, nuts, bitumen washers etc. and flat iron brackets 40 mm x 3 mm. size including Asbestos rope and plastic roofing compound in joint etc. complete. 300 mm. nominal size.

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 15.29 (I) shall be followed except that the size of the Asbestos socketed eaves hall round gutter shall be 300 mm. nominal size.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 15.29(1) shall be followed.

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

15.51. Tiled roofing with Mangalore pattern roof tiles including teak reefers of size 50 mm. x 25 mm.

1.0. **Materials**

(1) Mangalore pattern roof tiles shall conform to M-25, (2) Teak wood batten shall conform to M-29.

2.0. **Workmanship**

2.1. **Laying**

The maximum distance between centre to centre of rafters shall be not more than 500 mm. Teak wood reapers 50 mm. x 25 mm. be nailed to each rafter at central distances suited to the size of the tiles by

means of nails 50 mm. long. The reapers shall bje of well seasoned teak wood and shall be straight pieces of uniform size and colour and not shorter than the length necessary to cover at least four rafter. The under face and sides of the reapers shall be planned before fitting up. Joints shall come over the rafter. The joints of two adjacent rows of reapers shall not come over the same rafter. At the eaves, there shall be two reapers of such thickness and shape that the uniformity of the top slope of the roof shall be preserved.

2.2. **The work of valleys shall be executed as under :**

Galvanized iron sheet 1200 mm. wide and 1.25 mm. thick shall be used for valleys. The sheet shall be extended by about 450 mm. under the tiles on either side in a depth of 100 mm. at centre. The sheet shall be carried 75 mm. into the wall and set with cement mortar unless flushing is specified. The laps, if any, on the slope shall be 300 mm. The sheets shall be laid over the reapers and nailed. Two reapers 50 mm x 25 mm. each shall be fixed over the galvanized iron sheet 150 mm. away from the centre line of the valley, on either side to keep the tiles and mortar from falling into the gutter of the valley.

2.3. **Laying :**

The tiles shall be laid from the eaves towards the ludges after fitting of the reapers, the rebate of the tiles resting fully against the reapers. The joints of the hips and ridges tiles and also those between them and the plain tiles shall be set in and well grouted with lime mortar and the mortar surface painted and finished off with a mixture of red paint and port land cement or preserve informality of colour. The finished slope of rool shall be uniform from ridges to eaves. The eaves line shall be perfectly straight, horizontal and parallel to each other. The end over gales shall be protected by lime borders and neatly finished.

2.4. At the side of valleys and for 230 mm. on either side of the roof at valleys cement plastering 12 mm. thick shall be done to prevent the rain water from the gutter leaking by the sides of valleys.

2.5. At the eaves, wide tie shall be placed over the ends of the last tiles and secured by means of galvanized iron washers and screws 25 mm. into the rafter to prevent tiles from being blow up. Care shall be taken to put the screws in the, ridges and not in the gutter or the tiles, Where full tiles are not necessary, half tiles manufactured for the purpose shall be used.

3.0. **Mode of measurements and payment**

3.1. The measurement of the roof shall be taken for finished work for superficial area flat in the plane, of the roof and not girthed. Laps shall not be measured.

3.2. No deduction in measurements of roofed shall be made for openings of area up to 0.40 sq. mt. nor shall any extra be paid for labour and wastage in forming such openings.

3.3. The rate includes the cost of all materials and labour including ridges, hips, eaves and bottoms.

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

15.75 **Providing and fixing five courses water proofing treatment with bitumen felt consisting/ of second and fourth course of blown bitumen or/and residual bitumen applied hot 1.20 kg./sq. mt. of area for each course and first course with fiber base bitumen saturated underlay type and third course with fiber base seli finished felt type 2 Grade-I, fifth and final course of stone grit 6 mm. and down size or pea sized gravel spreaded at 0.008 cum/sq.mt. including preparation of surface, excluding grading complete.**

1.0. **Materials**

The tar felt shall conform to M-76. The bitumen primer shall conform to I.S. 3388-1965. The bitumen shall conform to I.S. 702-1961. The grit or gravel shall conform to M-8.

2.0. **Workmanship**

2.1. **Preparation of surface :**

2.1.1. Well defined cracks other than hair cracks in the rool structure shall be cut to V section cleaned and filled up flush with cement sand slurry or with bitumen conforming to I.S. 702-1961. The surface to be treated shall have minimum slope of 1 in 120. The grading shall be carried out prior to the application of water proofing treatment by cement mortar or line surkhi mortar or as specified in description of item.

2.1.2. The surface or room, part of parapet and gutters, drain mouths etc. over which the water proofing treatment is to be applied shall be cleaned or all foreign matter such as funguses, moss and dust by wire brushing and dusting.

2.1.3. Drain outlet shall suitably placed with respect to the roof gradient to ensure rapid drainage and prevent local accumulation of water on the roof, surface, masonry drain mouth shall be widen sufficiently and rounded with cement mortar.

2.1.4. For cast iron drain outlets, a groove shall be cut all round to touch the treatment.

2.1.5. When a pipe passes through a roof on which water proofing treatment is to be laid a cement concrete angle fillet shall be built round it and the water proofing treatment taken over the fillet.

2.1.6. In case of parapet wall over 450 mm. in height for trucking in the water proofing treatment a horizontal groove 75 mm. wide and 65 mm. deep at minimum height of 150 mm. above roof level shall be left in the vertical face at the time of construction. The horizontal face of the groove shall be shaped with cement mortar 1:4.

2.1.7. In case of low parapet where the height does not exceed 450 mm. no groove shall be provided and the water proofing treatment shall be carried right over the top.

2.1.8. In-case of existing R.C.C. and stone and vertical face of the parapet wall, a fillet 75 mm. in radius shall be constructed.

2.1.10. At the drain months the fillet shall be suitably cu back and rounded off for easy application of water proofing treatment and easy flow of water.

2.1.11. Outlet at every low dividing wall about less than 300 mm. in height cut open to full depth and the bottom and the sides shall be rounded smooth and corners rounded off for easy application of water proofing treatment.

2.2. Priming coat:

2.2.1. Bitumen primer shall conform to I.S. 3335-1965. A priming coat consisting of bituminous solution of low viscosity shall be applied with brush on the roof and wall surface at specified weight per unit area to assist adhesion to bonding materials as specified in the description of the item.

2.2.2. Where a floating treatment to water proofing with self finished bitumen felt is required i.e. where water proofing treatment is required to be isolated from the roof structure, a layer of bitumen saturated felt (under lay) shall be spread over the roof surface and tucked into the flashing grooves. To keep the underlay free from the structure nonbonding materials shall be used below underlay. Overlapping to the adjoining strip of underlay shall be minimum of 75 mm. as sides and 10 mm. at ends, and shall be sealed with the same bonding materials, m as used for self finished felt treatment. The underlay shall be of type I saturated felt conforming to I.S. 1322-1970.

2.3. Laying of Felt :

2.3.1. The self finished tar felt shall be cut to the required lengths, brushed clean to dusting materials, laid out flat on the roof to eliminate curls and subsequent sketching. The felt shall be laid in lengths running at right angles to the dilection of run off gradient commencing at the lowest level and working up to crest, so that the lower laps of the adjacent felt layer offer minimum obstruction to the flow of water. The felt shall not be laid in a single piece of very long lengths as it is likely to shrink. 6 to 8 meters are suitable length. The roof shall be cleaned and dried before the felt treatment is begun. Each length shall be laid in position and rolled up for a distance of half its-lengths. The hot bonding materials heated to correct working temperature as specified by manufacturer shall be poured on the roof across the full width of the felt as the letter is steadily unfolded and pressed down. The excess of bonding materials which squeezes out at the ends shall be removed as the laying proceeds. The pouring shall be so regulated that the correct weight of the bonding materials as per unit area is spread uniformly over the surface. When the fists half of the tar felt has been bonded to the roof, the other half shall be rolled up and then unrolled on the hot bonding materials in the same watt. Subsequent strips shall also be laid in the same manner. Each strip shall overlap the proceeding one by at least 75 mm. at the longitudinal edges and 100 mm. at the ends. All overlaps shall be firmly bonded with hot bitumen. Streaks and trailing of bitumen near edges or laps shall be leveled by heating the overlaps with blow lamp and leveling down unevenness.

2.3.2. Third layer of bonding materials in four course treatment shall be carried out in similar out in manner after the flashing has been complete.

2.3.3. Water proofing treatment shall be carried out in the drain pipe or out-lets by at least 100 mm. The Water proofing treatment laid on the surface shall over-lap the upper edge of water proofing treatment in the drain outlets by latest 100 mm. Flashing felts shall be laid as flashing. Wherever junction of vertical horizontal surfaces occurs longitudinal laps shall be 100 mm. The lower layer of flashing felt shall overlap the roofing felt by 100 mm on vertical and sloping faces. Last course of flashing should not be of stone grit or pea sized gravel but it shall be replaced by providing two coats of bitumen solution of approved quality.

2.3.4. The lower edge of flashing shall overlap the flat portion for the roof and the upper edge of the flashing shall be trucked into the horizontal groove 75 mm. thick wide, 65 mm. deep provided at minimum height of 150 mm. from top of the roof surface. The flashing treatment shall be firmly held in place in the grooves with wooden wedges at intervals and the grooves shall be filled with cement mortar 1:4 (1 cement : 4 coarse sand) or cement concrete (1:2:4) (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominal size) and surface finished smooth with the rest of wall. The cement work shall be cured of bituminous solution shall be applied on the vertical and sloping surface of flashing.

2.3.5. After the top flashing felt layer has been laid, the penultimate layer of bonding material shall be applied over the roofing felt and horizontal overlap, and vertical and sloping surfaces of flashing shall be spread uniformly over the hot bounding materials on the horizontal roof surface and pressed into it with wooden roller.

2.3.6. The material for surface finish shall be spread as described in the item over top layer.

2.3.7. If ballooning occurs the defects may be rectified as under.

2.3.8. Remove the gravel on the ballooned surface. The cut open and squeeze out the trap vapor by firm pressure applied by hand, seal the bitumen felt so lifted back on the surface by applying additional bitumen, finally seal the cut with piece of bitumen felt with bitumen application.

3.0. **Mode of measurements & payment**

3.1. The measurements for this item shall be taken as under:

(a) Water proofing of roof with bitumen shall be measured in sq. mt. length and breadth shall be measured correct to centimeter.

(b) Measurement shall be taken for the superficial area of roofing and flashing treatment including flashing over the parapet wall, low dividing walls and expansion joints and at the pipe projection etc. Overlapping and tucking into flashing grooves shall not be measured.

(c) Slopping and vertical surface of water proofing treatment shall be measured under the four or five course treatment as the case may be irrespective of the fact that the final course of grit or gravel is replaced by bitumen primer.

(d) In measurements, no deductions shall be made for either openings or recesses for chimney stacks, roof lights etc. for areas up to 0.40 sq. mt. not anything extra shall be paid for extra labour and materials in forming such openings. For similar area exceeding 0.04 sq. mt. deduction shall be made in measurements for full opening but nothing extra shall be paid for extra labour and materials in forming such openings.

(e) The grading (coba bedding) shall be paid separately but cleaning of surface and treatment shall not be measured or paid separately.

3.2. The rate includes cost of all materials and labour.

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

15.87(A) Providing and fixing on wall face C.I rain water pipe including filling the joints with spun yarn soaked in neat cement slurry and cement mortar 1:2 (1 cement : 2 fine sand) 75 mm. dia.

1.0. **Materials**

Water shall conform to M-1. The C.I. rain water pipes and fittings shall conform to M-68. Cement mortar shall conform to M-11.

2.0. **Workmanship**

2.1. C.I. rain water pipes shall be of the specified diameter and shall be in full lengths of 1.8 meters including socket ends of the pipes unless shorter lengths are required at junction with fittings.

2.2. **Fixing :**

The pipe and fittings shall be fixed in vertical alignment unless otherwise specified and shall be secured to the walls at joints with M.S. clamps. The clamps shall be M.S. sheet 30 mm. bent to required shape and size so as to fit tightly on the socket of pipe when tightened with screw bolts. It shall be formed out of two semi-circular pieces, hinged with 6 mm. dia M.S. pin on one side and provided flanged ends on the other side with holes to fit in the screw bolt and nut 40 mm. long. The clamps shall be provided with hook made out of 275 mm. long, 10 mm. dia M.S. bar invested to the ring at the centre of one semicircular piece. The clamps shall be fixed to the walls. The clamps shall be kept above 25 mm. clear of finished face of wall so as to facilitate cleaning and painting the pipes.

2.3. The pipe shall be fixed vertically. The spigot of the upper pipe shall be properly fitted in the socket of the lower pipe such that there is uniform annular space filling with the jointing material. The annular space between the spigot and socket shall be filled with, a few turns of spun yarn soaked in cement slurry or with stiff cement mortar 2:1 (1 cement : 2 fine sand) well pressed with caulking tools and finished smooth at top at an angle of 450, shopping up. The joint shall be kept we at least for 7 days by tying four fold of gunny bag to pipe and keeping it moist constantly.

3.0. Mode of measurements & payment

3.1. The relevant specifications of item No. 15.93(B) of A.C. rain water pipes shall be followed except that the C.I. rain water pipe shall be fixed.

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

15.88.(A) Providing and fixing M.S. Holder bat clamps of approved design to C.I. or S.C.I, pipes embedded and including cement concrete blocks (108 mm. x 100 mm. size) in 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) and cost of cutting holes and making good the wall etc. complete : 75 mm. dia.

1.0. Materials of Workmanship

1.1. The relevant specifications of item no. 15.94(6) shall be followed except that the M.S. holder bat clamps of approved design shall be C.I. rain water pipe-75 dia.

1.2. The bat clamps shall be fixed as directed with C.C. blocks of 100 mm. x 100 mm. The relevant specification of item No. 5.4.1 shall be followed for concrete work.

2.0. Mode of measurements and payment

2.1. The bat clamps of M.S. bolder suitable for 75 mm. dia shall be measured for finished item.

2.2. The rate includes cost of all materials and labour etc. required for satisfactory completion of this item.

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

15.90(A) Providing arid fixing and embedding sand C.I. rain water pipe in the mason surrounded with 12 mm. thick cement mortar of the same mix as that of masonry : 75 mm. dia. pipe.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. The C.I. pipe and fittings shall conform to M-68.

2.0. Workmanship

2.1. The relevant specifications of item No. 15.87 (A) shall be followed except that C.I. pipe 75 mm. dia shall be embedded in masonry surrounded with 12 mm. thick cement mortar.

2.2. The pipes shall be fixed in the masonry work as it proceeds. The pipe shall be kept vertical or to the line as directed. The pipe shall have minimum surroundings of 12 mm. thick cement mortar at every portion of external surface. The length shall be caulked with spun yarn and cement mortar as soon as the next length of pipe is placed in position. The socket end of the pipe of shall be kept closed till the next length of pipe is fitted and jointed to prevent any brick-bats or concrete or pieces of wood falling in and cocking the pipes.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 15.87 (A) shall be followed.

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

15.93(6) Providing and fixing on wall face asbestos cement rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) complete : 80 mm. dia.

1.0. Materials

1.1. Asbestos cement pipes of 80 mm. dia shall conform to I.S. 1626-1960 for pipes fixed on wall face. AC. pipe shall conform to M-74.

2.0. Workmanship

2.1. Asbestos cement rain water pipes and fittings shall be of the diameter, size and type specified in the item. The pipe shall be full lengths of 2 meter as far as possible. All the pipes shall be fixed on wall face at locations indicated on drawings or as ordered by the Engineer-in-charge. Pipe shall be secured to face of wall below all joints by M.S. clamps with wooden gut ties.

2.2. The spigot of the upper pipe shall be properly fitted into the socket of the lower pipe such that there is uniform annular space for fitting with the jointing materials. One third depth of annular space between the

item. The pipe shall be full lengths of 2 meter as far as possible. All the pipes shall be fixed on wall face at locations indicated on drawings or as ordered by the Engineer-in-charge. Pipe shall be secured to face of wall below all joints by M.S. clamps with wooden gut ties.

2.2. The spigot of the upper pipe shall be properly fitted into the socket of the lower pipe such that there is uniform annular space for fitting with the jointing materials. One third depth of annular space between the socket and the spigot shall be filled with spun-yarn soaked in bitumatic jointing compound and shall be pressed home by means of caulking tool. The remaining 2/3 depth of the joints shall be filled in with stiff cement mortar 1:2 and shall be pressed with caulking tool and finished smooth at top at an angle of 45 sloping up.

3.0. **Mode of measurements and payment**

3.1. The pipe shall be measured including all fittings along its length in running meter. No allowance shall be made for the portion of pipe length entering the sockets of the adjacent pipe or fittings.

3.2. The rate includes the cost of all materials and labour involved in all the operations including jointing.

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

15.93.(C) **Providing and fixing on wall face asbestos cement rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) complete : 100 mm. dia.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 15.93 (B) shall be followed except that the diameter of pipes shall be 100 mm.

2.0. **Mode of measurements & payment**

2.1. The pipe shall be measured including all fittings along its length in running meter. No allowance shall be made for the portion of pipe length entered into the sockets of the adjacent pipe or fittings.

2.2. The rate includes the cost of all materials and labour involved in all the operations including jointing.

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

15.94.(B) **Providing and fixing for A.C. pipe on wall plugs and standard holder bat clamps comprising of two semi circular halves of flat iron and cast iron base screwed on wooden plugs : 80 mm. dia.**

1.0. **Materials and workmanship**

1.1. The bat clamps shall consist of a iron base with a projecting 1 shaped lay, teeth web of which the semicircular halves of the flat iron clamps are bolted. The base on the holder bat clamp shall be screwed on a pair of wooden plugs fixed in the wall with screw slotted driven through the holes in the base. The ' screws shall be not less than 75 mm. long-for 80 mm. diameter pipes and 100 mm. diameter pipes. The plugs shall be fixed in the wall to a depth of 150 mm. in cement mortar, 1:2 centrally to the holes in the base of the bat clamps and with their front face projecting to such a length from the brick face that when the bat clamps is fixed, the outer base of its base shall be flush with the plaster face of the wall. The plugs shall be 110 mm. x 50 mm. wide at face increasing to 160 mm. x 70 mm. width at rear and shall be 70 mm. deep through out.

2.0. **Mode of measurement & payment**

2.1. The work shall be measured on number basis of clamps prescribed with accessories including cost of all materials and labour involved in all the operation including jointing etc. complete fixing in position etc. complete.

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

15.94 (C) **Providing and fixing for A.C. pipe on wall plugs and standard holder bat clamps comprising of two semi circular halves of flat iron and cast iron base screwed on wooden plugs : 100 mm. dia.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 15.94 (B) shall be followed except that the standard holder bat damps shall be for A.C. pipe of 100 mm. dia.

2.0. **Mode of measurements and payment**

2.1. The work shall be measured on number basis of clamps including cost of all materials and labour involved in all the operation including jointing, fixing in position etc. complete.

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

15.95.(A) **Providing and fixing on wall face asbestos cement fittings for rain water pipe including jointing with spun yarn socked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand). Bend of required degree. 80 mm. dia without door. 100 mm. dia. without door.**

1.0. **Materials**

1.1. The bend of required degree and size as specified in item shall be of best quality and made as approved by the Engineer-in-charge. The fittings shall conform to I.S. 1626-1960.

2.0. **Workmanship**

2.1. The fitting (bend of required degree) shall be fixed as per relevant specifications of item No. 15.93 (B), except that the A.C. bends of required degree shall be provided instead of pipe.

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

3.1. The rate shall be for a unit of One Number.

15.95.(B) **Providing and fixing on wall face asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement: 2 coarse sand) off set 50 mm. (2) 80 mm. dia. (3) 100 mm. dia.**

1.0. **Materials & Workmanship**

1.1. The relevant specification of item No. 15.95 (A) shall be followed except the off set 50 mm. of specified size of A.C. pipe shall be used instead of bends.

2.0. **Mode of measurements & payment**

2.1. The rate shall be for a unit of One Number

15.95.(C) **Providing and fixing on wall face asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) off set 75 mm. (2) 80 mm. dia (3) 100 mm. dia.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 15.95 (A) shall be followed except that off-set 75 mm. of specified size of A.C. Pipe shall be provided instead of bends.

2.0. **Mode of measurements & payment**

2.1. The rate shall be for a unit of One Number.

15.95.(J) **Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) junction equal angle. (3) 80 mm. dia without door (5) 100 mm. dia. without-door.**

1.0. **Materials and workmanship**

The relevant specifications of item 15.95 (A) shall be followed that junction of equal of angle of specified size of A.C. pipe shall be provided instead of bends.

2.0. **Mode of measurements & payment**

2.1. The rate shall be for a unit of One Number.

15.95.(K) **Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) : junction of equal double angle. (3) 80 mm. dia. without door (5) 100 mm. dia. without door.**

1.0. **Materials and workmanship**

1.1. The relevant specification of item 15.95 (A) shall be followed except that junction of equal double angles of A.C. rain water pipe of specified size shall be provided instead of A.C. Bend.

2.0. **Mode of measurement & payment**

2.1. The rate shall be for a unit of One Number.

15.95.(L) **Providing and fixing on wall face Asbestos cement fittings for rain water pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 cement : 2 coarse sand) : Standard shoe. (2) 80 mm. dia. (3) 100 mm. dia.**

1.0. **Materials and workmanship**

1.1. The relevant specification of item No. 15.95 (A) shall be followed except that the standard shoe of A.C. pipe of specified size shall be provided instead of bend.

2.0. **Mode of measurement & payment**

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

SECTION-16
Ceiling Lining

16.3.(A) Providing and fixing wooden planks ceiling with long Lied and grooved jointing and Wood screws (Frame work and cover fillets to be measured and paid separately) : Indian Teak Wood (i) 12 mm. thick (ii) 20 mm. thick (iii) 25 mm. thick.

1.0. Materials

1.1. The Indian Teak wood shall conform to M-29.

2.0. Workmanship

2.1. General

The planks shall be clean sawn in the direction of the grain, cut square and straight. Each plank shall have tongued and grooved jointing. On exposed faces, it shall be planed for full face.

2.2. The frame for supporting the ceiling may be wooden or metal and the size and the other details of frame work shall be as directed, Suspenders of M.S. angles or other sections may be used for suspending the frame. Use of wooden suspenders shall be permitted. The bottom surface of the frame shall be checked and corrected to true surface and slope.

2.3. Fixing :

Planks of a specified timber and thickness shall be used. The width of the planks shall not be more than 100 mm. up to 20 mm. thick planks and 150 mm. for planks above 20 mm. thick and length shall not exceed 3 meters. The planks shall be of uniform width except in the first and last lines of planks adjacent to the two walls where remaining additional odd width shall be adjusted equally on both sides. The minimum, length of planks in finished work shall be such that it will span at least two spacing of the supporting frame work except where shorten lengths are unavoidable. The planks shall be planed true on the exposed sides.

2.4. The longitudinal edges of the planks shall be jointed with tongued and grooved type joints as described in the item.

2.5. The outer lines of planks shall be accurately fixed parallel and close to be wall. Each subsequent plank shall be carefully jointed up. The plank shall be fixed to the frame above with two screws at each and joints of frame and one at every intermediate joint. (The screws shall not be thinner than designations 8 and of a length not less then twice the thickness of the boards). The screws shall be counter sunk and the screw holes filled with putty or-sloping out way. The unexposed face of planks shall be treated with wood preservative before the board is fixed.

3.0. Mode of measurement & payment

3.1. The supporting frame, cover fillets, and suspenders shall not be included in rate of ceiling.

3.2. No deductions in measurements shall be made for opening not exceeding 0.46 sq. m. and no extra payment shall be made for forming such openings.

3.3. Each type of work in ceiling shall be measured separately.

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

16.4. Providing and fixing Fiber insulation board lining with butt jointing and nails (Frame work and cover fillets to be measured and paid separately) (i) 12 mm. thick (ii) 18 mm. thick (iii) 25 mm. thick.

1.0. Materials

1.1. The fiber insulation board of specified thickness shall conform to I.S. 3348-1965.

2.1. Fixing :

The work shall be carried out as per detailed drawings for panel arrangements.

2.2. All boards are subject to slight movements due to moisture and temperature changes, and this shall be allowed for in fixing. Preferably the board shall be stored up for at least 24 hours before use in the same environment as the one in which they are to be fixed.

2.3. **Frame work :**
The studs and grounds for fixing the boards shall be spaced at 300 mm. to 450 mm. centers both ways the actual spacing selected depending on the width of the cut board in the panel arrangements. All edges of the boards shall be supported. Intermediate supports shall be provided at dedo heights for picture rails and cornices etc.
2.4. Planked battens 40 mm. x 20 mm. shall toe used for grounds on solid walls. The batten shall be plugged to wall as described-under. The batten snail be fixed on tapering plugs with 50 mm. long wood screws. The tapering plug shall be trapezoidal in shape having base 50 x 50 mm. at bottom 38 x 38 mm. at top with depth of 50 mm. Plugs shall be embedded in C.M. 1 : 3 and shall be placed at 450 x 500 mm. centers. The plugs shall treated with coal tar and battens shall be treated with wood preservative before use. On uneven wall faces the battens shall be plugged and fitted with packing pieces at the back where necessary. The frame shall be treated with wood preservative before boards are nailed on.
Nailing shall be done by nails having a shank diameter of 2.5 mm. and head diameter of about 8 mm. Nails shall have length as per requirements. The nails shall be placed at supports at 100 mm. to 150 mm centre to centre and at edges 75 mm. centers. Minimum clearance for nails from edges shall be 10 mm. The nails shall be rustles where the nail heads are exposed. Where the joints are to be covered with beading, felt headed (clout) nails shall be used instead of lost head nails.
3.0. **Mode of measurements and payment**
3.1. The relevant specifications of item No. 16.3.(A) shall be followed.
3.2. The rate shall be for a unit of One sq. meter.

16.13(1) **Providing and fixing plywood lining with butt jointing and nails (frame work and cover fillets to be measured and paid for separately) 6 mm. thick play.**

1.0. **Materials :**
6 mm. thick plywood shall conform to M-37.
2.0. **Workmanship**
The relevant specifications of item 16.4 shall be followed except that 6 mm. thick plywood shall be fixed in lining.
3.0. **Mode of measurements and payment**
3.1. The relevant specifications of item 16.4 shall be followed.
3.2. The rate shall be for a unit of One sq. meter,

16.13(11) **Providing and fixing plywood lining with but jointing and nails (frame work and cover fillets to be measured and paid for separately) 9 mm. thick ply.**

1.0. **Materials & Workmanship**
1.1. The relevant specifications of item No. 16 13 (I) shall be followed except that the thickness of plywood to be fixed shall be 9 mm.
2.0. **Mode of measurements & payment**
2.1. The relevant specifications of item No. 16.4 (I) shall be followed.
2.2. The rate shall be for a unit of One sq. meter.

16.21(1) **Providing and fixing plain asbestos sheet lining with butt jointing and wood screws (frame work and cover fillets to be paid for separately), Class-A-6.5 mm. thick.**

1.0. **Materials**
1.1. Plain A.C. Sheets 6.5. mm. thick shall be conform to M-24.
2.0. **Workmanship**
2.1. The relevant specifications of item No. 16.4. shall be. followed except that the plain A.C. sheets class A of 6.5 mm. thickness shall be fixed in lining.
2.2. In fixing asbestos cement sheets, care shall be taken to avoid rigid fixing as this may cause cracking if the supporting structure expands or shrinks. The sheet shall be fixed with wood screws to wooden ground

and the screw holes shall be drilled slightly longer than the screws. Asbestos sheet may also be advantageously fixed on to walls with cement plaster backing. The screws shall be fixed at 150 mm. to 200 mm. at supports. The boards shall be fitted either with wooden cover fillets or asbestos strips as described in item.

3.0. Mode of measurement and payment

3.1. The relevant specifications of item No. 16.4 shall be followed.

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

16.21 (II) Providing and fixing plain asbestos sheet lining with butt jointing to wood screws (frame work and cover fillets to be paid for separately), Class-B-5 mm. thick.

1.0 **Materials & Workmanship**

1.1. The relevant specifications of item No. 16.21 (I) shall be followed except that the plain A.C. sheet of Class-B 5 mm. thick shall be fixing in lining.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 16.21 (I) shall be followed.

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

17.58 (i) **10 mm. thick cement plaster in single coat on fair side of brick concrete walls for interior plastering up to floor two level and finished even and smooth in (i) C. M. 1:3.**

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

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

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

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

3.0. **Mode of measurements & payment**

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

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

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

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

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

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

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

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. mt each and no addition shall be made for reveals. jambs, soffits, sils 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 ravels, 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 sand sills shall be measured.

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

17.58 (II) 10 mm. cement plaster in single coat on fair side of brick/concrete walls for interior plastering up to floor two level and finished even and smooth in C.M. 1:4.

1.0. Materials & workmanship

1.1. The relevant specifications of item No. 17.58 (I) shall be followed except that the proportion of mortar is C.M. 1 :4 instead of C.M. 1:3.

2.0. Mode of measurements & payment

2.1. The mode of measurements and payment shall be the same as for item No. 17.58 (I)

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

17.58 (III) 10 mm. cement plaster in single coat on fair side of brick/concrete walls for interior plastering' up to floor two level and finished even and smooth in C.M. 1:6.

1.0. Materials & Workmanship

1.1. The relevant specifications of item No. 17.58 (I) shall be followed except that the proportion of mortar is cement mortar 1:6.

2.0. Mode of measurements & payment

2.1. The mode of measurement and payment shall be followed same as item No. 17.58(1)

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

17.61.(I) 20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior plastering up to floor two level, finished even and smooth in cement mortar 1:3 (1 cement : 3 sand).

1.0. Materials & workmanship

1.1. The relevant specifications of item No. 17.59 (I) shall be followed except that the thickness of cement plaster shall be 20 mm. The plastering work shall be in single coat on rough side of half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:3.

2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 17.59(1) shall be followed.

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

17.61.(II) **20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior plastering up to floor two level, finished even and smooth in cement mortar 1:4 (1 cement : 4 sand).**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.59. (II) shall be followed except that the thickness of plastering shall be 20 mm. in C.M 1:4.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 17.59 (I) shall be followed.

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

17.61 (III) **20 mm. thick cement plaster in single coat on rough side of single or half brick wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:6 (1 cement : 6 sand).**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.59 (III) shall be followed except that thickness of plaster shall be 20 mm. C.M 1:6.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 17.59 (I) shall be followed.

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

17.69 **Extra over items 51 to 65 for finishing with a floating coat of neat cement slurry.**

1.0. **Materials & workmanship**

1.1. The relevant specification of item No. 17.58 and 1761 shall be followed for materials and workmanship except that this work is only providing smooth cement finish with floating coat of neat cement slurry

1.2. The coat of cement and fine sand mortar of proportion V1 (1 5 mm thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the bas;. coat is still plastic.

1.3. In any continuous face of wall the finishing treatment should be carried out continuously and day lo day breaks made to coincide with architectural breaks in order to avoid unsightly Junctions

1.4. Curing : All the plaster work shall be kept damp continuously for a period 7 days

2.0. **Mode of measurements and payment**

2 1. The payment shall be made for a unit of 1.0 sq. mt of work done over an above the finishing of work of base coat.

2.2. The relevant specifications of item of base coat shall be followed for measurements and payment.

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

17.70. **Extra over item 17.58 to 17.61 for providing and mixing water proofing materials m cement mortar in proportion recommended by the manufacturers.**

1.0. **Materials and Workmanship**

The relevant specification of item No 17.58 to 1761 shall be fallowed except that the water proofing materials of 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 recommenced by the manufacturers of the water proofing material

2.0. **Mode of measurements & payment**

2.1. The payment shall be made extra for this work over and above the plaster work

2.2. The rate shall he 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

17.91. **Extra over item No. 17.59 to 17.61 for plastering on ceiling and soffits of stair up to floor two level instead of plastering on walls.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No 17.59 (1) shall no followed except that this work is for ceiling, soffits of stairs up to two floe

1.2. The smooth concrete surface shall be suitable roughened to provide bond before plastering.

2.0. **Mode of measurement and payment**

2.1. 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.

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

17.94(1). **Extra over item No. 1 to 69, 71 to 87 and 90 for interior plastering above floor two level for every additional storey height (i) Single coat plaster.**

1.0 **Materials and Workmanship**

1.1. The relevant specification of Item No. 17.59 (1) shall be followed except that the whole work is to be carried out above floor two level.

2.0. **Mode of measurements and payment**

1.2. The mode of measurement and payment shall be same as item No. 17.59(1).

2.2. The extra payment shall be made over and above the floor two level rate for every additional floor height.

17.94 (II) **Extra over item 1 to 69, 71 to 87 and 90 for interior plastering above floor two level for every additional storey height. Tow coat plaster.**

1.0. **Materials & workmanship**

1.1. The relevant specifications of item No. 17.94 (I) shall be followed except that extra payment for work shall be for a two coat plaster.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 17.94(1) shall be followed.

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

17.94(111) **Extra over item 1 to 69, 71 to 87 and 90 for interior plastering above floor two level for every additional storey height. Floating coat of neat cement.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.94 (I) shall be followed except that the extra payment shall be made for work of floating coat of neat cement slurry.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 17.59 (I) shall be followed.

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

17.95. **20 mm. thick sand face cement plaster on walls up to height of 10 mm. and above ground level consisting of 12 mm. thick backing coating of C.M. 1:3 (1 cement : 3 sand) and 8 mm. thick finishing coat in C.M. 1:1 (1 cement : 1 sand) etc. complete.**

1.0. **Materials**

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

2.0. **Workmanship**

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

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

2.3. **Curing :**

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

3.0. **Mode of measurement & payment**

3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.

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

17.116(A) **Pointing on brick work with cement mortar 1:3 (1 cement : 3 coarse sand) flush pointing.**

1.0. **Materials**

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

2.0. **Workmanship**

2.1. The flush pointing work shall be carried out with cement mortar of proportion 1:3(1 part of cement and 3 part of coarse sand) by volume.

2.2. Preparation of surface.

2.2.1. The joints shall be raked to such a depth that the average of new mortar measured from either the sunk surface to finished pointing or from the -edge of the brick shall be average 10 mm.

2.3. **Application of Mortar and Finishing :**

2.3.1. The mortar shall, be pressed in to the raked out joints with a pointing trowel according to the types of pointing specified in item. The mortar shall not spread over the corner edges or surface of the masonry. The pointing shall then be finished with the pointed tools.

2.4. **Curing :**

2.4.1. The pointing shall be kept wet for 7 days. During this period, it shall be suitably protected from all damages.

3.0. **Mode of measurements & payment**

3.1. No deductions shall be made end of joints, beams and posts etc. and openings not exceeding 0.5 s. mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings.

3.2. Deductions for openings exceeding 0.5 sq. mt. but not exceeding 3 sq. mt. each shall be paid as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings : (i) When both faces of walls are pointed with same type of pointing, deduction shall be made for one face only, (ii) When two faces of walls are pointed with different type of pointing or if one face is plastered and the other is pointed, deduction shall be made in the plaster or pointing on the side of frame for door, windows etc. on which the width of reveals is less than that on the other side but no deduction shall be made from plaster or pointing on the other side.

(iii) When only one face is treated and the other face is not rested, full deduction shall be made, if the width of the reveals on the treated side is less than on the untreated side, but if the width of the reveal is more then no deduction shall be made nor any addition shall be made for reveals/jambs, soffits, sills etc. 3.3. In case of openings of area above 3 sq. mt each deduction shall be made for opening but jambs, sills, and soffits, shall be measured.

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

17.116(B) **Pointing on brick work with cement mortar 1:3 (1 cement : coarse sand) Ruled pointing.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.116 (A) shall be followed except that the pointing to be done ruled pointing as under:

1.2. The joints shall be initially formed as for flush pointing and then while the mortar is still green, a groove of specified shape shall be formed by running forming tool straight along the centre line of joints till a smooth and hard surface is obtained. The vertical joints shall also be finished in a similar way. The pointing lines shall be uniform in width and truly horizontal and parallel in case of floor and ceiling.

2.0. **Mode of measurements & payment**

2.1. The mode of measurements and payment shall be the same as per item No. 17.116(A).

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

17.117(A) **Pointing on brick work with cement mortar 1:4 (1 cement : 4 sand) Flush pointing.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.116 (A) shall be followed.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 17.116 (A) shall be followed.

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

17.117(B) **Pointing on brick work with cement mortar 1:4 (1 cement : 4 sand) Ruled pointing.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 17.116(B) shall be followed except that the proportion of C.M. 1:4 shall used for ruled pointing.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 17.115 (A) shall be followed.

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

17.140.(A) **Pointing on coursed stone masonry with cement mortar 1:3 (1 cement : 3 sand) flush pointing.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 17.116 (A) shall be followed except that the pointing shall be done on coursed stone masonry with C:M. 1:3 and the mortar shall be simply struck off with a trowel and the work left showing the natural irregularities in line and the surface of the stones themselves.

2.0. **Mode of measurement and payment**

2.1. The relevant specifications of item No.17.116 (A) shall be followed.

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

17.140(B) **Pointing on course stone masonry with cement mortar 1:3 (1 cement ; 3 sand) Ruled pointing.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 17.140 (A) and 17.116 (B) shall be followed.

2.0. **Mode of measurements & payment**
2.1. The relevant specifications of item No. 17.116(A) shall be followed.
2.2. The rate shall be for a unit of One sq. meter.

17.44.(A) Pointing on uncoarsed stone masonry with cement mortar 1:3 (1 cement : 3 sand) Flushing pointing.

1.0. **Materials & Workmanship**
1.1. The relevant specifications of item No 17 116(A) shall be followed except that the flush pointing shall fie done on uncoarsed rubble masonry work if C.M 1 3 and the mortar shall Ds simply Struck off with a trowel and the work left showing the natural irregularities in line and the surface of the stone themselves.
2.0. **Mode of measurements and payment**
2.1. The relevant specifications of item No. 17.116(A) shall be followed.
2.2. The rate shall be for a unit of One sq. meter.

17.144.(B) Pointing on uncoarsed stone masonry with cement mortar 1:3 (1 cement : sand) Ruled pointing.

1.0. **Materials & Workmanship**
1.1. The relevant specification of item No 17 116 (A) and 17 144 (A) shall be followed except that the ruled pointing work -shall be carried out on uncoarsed rubble masonry work in CM 1.3.
2.0. **Mode of measurements and payment**
2.1. The relevant specifications of item No. 17.116(A) shall be followed.
2.2. The rate .shall be for a unit of One sq. meter

17.0.0.1 Providing cement vata (10 cms x 10 cms) size quarter round in cement mortar 1:1 including neat cement finishing, watering, etc. complete.

1.0. **Materials**
1.1. Water shall conform to M-1 .Cement mortar shall conform to M-11.
2.0. **Workmanship**
2.1. The work of cement vata of 10 cms x 10 cms. size shall be earned out at Functions of parapets and terraces as directed. The vata shall he finished in quarter round shape. The work shall be earned out in the nest workman like manner. The inter portion of rain water pipe shall be rounded off properly during constructing the vata. The work shall be cured for 7 days.
3.0. **Mode of measurements and payment**
3.1. The work shall be measured for finished item in running meter.
3.2. The rate shall be for a One running meter.

SECTION-18

White Washing & Distempering

18.11. **White washing with lime on undecorated wall surfaces (two coats) to give an even shade including thoroughly brooming the surface to remove alt dirt, dust, mortar drops and other foreign matter.**

1.1. **Materials**

1.1. The clear Cole shall be made from glue and boiling water by mixing 1 Kg. mixture shall be suitably tinted where required for use under coloured distemper it directed. Glue shall conform to I.S. 352-1959 (Specifications for animal give)

1.2. Lime used shall be Freshly burnt class 'C' Lime (fst lime) and white in colour conforming to I S. 712-1973. Water shall conform to M-1. Bast quality of gum shall be used in (he preparations of white wash. Ultramarine blue or Indigo : This shall conform to I.S. 55-1970 for points, and shall be used for preparation of white was, Pigments. Mineral colours, not affected by lime shall be used in preparing colour wash.

2.0. **Workmanship**

2.1. Preparation of white wash solution Surface already white or colour. The fat lime shall be slaked as site and shall be mixed and stirred with about five liters of water for 1 kg. of unslaked lime to made a trim cream This shall be allowed to stand for d period of 24 hours and then shall be screened through a clean coarse cloth, 4 Kg. of gum dissolves in hot water shall be added to each cubic meter of lime cream Small quantity of ultramarine blue (Up to 3 gins, per kg. of lime) shall also-be added to the last two coats of white wash solution and the whole solution shall be stirred thoroughly before use.

2.2. **Preparation of surface:**

2.2.1. The surface shall be thoroughly cleaned of all dust, dirt, mortar cropping and other foreign matter before white wash is to be applied.

2.2.2. The surface spoiled by smoke soot shall be scrapped with steel wire brushes or steel scrapers 01 shall be rubbed with over-burnt surkhi or brick bats. The surface shall be then broomed to remove all dust dirt and shall he washed with clean water.

2.2.3. Oil or grease spots shall be removed by suitable chemical and smooth surface shall be rubber with wire Crushes.

2.2.4. All unsound portion of the surface plaster shall be removed to full depth of plaster in rectangular patches and plastered again after raking the masonry joints properly. Such portion shall he wetted and allowed to dry. They shall then be given one coat of white wash

2.2.5. All unnecessary nails shall be removed the holes, cracks, patches etc. shall be made good with material similar in composition to the surface to be prepared

2.3. **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.

2.4. **Application of white wash :**

2.4.1. On the surface so prepared the white wash shall be applied with 'Moon' brush. The first stroke of the brush shall be from top downwards, another from bottom upwards over the first stroke and similarly one stoke from the right another from the left, over the first stroke brush before it dries. This will form one coat each coat shall be allowed to dry before and uniform finish free from brush marks and it should not come off easily when rubbed with finger

2.4.2. Splashing and dropping if any on the doors and windows, ventilators etc shall be removed and the surface cleaned.

2.4.3. Priming and Alkali resistant treatments, scraping of surface washing etc. surface spoiled by smoke soot removed of oil and grease spots, treatment for infection with efflorescence moulds moos, fungi, algae and lichen and patch repairs to plaster wherever done shall not be paid extra.

3.0. **Mode of measurement & 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. The rate shall include the cost of all materials, labour, scaffolding, protective measures etc. involved in all the operations described above.

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

18.12. White washing with lime on decorated wall surface (One coat) to give an even shade including thoroughly brooming in the surface to remove dust, mortar, drops and loose scales of lime wash and other foreign matter.

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.11 shall be followed except that the white washing work shall be carried out on decorated wall surface single coat.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 18.11 shall be followed.

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

18.13 Extra over items 18.11 and 18.12 for every subsequent coat of white washing with lime on wall surfaces.

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.11 shall be followed except that this work is for extra coat over and above two coats on wall surface.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 18.11 shall be followed except that the payment of subsequent coat snall be made extra over and above the item No. 18.11 for every subsequent coat applied.

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

18.14. Extra over item 18.11 for white washing with the lime on ceiling and / or sloping roof.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 18.11 above shall be followed except that this work is for ceiling and / or sloping roof.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 18.11 shall be followed except that extra payment for white washing on ceiling and/or slopping roof shall be made over and above the payment of item No. 18.11

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

18.15 Extra over 18.12 for white washing with lime on decorated dealings and sloping roofs.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 18.12 shall be followed except that the white washing work shall be carried out on decorated ceilings and/or sloping roofs.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 18.52 shall be followed except that extra payment for white washing on ceiling and/or sloping roof shall be made over and above the payment of item No. 18.12.

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

18.16. Extra over the item No. 18.13 for every subsequent coat of white washing with lime on ceiling and /or sloping roofs.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 18.11 and 18.13 shall be followed except that this work is for extra coat over and above two coats of ceiling and / or sloping roofs.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 18.11 and 18. 13 shall be followed except that the extra payment for white washing shall be made for sloping roof or/and ceiling for every subsequent coat applied over and above item 18.11 and 18.13.

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

18.17. Colour washing with lime on undecorated wall surfaces (Two coats) over and including priming coat of white washing to give even shade including thoroughly brooming the surface to remove all dirt, dust, mortar drops and other foreign matter. The relevant specifications for the materials and workmanship 18.11 shall be followed except that it shall be for colour wash.

1.0. Materials

1.1. Clear-Cole : This shall be made from glue and boiling water by mixing 1 kg. of glue to every 15 liters of water. The mixing shall be suitably tinted to match with colour of colour washing as directed. Glue shall conform to I.S. 852-1969.

1.2. Lime : Lime used shall be freshly burnt class 'C' lime (Fat lime) and white in colour conforming to I.S. 712-1973.

1.3. Water : Water shall conform to M-1.

1.4. Gum ; Best quality of gum shall be used in the preparation of white or colour wash. The colour pigment of required tint and shade shall be mixed in lime cream. The mineral colour not affected by lime shall be used in preparing the colour wash.

2.0. Workmanship

2.1. Sufficient quantity of colour wash enough for the complete job shall be prepared in one operation to avoid any difference in shade. The basic white wash solution shall be prepared in accordance with item 18.11 Mineral colours not affected by lime shall be added to the white wash solution. No colour wash shall be done until a sample of the colour has been approved. It shall be noted that small samples of colour appeals lighter in shade than when the same shades are applied precisely to large surface. The colour shall

be of event, tint, over the colour shall be of event tint, over the whole surface. If it is patchy or otherwise badly applied, it shall be rejected. Preparation of the colour wash with pigment shall be as under:

(a) With Yellow and Red Ocher :

Solid lumps if nay in the powder shall be crushed to powder and solution in water prepared and then added to white wash sieving it through a coarse cloth, mixed evenly and thoroughly to white wash in-small quantities till required shade is obtained.

(b) With Blue Vitriol :

Fresh crystals of hydrous copper sulfate (i.e. vitriol) shall be ground to fine power and dissolved in small quantity of water. Sufficient quantity of solution enough to produce the colour wash of required shade shall be strained through a clean cloth, the filtrate being mixed evenly and thoroughly to the white wash.

(c) Colour wash from other colouring pigment shall be prepared in accordance with the instructions of the manufacturer.

2.2. Preperation of Surface :

The surface shall be prepared by removing mortar dropping and foreign matter and thoroughly cleaned with wire of fiber brush or any other suitable means as directed by the Engineer-in-charge. All loose pieces and scales shall be scrapped off and holes filled with mortar.

2.2.1. For scaffoldings and application of colour wash, relevant specification of item No. 18.11. above shall be followed. The colour wash shall be applied as under:

The colour wash shall be applied in accordance with the procedure given in item No. 18.11. "Application of white wash for colour washing on undercoated surface after the surface has been prepared. The first primary coat shall be of white wash and subsequent coats (minimum two) shall be colour wash and the entire surface shall represent a smooth and uniform finish. To star with, patch of 0.1 sq. mt. on prepared surface shall be colour washed with first coat of white wash and subsequent coats of colour wash solution entire work of cofour washing is taken up in hand, It shall be noted that small areas of colour wash will appear lighter than when the same shade is applied to the large surface.

2.2.2. For colour washing on decorated surfaces, after (he surface has been prepared, a coat of white wash-shall be applied for the patches and repairs. Then one coat or more of colour wash shall be applied over the entire surface, such that the colour washed surface shall present a uniform colour shade. No primary coat is needed for a decorated surface bearing colour of same shade on surface required change of colour after the surface has been prepared as described above. Two coats of white wash shall be applied before application of specified number (minimum TWO) of coats of colour wash of the new shade.

2.3. Protective measure :

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 snail be cleaned of white wash splashed if any.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 18 11 shall be followed.

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

18.18. Colour washing with lime on decorated wall surfaces (one coat) to give even shade including thoroughly brooming the surface to remove all dirt, dust, mortar drops and loose scales of lime wash and other foreign matter.

1.0. mortals and Workmanship

The relevant specifications item No 18.17 shall be followed except that the colour washing shall be carried out on decorated wall surface in one coat

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No 18.7 shall be followed.

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

18.19. Exira over item No 13.17 and 18.18 for every subsequent coat of colour wash with lime on wall surfaces.

1.0 Materials and Workmanship

1.1 The relevant specifications item No. 18.17 shall he followed except that this work is for extra coat of colour wash over and above two coats on wall surface.

2.0. **Mode of measurement and payment**

2.1. The relevant specifications of item No. 18.17 shall be followed except that the extra payment for every subsequent coat of white wash shall be made over and above the rate of item. 18.17 and 18.18.

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

18.20. **Extra over item 18.17 for colour washing on ceilings and /or sloping roofs.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 18.17 shall be followed except that this work is for colour washing on ceiling and/or sloping roofs.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.17 shall be followed except that the-rate shall be paid extra over and above the rate of item No. 18.17 for providing colour washing on ceiling and /or sloping roof.

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

18.29. **Cement washing with port land cement slurry on undecorated wall surfaces, (one coat) to give a smooth finish including thoroughly brooming the surface to remove all dirt, dust, mortar drops and other foreign matter.**

1.0. **Materials**

1.1. Water shall conform to M-1. Part land cement shall conform to M-3.

2.0. **Workmanship**

2.1. The re;3vant specification of item No. 18.11 for preparation of surface, scaffolding, application of wash etc. shall be followed except that the cement wash shall be applied, instead of white wash. Cement applied with brushes to form a smooth bodied opaque surface.

3.0. **Mode of measurements and payment**

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

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

18.30. **Extra over item No. 18.29 for every subsequent coat of cement washing with port land cement slurry.**

1.0. **Materials Workmanship**

1.1. The relevant specifications of item No. 18.29 shall be followed except that the work of cement slurry wash shall be provided for every subsequent coat above item No. 18.29 to be applied.

2.0. **Mode of measurements and payment**

2.1. The relevant specification of item No. 18.29 shall be followed except that the extra rate shall be paid for every subsequent coat and above the rate of item No. 18.29.

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

18.33. **Removing dry or oil bound distemper by washing scraping and sand papering the wall surface smooth including necessary repairs to scratches complete.**

1.0. **Materials and Workmanship**

1.1. All loose places and scaled shall be removed by sand papering and surface shall be cleared of all greascay, dust, dirt, etc. on decorated wall surfaces. Where heavy scaling has taken place, the entire surface shall be scrapped by means of steel scrappers so as to remove all accumulated distemper, leaving clean surfaces. Necessary repairs to the scratches shall be made as directed.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.11. shall be followed.

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

13.34. **Extra over item No. 18.33. for removing dry oil bound distemper on ceiling and sloping and roofs.**

1.0. **Workmanship**

1.1. The relevant specifications of item No. 18.33 shall be followed except that removing dry/oil bound distemper from sloping roof/ceiling is to be carried out.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.33 shall be followed except that the payment shall be made for removing dry/oil bound distemper from ceiling/sloping roof over and above the rate of item No. 18.33.

2.2. The rate shall be for unit of one Sq. meter.

18.38. **Distempering with dry (water bound) Distemper of approved brand and manufacture (two coats) and of required shade on undecorated wall surfaces to give an even shade, over and including a priming coat of white washing after thoroughly brooming the surface free from mortar droppings and other foreign matters.**

1.0. **Materials**

1.1. The dry distemper and primer shall be of approved brand and manufacture. The dry distemper shall be of required colour and shade and the same shall conform to I.S. 427-1965. Writing shall conform to I.S. 63-1964.

2.0. **Workmanship**

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 (Joolas) 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 free from dust, dirt, grease, mortar, droppings and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry at least 2 months before application of distemper.

2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster of Paris mixed with dry distemper of the colour to be used. The surface shall then be rubbed down again with a fine grades and paper and made smooth. The surface affected by moulds, moss, fang, algae lichens, efflorescence etc. shall be treated in accordance with I.S. 2395 (Part-I) 1966 before applying distemper. Any unevenness shall be made good by applying putty made of plaster of Paris mixed with water on entire surface including filling up the undulations and then sand papering the same after it is dry.

2.3. **Priming coat :**

2.3.1. A priming coat of whiting shall be applied as per item No. 18.11 over the prepared surface in case of new work on undecorated surface. No coat of white washing with lime shall be used as a priming coat for distemper.

2.3.2. Application of plaster 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 stokes 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 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. Distemper is not recommended to be applied within six months of the completion of wall plaster.

2.4. **Proportion of Distemper** : The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturers only. Sufficient quantity of distemper required for one 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 surfaces shall be lighlly sand papered to make them smooth for receiving the distemper, taking care not to rub out the 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 strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coals to permit proper drying of the proceeding 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 on room at a time. The application of a coat in each room snail 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 bristle distemper brush shall be used. After the day's work, brushes shall be thoroughly washed in hot water with soap solution and hang down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

2.6. Protective Measures : The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the building as are not to be distempered shall be a plashed form being splashed upon. Such surfaces shall be cleaned of distemper a plashes if any.

3.0. Mode of measurements and payment

3.1. Pruning coat of distemper primer, scraping of surface spoiled by smoke soot, removal of oil and grease spots, treatment for infraction of effloresces, mould moss, fungi, algee and lichens and patch repairs to plaster shall be included in this item for which nothing extra shall be paid.

3.2. AH the work shall be measured net in the decimal system as in places 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 measured in sq. meter. No deductions shall be made for ends of joints, beams, posts, etc. of these openings nor for finish around the ends of joints, beams, posts etc.

3.3. Deductions of openings exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and no addition shall be made for reveal, jambs, soffits etc. of these openings:

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

(b) Wren each face of wall is provided with different finish, deduction shall be made for that of frame for door, windows etc. on which width of reveal is less than that of the other side but no deductions 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 reveals is equal or more than that of untreated side neither deductions nor additions to be made for reveals, jambs, sills and soffits shall be measured

3.4. In case of openings 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 casing, conduits, pipes, electric wiring and the like.

3.6. Item includes removing nails, making good holes, cracks, patches with materials similar in composition to the distemper.

3.7. The rate includes cost of all materials, labour, scaffolding, protective measures etc. involved in all the operations described above This shall also include conveyance, delivery, bundling, unloading storing etc.

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

18.39. Distempering with dry (wafer bound) distemper of approved brand and manufacture (one coat) and of required shade, on decorative wall surface to give an even shade after thoroughly brushing the surface clean of all grease dirt, loose pieces of scales including preparing the surfaces and even sand papered smooth.

1.0. Materials and workmanship

The relevant specifications of Kern No. 18,38 shall be followed except that the dry distemper shall applied on decorative wall surface in on coat.

2.0. Mode of measurements and payment

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

18.40. Extra over item 38 and 39 for every subsequent coat of distemper with dry distemper of approved brand and manufacture.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 18.38 shall be followed except that the extra work for applying subsequent coat of dry distemper is to be carried out over and above the work of item No. 18.38 and 18.39.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.38 shall be followed except that extra rate shall be paid for every subsequent coat applied over and above the rate of item No. 18.38 and 18.39.

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

18.41. **Extra over item 38 for distempering with dry distemper on ceiling and sloping roofs.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 18.38 shall be followed except that the dry distempering shall carried out on ceiling and sloping roofs of undercoats surface.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 18.38 shall be followed except that extra rate shall be paid for carrying outwork on ceiling/sloping roof on undecorated surface over and above the rate of item 18.38.

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

18.42. **Extra over item 39 and 40 for distempering with dry distemper on ceiling/sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.39 shall be followed except that the work shall be carried out on ceiling/sloping roofs on decorated surfaces.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.39 shall be followed except that the extra rate shall be paid for the distempering work carried out by dry distempered on ceiling/sloping roofs with decorated surfaces over and above the raw of item N. 18.39.

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

18.44. **Distempering (two coats) with oil bound distemper of approved brand and manufacture and of required shade on undecorated wall surfaces to give an even shade, over and including a priming coat with distemper primer of approved brand and manufacture after thoroughly brushing the surface free from mortar droppings and other foreign matter and also including preparing the surface even and sand papered smooth.**

1.0. **Materials**

1.1. Oil bound washeble 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.

2.0. **Workmanship**

2.1. **Scaffolding**

Where scaffolding is required, it shall be erected in such a way that as far as possible no pail 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 pairs 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 on 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 days 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 of after rubbing. Minimum tow 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 proceeding coat. The finished surface shall be even and inform 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 siriated 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 form 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 infraction of effloresces., mould moss, fungi, algae and litchen 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 fates 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. Mo 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 rate includes cost of all materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, handing , unloading, storing work etc
2.8. The rate shall be for a unit of one sq. meter

18.45. **Distempering (two coats) with oil bound washable distemper of approved brand and manufacture and of shade required on undecorated wall surfaces to give an even shade, over and including a priming coat with alkali resistance primer of approved brand and manufacture after thoroughly brushing the surface free from mortar droppings and other foreign matter and also including preparing the surface even and sand papered smooth.**

1.0. **Materials and Workmanship**
1.1. The relevant specifications of item No. 13.44 shall be followed except that the primer of alkali resistance primer of approved brand and manufacture shall be used instead of distemper primer.
2.0. **Mode of measurements and payment**
2.1. The mode of measurements and payment shall be the same as for item No. 18.44 above.
2.2. The rate shall be for a unit of One sq. meter.

18.46. **Distempering (one coat) with oil bound washable distemper of approved brand of required shade on decorated wall surfaces to give an even shade after thoroughly brushing the surfaces clean of all grease, dirt, loose pieces of scales and also including distempering with oil bound washable distemper of preparing the surface even and smooth.**

1.0. **Materials and Workmanship**
The relevant specifications of item No. 18.44 shall be followed except that the distempering with oil bound washable distemper shall be carried out on decorated wall surfaces in on coat.
2.0. **Mode of measurement and payment**
2.1. The relevant specification of item No. 18.44 shall he followed.
2.2. The rate shall be for a unit of one sq meter.

18.47. **Extra over item 18.44 to 18.46 for every subsequent coat of distempering with oil bound washable distemper of approved brand and manufacture.**

1.0. **Materials and Workmanship**
1.1. The relevant specifications of item No. 18 44 shall be followed except that this work is for providing extra coat of oil bound distempering over and above two coats of distempering.
2.0. **Mode of measurements and payment**
2.1. The relevant specification of item No, IS K shall be followed except that the extra rate shall be paid over and above the rate for every subsequent coats over two coats of item 18.44 and 18.46.
2.2. The rate shall be for a unit of one sq. meter.

18.48. **Extra over item 18.44. and 18.45 for distempering with oil bound washable distemper on ceiling and sloping roofs.**

1.0. **Materials and Workmanship**
The relevant specifications of item No. 18.44 shall be followed except that the distempering shall be carried out on ceiling/sloping roofs.
2.0. **Mode of measurements and payment**
2.1.1. The relevant specifications of item No. 18.44 shall be followed except that the extra rate shall be paid for carrying our distempering work on ceiling/sloping roofs over and above the rate of item No. 18.44 and 18.45.
2.2. The rate shall be for a unit of one sq. meter.

18.49. **Extra over item 18.46 and 18.47 for every subsequent coat of distempering on ceiling and sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.44 shall be followed except that the distempering work shall be carried out for subsequent coats over item No. 18.46 and 18.47.

2.0. **Mode of measurements and payments**

2.1. The relevant specifications of item No. 18.46 shall be followed except that the extra rate shall be paid for every subsequent coat of distemper applied over and above the rate of item No. 18.46 and 18.47.

18.51. **Finishing wall with water proofing cement paint of an undecorated wall surfaces (two coats) to give an approved brand and manufacture and of required shape, even shade after thoroughly brushing the surface to remove.**

1.0. **Materials**

1.1. The water shall conform to M-1. Cement water proofing paint shall conform to I.S. 5410-1969.

2.0. **Workmanship**

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

2.2. **Preparation of surface :**

The relevant specifications of item No. 18.11 shall be followed except that the word white wash colour wash shall be substituted with water proofing cement paint. The surface shall be thoroughly wetted with clean water before cement water proofing paint is applied.

2.3. **Preparation of paint:** Portland cement paint shall be prepared by adding paint powder to water and stirring to obtain a thick paste, which shall then be diluted to a brush able consistency. Generally, equal volumes of paint powder and water make a satisfactory paint. In all cases, The manufacture's instructions shall Site followed. The paint shall be mixed in such quantities as can used up within an hour of mixing as otherwise the mixture will set and thickness, affecting flowing and finish. The lids of cement paint drums shall be kept tightly when not in use.

2.4. **Application of Paint:**

2.4.1. No painting shall be done when the paint is-likely to be exposed to a temperature of below 7^0 c within 48 hours after application.

2.4.2. When weather conditions are such as to cause be carried out in the shadow as far as possible. This helps the proper hardening of the paint film by keeping the surface moist for a longer period.

2.4.3. To maintain the uniform mixture and to prevent segregation, the paint shall be stirred frequently in the bucket.

2.4.4. For undecorated surfaces, the surface shall be treated with minimum two coats of water proof cement paint. Not less than 24 hours shall be allowed between two coats. Next coat shall not be started until the proceeding coat has become sufficiently hard to resist marking by the brush being used. In hot dry weather, the proceeding coat shall be slightly moistened before applying the subsequent coat.

2.4.5. The finished surface shall be even and uniform in shade, without patches, brush masks, paint drops etc.

2.4.6. The cement paint shall be applied with a brush with relatively short stiff hog or fiber bristles. The paint shall be brushed in uniform thickness and shall be free from excessively heavy brush marks. The lamps shall be brushed out.

2.4.7. Water proof cement paint shall not be applied on surface already treated with white wash, colour wash, distemper dry or oil bound varnishes, paint etc. It shall not be applied on gypsum, wood and metal surfaces.

2.5. Curing : Painted surfaces shall be sprinkled with water two or three times a day. This shall be done between coats and for at least two days following the final coat. The curing shall be started as soon as the point has hardened so as not be damaged by the sprinkling of water say about 12 hours after the application.

2.6. Protection measures shall be taken as per item No. 18.11 Para 2.6.

3.0. **Mode of measurements and payment**

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

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

18.53. **Extra over item 18.51 for every subsequent coat of water proofing cement paint of approved brand and manufacture.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.51 shall be followed except that the work is for applying subsequent coat of cement water proofing paint.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.51 shall be followed except that the extra rate shall be paid for applying every subsequent coat of cement water proofing paint over and above the rate of item No. 18.51.

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

18.54. **Extra over item 18.51 for finishing with cement paint on ceiling/sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.51 shall be followed except that the cement water proofing paint shall applied on ceiling and sloping roofs.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.51 shall be followed except the extra shall be paid for applying cement water proofing paint on ceiling and sloping roofs, over and above the rate of item No. 18.51.

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

18.56. **Extra over 18.53 for every subsequent coat of finishing with cement paint on ceiling and sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specification of item No. 18.51 shall be followed except that the work shall be carried out for subsequent coat on ceiling and sloping roofs.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.53. shall be followed except that extra rate shall be paid for every subsequent coat applied with cement water proofing paint over and above the rate of item No. 18.53.

18.57. **Wall painting (two coats) with plastic emulsion paint of approved brand of manufacture on undecorated wall surfaces to give an even shade including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand paper smooth.**

1.0. **Materials**

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

2.0. **Workmanship**

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

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

2.3. **Preparation of Mix :**

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

2.4. **Application :**

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

2.4.2. The paint shall be laid on evenly and smoothly by means of crossing and laying off the crossing and consist of covering the area over with paint, brushing the surface hard for the first time over and then, brushing alternately in opposite direction two or three times and then finally brushing lightly in direction at right angles to the same. In this process, no brush Marks shall be left after the laying off is finished. No hair marks from the brush or clogging of paint puddles in the corners of panels, angles of 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 relevant specifications of item No. 18.11 shall be followed.

3.0. **Mode of measurements and payment**

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

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

18.59. **Extra over Item No. 18.57 for every subsequent coat of wall painting with plastic emulsion paint of approved brand.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.57 shall be followed except that the painting work shall be for subsequent coat of plastic emulsion paint.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra payment shall be done on ceiling and sloping roofs.

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

18.60. **Extra over item 18.57 for painting with plastic emulsion paint of approved brand on ceiling and sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.57 shall be followed except that the painting shall be done on ceiling and sloping roofs.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra payment shall be made for applying plastic emulsion paint on ceiling and sloping roofs over and the rate of item No. 18.57.

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

18.62. **Extra over item 18.59 for paint ceiling and sloping roofs.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 18.57 shall be followed except that the work for subsequent coat of plastic emulsion paint shall be carried out on ceiling and sloping roofs.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 18.57 shall be followed except that the extra rate shall be paid for carrying out painting on sloping roofs and ceiling with plastic emulsion paint over and above the rate of item No. 18 59

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

SECTION-19

Paintings & Polishing

19.7. Painting two coats (excluding priming coat) on new steel and other metal surfaces with enamel paint, brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.

1.0. Materials

The enamel pain shall conform to M-44 B.

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 stirrod 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 of 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 relevant specifications of item No. 19.12 shall be followed for mode of measurements and payment. The rate is excluding priming coat.

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

19.15. Extra over item No. 19.7 and 19.11 for every subsequent coat of paint.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 19.7 shall be followed except that the work of painting shall be carried out for subsequent coat.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item No. 19.7 shall be followed except that the extra rate shall be paid for every subsequent coat of paints applied over and above the rate of item No. 19.7 and 19.11.

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

19.11. **Painting one coats Excluding priming coat) on previously painted steel and other metal surface with enamel paint, brushing to give and even shade including cleaning the surface of all dirt, dust and other foreign matter.**

1.0. **Materials and Workmanship'**

1.1. The relevant specification of item No 19.7 shall be followed except that painting shall be carried out in one coat with enamel paint on previously painted steel and metal surface.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No, 19.7 shall be followed.

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

19.12. **Applying priming coat over new steel and other metal surfaces after and including preparing the surface by thoroughly cleaning oil, grease, dirt and other foreign matter and secured with brushes, fine steel, wool scrapers and sand paper, with ready mixed priming paint, brushing red lead.**

1.0. **Materials**

1.1. The ready mixed primer, brushing red shall conform to I.S. 102-1962.

1.2. The thinner (linseed oil) shall conform to I.S. 75-1973. If for any reason, thinning is necessary *m* case of ready mix paint the brand of thinner recommended by manufacture shall be used.

2.0. **Workmanship**

2.1. **Prèparation 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.

2.2. **Application of primer :**

2.2.1. 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.

2.2.2. 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 in to a paint container The prima/y coat shall be allowed to dry completely before painting is started.

2.2.3. 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

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

2.2.5. 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.

3.0. **Mode of measurements & payment**

3.1. The new 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. 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 1 he weight calculated for the purpose of measurements of steel and iron works for paint applied on shop or at site.

3.5. 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.

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

19.19. Painting two coats (excluding priming coat) on new steel and other metal surfaces with synthetic enamel paints, brushing to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.

1.0. **Materials**

Synthetic enamel paint shall conform to I.S. 1932-1964.

2.0. **Workmanship**

2.1. The relevant specifications of item No. 19.7 shall be followed except that the painting shall be carried out with synthetic enamel paint.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item No. 19.7 shall be followed.

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

19.21. Painting one coat (excluding priming coat) on previously painted steel and other metal surfaces with synthetic enamel paint brushing to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.

1.0. **Materials and Workmanship**

2.1. The relevant specifications of item No. 19.19 shall be followed except that the painting shall be carried out on previously painted steel and other metal surfaces using synthetic enamel paint in one coat.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.19 shall be followed.

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

19.13. Extra over item No. 19.19 and 19.21 for every subsequent coat of paint.

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 19.19 shall be followed except that the extra rate shall be paid for out for subsequent coat of point.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 19.19 shall be followed except-that the work shall be paid for applying subsequent coat of oil paint over and above the item No. 19.19 and 19.21.

19.50.(B) Painting two coat (excluding priming coat) on external of new rain water, soil, waste and vent pipe and fittings with ready mixed bituminous paint, brushing, black anticorrosive to give an even shade including cleaning of all dirt, dust and other foreign matter (75 mm. dia.)

1.0. **Materials**

1.1. Ready mixed bituminous pain shall conform to I.S. 158 : 1968.

2.0. **Workmanship**

2.1. The relevant specifications of item No. 19.7 shall be followed except that the paining work of external surfaces of 75 mm. dia rain water pipe, soil, waste, and vent pipe and fittings with ready mixed bituminous paint snail be earned out.

3.0. **Mode of measurements and payment**

3.1. The rate is excluding the cost o priming coat but including painting of all fittings coming in line.

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

19.50.(C) Painting two coats (excluding priming coat) on external of rain water, soil, waste and vent pipe and fittings with ready mixed bituminous paint brushing black anticorrosive to give an even shade including cleaning off all dirt, dust and other foreign matter : 100 mm. dia.

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 19.50 (B) shall be followed except that the pipes to be painted on is 100 mm. dia. meter.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 19.50(B) shall be followed. The rate is excluding the cost of priming coat but including cost of painting all fittings coming in line.

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

19.59.(B) **Applying priming coat over wood and wood based surfaces after and including preparing the surface by thoroughly oil, grease, dirt and other foreign matter, sand papering and knotting : Ready mixed paint, brushing wood primer pink.**

1.0. **Materials**

1.1. The ready mixed paint, brushing, wood primer pink shall conform to I.S. 3536-1966

2.0. **Workmanship**

2.1. **Preparation of Surfaces :**

2.2.1. All wood work shall be dry and free from any foreign matter incidental to building operations. Nails shall be punched well below the surface to provide a film key for stopping. Moldings shall be carefully smoothened with abrasive paper and projecting fibers shall be removed. Flat portions shall be smoothened off with abrasive paper used across the grain prior to painting prior to painting and with the grain prior to staining or if the wood is to be left in its natural colour, wood work which is to be stained may be smoothened by scraping instead of by glass papering if so required.

2.2.2. Any knots, resinous, streaks or bluefish sap wood that are not large enough to justify cutting out shall be treated with two coats of pure shellac knotting applied thinly and extended about 25 mm. beyond the actual area requiring treatment.

2.2. **Application of primer :**

2.2.1. The relevant specifications of item No. 19.12(A) shall be followed for application of primer.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item No. 19.12 shall be followed except that work done on wood and wood based surfaces shall be paid under this item.

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

19.59.(D) **Applying priming coat over new wood and wood based surface after and including preparing the surface by thoroughly cleaning oil, grease, dirt and other forging matter sand papering and knotting : Ready mixed paint brushing priming, for enamel.**

1.0. **Materials**

1.1. The ready mixed paint for brushing priming for enamels wood shall conform to I.S. 106-1962.

2.0. **Workmanship**

2.1. The relevant specifications of item No. 19.59 (B) shall be followed except that ready mixed paint brushing priming for enamel shall be used instead of ready mixed paint brushing wood primer pink.

3.0. **Mode of measurements and payment**

3.1. The relevant specifications of item No. 19.12 shall be followed.

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

19.62.(B) **Extra over item 59.59 (B) for every subsequent coat of priming coat. Ready mix paint, brushing wood primer work.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 19.59 (B) shall be followed except that the painting work shall be carried out with ready mix paint instead of wood primer pink for subsequent coat.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.59 (B) shall be followed except that the extra rate shall be paid for every subsequent coat applied with Ready mix paint, brushing wood primer pink over and above the rate of item No. 19.59 (B).

19.62.(D) **Extra over item No. 19.59 for every subsequent coat of priming coat ready mix paint brushing priming for enamel.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 19.59(D) shad be followed except that the painting work shall be carried out with ready mix paint brushing priming for enamel.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.59(D) shall be followed except that the extra rate shall be paid for every subsequent coats of priming coat with ready mixed paint, brushing priming for enamel.

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

19.71. **Painting two coats (excluding priming coat) on new wood and wood based surfaces with enamel paint interior to give an even shade including the surface off all dist, dust and other foreign matter and papering and stopping.**

1.0. **Materials**

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

2.0. **Workmanship**

2.1. The relevant specifications of 19.7 shall be followed for general and application of paint, except that the enamel paint shall be used for painting on new wood/wood based surfaces.

2.2. In painting doors and windows, the putty, round the glass panes also be painted but care shall be taken to see that no paint, stain etc. are left on the glass. Top of shutters and surfaces in similar hidden locations shall not be left out in painting.

3.0. **Mode of measurements and payment**

3.1. The relevant specifications of item No. 19.12 shall be followed, for mode of measurements and payments. The rate excludes cost of priming coat.

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

19.73. **Painting one coat (excluding priming coat) on previously painted wood and wood based surfaces with enamel paint to give even shade including cleaning of all dirt, dust and other foreign matter.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 19.71 shall be followed except that the painting work shall be carried out on previously painted wood and wood based surfaces with enamel paint to give even shade in one coat.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.7t shall be followed

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

19.75. **Extra over item 19.71 arid 19.73 for every subsequent coat of paint.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item 19.71 shall be followed except that painting work shall be for subsequent coat with paint.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 13.71 shall be followed except that the extra rate shall be paid.

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

19.77. **Painting two coats (excluding priming coat) on new wood and wood based surfaces with ready mixed paint brushing, oil gloss, semi-gloss, to give an even shade including cleaning of all dust, dirt and other foreign matter sand papering and stopping.**

1.0. **Materials**

The ready mixed paint shall conform to M-44. The ready mixed paint brushing gloss, semi-gloss shall conform to KS. 129-1962 and I.S. 117-1364.

2.0. **Workmanship**

2.1. The relevant specification of item 19.71 shall be followed for general and application of paint, except that ready mixed paint brushing, oil gloss and semi-gloss shall be used of approved colour and shade instead of enamel paint.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item 19.12 shall be followed for measurements and payment. The rate excludes cost of priming coat.

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

19.84. **Varnishing two coats (excluding priming coat) on new wood and wood based surfaces undercoating with flatting varnish and finishing coat with varnish to give an even surface cleared of all dirt, dust and sand papering so as to produce a smooth dry surface.**

1.0. Materials

The varnish shall conform to I.S. 338-1962.

2.0. **Mode of measurements & payment**

2.1.1. The surface to be varnished shall be prepared to produce a smooth, dry neat surface. The previous coat of paint, if any shall be allowed to dry and rubbed down slightly whipped off and allowed to dry.

2.1.2. The operation of varnishing calls for careful attention to cleanliness. A?l dust and dirt shall be removed from the Surface to be varnished and also from the neighborhood. If surfaces are dampened to avoid razing of dust, they shall be allowed to dry thoroughly before varnishing is commenced. Damp Exposure to extreme of heat or cold, or to a damp atmosphere will spoil the work.

2.1.3. In handling and applying varnish care should be taken to avoid forming forth or air bubbles. Brushes and containers shall be kept scrupulously clean.

2.2. Application

2.2.1. The varnish shall be applied liberally with a brush an spread evenly over a portion of the surface with a short light strokes to avoid for froth in. It shall be allowed to flow out while the next section is being laid in. Excess varnish then be scrapped out of the brush and the first section be crossed, re crossed and the laid of lightly. Two much or too little varnish left on the surface will mar the appearance of the finish. The varnish, once it has begun to set, shall not be retouched. If a mistake is made, the varnish shall be removed and the work started afresh.

2.2,2. In case of two coats of varnish work, the first shall be hard drying, under coating or flatting varnish, this shall be allowed to dry hard and then be flatted down before applying the finishing coat. If two coats are applied, sufficient time shall be allowed between two coats.

2.2.3. When flat varnish is used for finishing a preparatory coat of hard drying under coating of flatting varnish shall be first applied and shall be allowed to harden thoroughly, It shad then be lightly rubbed down before the flat varnish is applied. Section of the work such as panels, shall be cut in clearly, so as to avoid any overlapping during applications, as this is likely Jo impart some measure, of gloss to partially dried area, worked up in lapping. On larger area the flat varnish shall be applied rapidly and the edges of each patch applied shall not be allowed to set but shall be followed up whilst in free working conditions.

3.0 **Mode of measurements & payment**

3.1. The relevant specifications of item 19.71 shall be followed.

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

13.86. **Extra over item No. 19.84 for every subsequent coat of varnish.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No.19.84 shall be followed except that the work shall be for subsequent coat of varnishing.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 19.84 shall be followed except that the extra rate shall be paid for every subsequent coat of varnishing done over and above the rate of item No. 19.84.

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

19.87. **Polishing with polish on new wood and wood based surface to give an even surface including cleaning the surface of all dirt, dust and sand papered smooth and including a coat of wood filler**

1.0. Materials

1.1. The French polish required tint and shade shall be prepared with the below mentioned ingredients and other necessary materials : (i) Chandra (ii) Shellac (ic) Pigment. The French polish so prepared shall conform to I.S. 348-1968.

2.0. **Workmanship**

2.1. **Preparation of surface :**

2.1.1. All unevenness shall be rubbed down to smoothness with sand paper and the surface shall be well dusted. The proper in the wood shall be filled up with a filler made of a paste of whiting in water or methylated spirit (with a suitable pigment like burnt sienna or umber if required) : otherwise the French polish will get absorbed and a good gloss will be difficult to obtain.

2.2. **Application**

2.2.1. A pad of wooden cloth covered by a fine cloth shall be used to apply the polish. The pad shall be moistened with polish and rubbed hard on the surface in a series of overleaping circles applying the polish sparingly but uniformly over the entire area to give an even surface. A trace of linseed oil on the face of the pad may be added which shall facilitate this operation. The surface shall be allowed to dry and the remaining coats applied in the same way. To finish off, the pad shall be covered with a fresh pieces of clean fine cloth, slightly damped with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall present a uniform texture and high loose.

3.0. **Mode of measurements and payment**

3.1. The relevant specification of item 19.12 shall be followed for mode of measurements and payment.

3.2. The rate includes cost of wood filler etc. complete.

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

19.89. **Polishing with French polish on previously polished wood and wood based surface to give an even surface including cleaning the surface of all dirt, dust and sand papered smooth including a coat of wood filler.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item No. 19.87 shall be followed that the French polish shall be applied on previously polished wood and wood based surface.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.87 shall be followed.

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

19.91. **Applying wax polish on new Wood work and wood based surfaces with bees wax polish in proportion 2 : 1.5 : 1 : 0.5 (2 Bees Wax : 1.5 linseed oil: 1 Turpentine oil : 0.5 Varnish by weight) by give an surface including cleaning the surface of all dist, dust and sand papered smooth.**

1.0. **Materials**

Bee's Wax shall conform to I.S. : 1504-1968. Linseed oil shall conform to I.S. : 75-1967. Turpentine shall conform to I.S. 83-1950. Varnish shall conform in I.S. 337-1952.

2.0. **Workmanship**

2.1. **Preparation of bees wax :**

2.1.1. In case of, bees wax it shall be prepared locally with following specification.

2.1.2. Pure bees wax free from paraffin on strain adulterants shall be used. The polish shall be prepared from mixture of bees wax, linseed oil, turpentine, and varnish in proportion 2:1:5:1:0.5 by weight. The bees wax and boiled linseed oil shall be heated of a slow fire, when the wax is completely dissolved the mixture shall be cooled till it is just warm and turpentine and varnish added to it in the required proportions and entire mixture shall be well stirred.

2.2. **Preparation of surfaces .**

2.2.1. The surface to be waxed shall he prepared to produce a smooth, dry, matt surface. Previous coat of paint of stain if any shall be allowed to dry and be rubbed down lightly wiped off and allowed to dry ail dust and dirt shall be removed from the surface to waxed and also from the neighborhood. Damp atmosphere and draughts shall be avoided, for waxing, normal dry day snail be chosen.

2.3. **Application :**

2.3.1. The polish shall be applied evenly with clean soft pad of cotton cloth in such a w=y that the surface is completely and fully covered. The surface shall then be rubbed continuously for half an hour After well rubbing in one coat of wax polish, the work shall be covered with dust proof sheet. (Cloth for preventing dust falling on the work). Subsequent coat shall be applied after the surface is quite dry arid shall be rubbed off with soft flannel until the surface has assumed a uniform gloss and in dry showing no sign of Stickiness.

2.3.2. The final polish depends on the amount of rubbing which shall be continuous and with uniform pressure with frequent changes in the direction.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item No. 19.12 shall be followed.

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

19.92. **Applying wax polish on previous wax polished wood and wood based surfaces with bees wax polish in proportion of 2:1.5;1:.0.5 (2 Bees wax 1.5 linseed oil : 1 Turpentine : 0.5 Varnish by weight) to give an even surface including cleaning the surface of all dirt, dust and sand papered smooth.**

1.0. **Materials and workmanship**

1.1. The relevant specifications of item No. 19.91 shall be followed except that the wax polishing shall be carried out on previously wax polished wood and owed based surfaces with bees wax polish.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.91 shall be followed.

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

19.98. **Coat tarring two coats on new wood and wood based surfaces using 0.15 and 0.12 liters of coal tar per sq. m. in the first and second coat respectively to give an even shade including cleaning of all dirt, dust and other foreign matter ;**

1.0. **Material :** The coal tar shall conform to I.S. 290-1961.

2.0. **Workmanship**

2.1. 200 cms. of unslaked lime shall be added to every liter of coat tar and heated till it begins to boil. It shall then be taken off the fire and kerosene oil added to it slowly the rate of 1 part kerosene old and 6 parts or more parts of coal tar by volume and stirred thoroughly. The addition of lime is for preventing the tar from running.

2.2. **Preparation of Surface :**

2.2.1. The surface to be painted shall be allowed to dry sufficiently. Any existing fungus or mould growth shall be completely removed. All major cracks or defects in the plaster shall be cut out and made good. Before primer is applied holes and undulations shall be filled up with plaster of parish and rubbed smooth.

2.3. **Application of paint:**

2.3.1. The coat tar shall be applied as per relevant specifications of applying mixed paint item No. 19.7 except coat tarring is used instead of enamel paint.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item No. 19.12 shall be followed.

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

19.119.(I) **Writing letter of figures on any surface with black Japan paint (stops, comas, hyphens and the like not to be measured and paid for separately) : block (Letters/figures).**

1.0. **Materials**

1.1. Ready mixed the black Japan paint shall conform to I.S. 341-1952.

2.0. **Workmanship**

2.1. The letters and figures shall be to the heights and widths as per approved drawings or as directed. These shall be stenciled or drawn in pencil and got approved before painting. They shall be of uniform size and finished neatly. The edges shall be straight or in pleasant smooth curves.

3.0. **Mode of measurements and payment**

3.1. Letters, figures and similar items etc. stops, commas, hyphens and the like shall be deemed to be included in the item. 9

3.2. The rate per cm. height of letter shall hold good irrespective of width of the letters of figures or the thickness of the lettering.

3.3. The rate shall be for a unit of per letter cm. height.

19.119(II) **Writing letter of figure? on any surface with black Japan pain (stops, commas, hypes and the like not to be measured and paid for separately ; Indian (Letters/figures).**

1.0. **Materials and Workmanship**

The relevant specifications of item No. 19.119 (I) shall be followed except the writing of letter shall be Indian letters/figures.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.119 (I) shall be followed.

2.2. The rate shall be for a unit of per letter per cm. height.

19.126(1) **Painting lines, dashes, arrows, letters etc. on roads, airfields and like in two coats with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : Over 10 cms. in width.**

1.0. **Materials**

1.1. The road marking paint shall conform to. I.S. 164-1951.

2.0. **Workmanship**

2.1. The relevant specifications item No. 19.119(1) shall be followed except that the painting lines, dashes, arrows and letters on roads, air fields and like shall be carried out with road marking paint in two coats : over 10 cms. in width.

3.0. **Mode of measurements and payment**

3.1. The relevant specifications of item No. 19.119 (I) shall be followed.

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

19.126.(II) **Painting lines, dashes, arrows, letters etc. on roads, fields and like in two coats with road marking paint brushing including cleaning the surface of all dirt, dust and other foreign matter: Up to 10 cms. in width.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 19.126 (I) shall be followed except that painting work shall be up to 10 cms. width.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.119 (I) shall be followed.

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

19.127.(A) **Painting lines, dashes, arrows letters etc. on roads, airfields, and like in one coat with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : over 10 cms. in width.**

1.0. **Materials and workmanship**

The relevant specifications of item No. 19.126(1) shall be followed except that the painting shall be done in one coat over 10 cms. in width.

2.0. **Mode of measurement and payment**

2.1. The relevant specifications of item No. 19.126 (I) shall be followed.

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

19.127. (B) **Painting lines, dashes, arrows, letters etc. on roads, air fields and like in one coat with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter : Up to 10 cms. in width.**

1.0. **Materials and Workmanship**

1.1. The relevant specifications of item No. 19.126 (I) shall be followed except that the painting shall be done in one coat upon 10 cms. in width.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 19.126 (I) shall be followed.

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

SECTION-20

Demolition & Dismantling

20.1.(i) Demolition and disposal of unserviceable materials with all leads and lifts : Lime Concrete.

1.0. Workmanship

1.1. The demolition shall consist of demolition of one or more parts of the building as specified or shown in the drawings. Demolition 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 demolition 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 bee 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.

2.0. Mode of measurements and 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 arid providing temporary enclosures or portions where considered necessary.

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

20.1.(ii) Demolition and disposal of unserviceable materials with all leads and lifts : Un reinforced cement concrete.

1.0. Workmanship

The relevant specifications of item 20.1.(i) shall be followed except that the un reinforced cement concrete work is to be demolished instead of lime concrete.

2.0. Mode of measurements and payment

2.1. The relevant specifications of item 20.1(i) shall be followed.

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

20.3. Demolition including of serviceable materials and disposal of unserviceable materials with all leads and lifts : R.C.C. work.

1.0. Workmanship

1.1. The relevant specifications of item 20.1 (i) shall be followed except that demolition of R.C.C. work is to be done.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 20.(i) shall be followed except that the demolition of reinforced concrete structure is to be clone. The unserviceable materials shall be disposed of at all leads and lifts. The rate excludes scraping straightening of reinforcement but includes cutting of reinforcement.

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

20.11 (ii) **Demolition of brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all leads and lift : in lime mortar.**

1.0. **Workmanship**

1.1. The relevant specifications of item No. 20.1.(i) .shall be followed except that demolition of brick or stone masonry in lime mortar is to be done.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 20.1(i) shall be followed except that the wall and independent piers or columns of brick or stone masonry shall be measured in cubic meters. All copings, corbels, comics and other projections shall be included with the wall measurements.

2.2. In measuring thickness of plastered walls, the thickness of plaster shall be included. The unserviceable materials shall be disposed off with all lead and lift. Ashlars face stones dressed stone etc., if required to be taken down intact shall be dismantled and measured separately in cubic meters.

2.3. The rate is exclusive of cleaning of bricks or stones. Honey comb works or hollow block walling shall be measured as solid.

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

20.11. (iii) **Demolition of brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all leads and lift : in cement mortar.**

1.0. **Workmanship**

1.1. The relevant specifications of item 20.1.(i) shall be followed except demolition of brick or stone masonry in cement mortar is to be done.

2.0. **Mode measurements and payment**

2.1. The relevant specifications of item 20.11 (ii) shall be followed. The unserviceable materials shall be stacked as directed by Engineer-in-charge with all leads and lifts.

20.22. **Demolition in terrace including stacking or serviceable materials and disposal of unserviceable materials with all lead and lift : Brick tiles covering.**

1.0. **Materials**

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the demolition of terrace brick tiles is to be done.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No'. 20.1(i) shall be followed except that the brick tiles covering of terrace shall be measured in sq. mt. The unserviceable materials shall be stacked as directed at all leads and lifts.

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

20.23. **Dismantling tiled or stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials** with **all lead and lifts.**

1.0. **Workmanship**

1.1. The relevant specification of item 20.1 (i) shall be followed except the dismantling of tiled or stone floors laid on mortar shall be done. 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. The supporting materials such as joints, beams if any etc. shall be measured separately. The relevant specifications of item No. 20.1 (i) shall be followed, The rate shall include staking the unserviceable materials as directed with all lead and lift.

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

20.25. **Dismantling of wooden floors, including, stacking of serviceable materials and disposal of unserviceable materials with all lead and lifts.**

1.0. **Materials**

1.1. The specifications of item 20.1(i) shall be followed except that wooden floors shall be dismantled.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 20.1 (i) same shall be followed. The supporting members such as joints, beams etc. shall be measured separately. The rate shall include disposal of unserviceable materials as directed for and with all lead and lift.

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

20.27.(i) **Dismantling of sheet including ridges, hips, valleys gutters etc. stacking of serviceable materials and disposal of unserviceable materials with leads with lifts : G.I. sheet roofing.**

1.0. **Materials**

1.1. The relevant specifications of item 20.1.(i) shall be followed except that G.I. sheet roofing shall be dismantled instead of concrete work.

2.0. **Mode of measurements and payment**

2.1. The area of G.I. sheets roofing shall be measured in sq. meter. Ridges, hips and valleys shall be girded and included with roof area. Corrugated and semi-corrugated surfaces shall be measured flat and not girthed.

2.2. Supporting members such as rafters, purlins, beams, joints, trusses etc. shall be measured separately.

2.3. The rate shall include disposal of unserviceable materials with all leads and lifts and stacking the serviceable materials as directed.

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

20.27 (ii). **Dismantling of sheet roofing including ridges, hips, valleys gutters etc. stacking of serviceable materials and disposal of unserviceable materials with all leads and lifts : A.C. Sheet roofing.**

1.0. **Workmanship**

1.1. The relevant specifications of item 20.27 (i) shall be followed except that dismantling work of A.C. sheet roofing is to be done.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 20.27 (i) shall be followed except that the A.C. sheets roofing shall be measured in this item.

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

20.28. **Dismantling Manglore or country tile roofing with battens, boarding etc. including stacking of serviceable materials and disposal of unserviceable materials with all lead and lifts.**

1.0. **Workmanship**

1.1. The relevant specifications of item 20.1 (i) shall be followed except that the country tile roof or Mangalore roof shall be dismantled.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 20.1 (1) shall be followed.

2.2. The supporting members shall be measured separate item.

2.3. The rate includes labour required for disposal of unserviceable item with all leads and lifts.

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

20.30. **Dismantling cement asbestos/hard board in ceiling or partition walls, wooden trellis work including frames, stacking of to serviceable material and disposal of unserviceable materials with all leads and lifts.**

1.0. **Workmanship**

1.1. The relevant specifications of item 20.1 (i) shall be followed except that the cement asbestos hard board in ceiling or partition walls, wooden trellis, work etc. shall be dismantled.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 20.1 (i) shall be followed. The serviceable materials shall be stacked as and where directed and the unserviceable materials shall be disposed off with leads and lifts.

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

20.35 **Dismantling wood wrought, framed and fixed in frames, trusses including stacking the materials with all lead and lift.**

1.0. **Workmanship**

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the wood work, wrought framed and fixed in frames, trusses etc. shall be dismantled.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 20.1 (i) shall be followed.

2.2. The materials shall be stacked as and where directed with all leads and lifts.

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

20.39. **Dismantling expanded metal or I.R.C. fabric with necessary battens and beading including frame work and stacking the serviceable materials with all lead and lift.**

1.0. **Workmanship**

The relevant specifications of item No. 20.1 (i) shall be followed except that the dismantling of expanded metal or I.R.C. fabric shall be done

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of in item No. 20.1 (i) shall be followed.

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

20.43. **Dismantling steel work including dismembering and stacking the materials with air leads and lifts.**

1.0. **Materials**

1.1. The relevant specifications of item No. 20.1 (i) shall be followed except that the dismantling of steel work shall be carried out.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 20.1 (i) shall be followed.

2.2. The weight of the member shall be computed from standard table unless the actual weight can be readily determined.

2.3. Riveted works where rivets are required to be cut. the same shall be carried out under this item arid nothing extra shall be paid.

2.4. In framed still gate, the weight of any covering material or filling such as iron sheets and expanded metal shall be added to the weight of the main articles if such covering is not ordered to be taken out separately.

2.5. The rate includes stacking the materials as and where directed with all leads and lifts.

2.6. The rate shall be for a unit of one Kg.

20.49.(i) **Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats, Architraves, hold fasts and other attachments etc. complete and stacking them within all leads & lift. No exceeding 3 sq. meters in area.**

1.0. **Workmanship**

The relevant specifications of item No. 20.1 (i) shall be followed except that the door, windows, ventilators etc. (wood or steel) shutters including chowkhats, architraves, hold fasts and other attachments etc. are to be dismantled.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 20.1 (i) shall be followed.

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 under this item.

2.3. The rate includes stacking the serviceable materials as and where directed with all leads and lifts.

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

20.49.(II) **Dismantling doors, windows, ventilators etc. (wood or steel) shutters including chowkhats. Architraves, hold fasts and other attachments etc. complete and stacking them within all leads and lift : Exceeding 3 sq. meters in area.**

1.0. **Workmanship**

The relevant specifications of item No. 20.49(I) shall be followed except that the area of doors, windows, ventilators, exceeding 3 sq. meters are to be dismantled under this item.

2.0. **Mode of measurements of payment**
2.1. The relevant specifications of item No. 20.49 (I) above shall be followed.
2.2. The rate shall be for a unit of One number.

20.51. **Dismantling barber wire fencing including making rolls and also including dismantling facing posts including all earth work, concrete in the base and making good the disturbed ground stacking useful materials as directed and disposing all the unserviceable materials with all leads and lifts.**

1.0. **Workmanship**
The relevant specifications of item No. 20.1 (i) shall be followed, except that the dismantling of barbed wire fencing shall be carried out.
2.0. **Mode of measurements & payment**
2.1. The relevant specifications of item No. 20.1. (i) shall be followed.
2.2. The rate includes making rolls of dismantled wires and including dismantling fencing posts, concrete work, in base and making good the disturbed ground etc. complete.
2.3. The serviceable materials shall be stacked as and where directed and end unserviceable materials shall be disposed with all leads and lifts.
2.4. The rate shall be for a unit of One running meter.

20.56. **Dismantling (C.I. Pipes, G.S.W. Pipes and A.C. rain water pipes with fittings and clamps, including stacking the materials with all lead and lift, (for any dia. of pipe).**

1.0. **Workmanship**
The relevant specifications of item No. 20.23 shall be followed except that the dismantling work of pipes lines of C.I., G.S.W. & A.C. Pipes with fitting shall be carried out.
2.0. **Mode of measurements and payment**
2.1. The relevant specifications of No. 20.1 (i) shall be followed.
2.2. Water pipe lines, including rain water pipes, with clamps and specials, swear pipe lines, (Salt glazed ware or concrete) etc. shall be measured in running meter inclusive of joints. (The measurements shall be taken along the centre line of pipe and fittings).
2.3. The rate shall be for a unit of One running meter.

20.00.1. **Dismantling sanitary fittings like wash basin, W.C. Pan, Indian & European Type flushing tank, etc. including stacking the materials with all lead lift.**

1.0. **Workmanship**
The relevant specifications of item No. 23.23 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. The relevant specifications of item No. 20.1 (i) shall be followed.
2.2. The rate shall be for a unit of one number.

20.00.2. **Scraping oil paint steel and other metal surfaces and making the surface even (with hand scraping).**

1.0. **Workmanship**
The old paint from steel and other surface shall be scraped thoroughly with hand scraper followed by wire brushing (first with coarse and then with fine brushes) and finally sand papering with coarse sand paper (No.3) steel wood (No.2) or emery paper (No.3) or with emery clothes. This shall then be wiped finally with mineral turpentine to remove grease and perspiration of hand marks etc. and allowed to dry. The surface shall be made even and smooth.
2.0. **Mode of measurements and payment**
2.1. The work shall be measured in actual area of work done.
2.2. The rate shall be for a unit of one sq. meter.

SECTION-21

Repairs to Buildings

21.8. Providing and fixing M.S. fan clamps of shape and size as specified in existing R.C.C. slab including cutting chase and making good.

1.0. Materials

1.1. M.S. Bar shall conform to M-18.

2.0. Workmanship

2.1. The shape and size of fan clamp shall be directed!

2.2. The fixing M.S. fan clamp in existing R.C.C. slab a chase of size 150 mm. x 75 mm. shall be cut from th,e ceiling so as to expose the reinforcement and up to 25 mm. clear round the reinforcement bar. This shall be done without any damage to adjoining portion of ceiling. The two arms of the ends of the clamp shall be passed through the space over reinforcement bar from the bottom of the slab. Then the two arms shall be bent down about 15 mm. by means of crow bar. The clamp shall be held in position and the chase in ceiling filled with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size). The ceiling shall be then finished to match the existing surface and properly cured.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all materials and lobour required for satisfactory completion of this item as described above.

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

21.23. Cutting our cracks, of roof terrace to V. section, Cleaning out, wetting, grouting with cement and sand slurry 1:3 (1 cement : 3 sand)

1.0. Materials

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6.

2.0. Workmanship

2.1. The cracks shall be cleaned out and trimmed to V shaped cuts at least 6 mm wide on top. The cracks shall be cleaned off and then cracks shall be thoroughly flooded with water, water allowed to a soak in cracks, and then grouted with cement and sand slurry in proportion 1:3. The required cracks shall be cured at least 7 days.

3.0. Mode of measurements and payment

3.1. The rate shall includes cost of all materials and labour required for satisfactory completion of item as described above.

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

21.24. Cutting out cracks of roof terrace to V-Section out, and filling solidly with a hot mixtures of bitumen and clean dry sand (1:1 weight).

1.0. Materials

(1) Bitumen shall be 85/25 penetration (2) Sand shall conform to M-6.

2.0. Workmanship

2.1. The relevant specifications of item No. 21.23 shall be followed for opening cracks and cleaning.

2.2. The cracks shall be absolutely dried and cleaned and filled solidly with a hot mixtures of 85/25 penetration and sand in ratio of 1; 1 by weight. The filler shall be well filled into cracks with the edges of a trowel and left flush with surface of roof. Repaired cracks shall cause no ridges the direction of the slope of roof.

3.0. Mode of measurements & payment

3.1. The relevant specifications of item No. 21.23 shall be followed.

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

SECTION-22

Misc. Building Items

22.20. **Providing and fixing 1.20 meter fencing with 2 meter long M.S. angle posts 40 mm. x 40 mm. x 6 mm. and oil painting 3 coats fixed at 2.5 M C/C with five horizontal lines, and two diagonals of galvanised steel barbed wire weighing 9.38 Kg. per 100 meter. (Min.) stained and fixed to posts with G.I. staples including fixing the posts in ground with 0.5 x 0.5 x 0.5 M block in C.C. 1:5:10 (cement : 5 sand : 10 graded brick aggregate 40 mm. nominal size) etc. complete.**

1.0. **Materials**

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6. (4) Brick bats aggregate shall conform to M-.14, (5) Oil paint shall conform to M-44. (6) Barbed wire shall conform to M-78.

2.0. **Workmanship**

2.1. The pits of the size 0.5 x 0.5 m. x 0.5 shall fist be excavated, true to line and level to receive the post at 2.5 C/C. The relevant specifications of item 4.00.1 shall be followed for excavation work.

2.2. The pits shall be filled with a layer 0.15 m. thick with lean concrete 1:5:10 (1 cement: 5 sand : 10 graded brick bat aggregate 40 mm. nominal size). The M.S. angles 40 mm. x 40 mm. x6 mm shall be filled in with lean concrete 1:5:10 and rammed properly so as to form total 0.5 m. x 0.5 m. x 0.5 m. concrete block. The concrete shall be cured for 7 days to allow it to set.

2.3. The barbed wire shall be stretched and fixed in 5 horizontal rows and two diagonals. The bottom row shall be 140 mm. above ground and the rest at 125 mm. centre to centre. The diagonal shall be stretched between adjacent post from top wire of one post to the bottom wire of 2nd post. The wires shall be fixed to posts by means of staples. The M.S. Angle posts shall be painted with 3 coats of old paint of approved tint and shade.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured for the finished work from centre to centre of the posts.

3.2. The rate shall include the cost of labour and materials involved in the operations described above.

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

22.00.1. **Construction of B.B. masonry paniara 23 cm x 75 mm wall including fixing pre cast R.C.C. marble Mosaic (Terrazzo) slab of 75 mm. thickness on top and smooth finishing to walls in cement plaster in C.M. 1:3 curing etc. complete including drainage out, waste water arraignments.**

1.0. **Materials**

(1) Water shall conform to M-1. (2) Cement shall conform to M-3. (3) Sand shall conform to M-6. (4) Brust bricks shall conform to M-15. 95) Pre cast marble mosaic terrazzo paniara of 75 mm thickness shall be of best quality. The width of paniara shall be directed.

2.0. **Workmanship**

2.1. The brick masonry shall be constructed for paniara for the size as directed in C.M. 1 :6. The thickness of wall shall be 23 cms. thick and height shall be 75 cms. The relevant specifications of B.B. masonry at item 6.13 (b) shall be followed for B.B. masonry work.

2.2. The B.B. masonry shall be covered with pre cast marble terrazzo paniara at top, of width and length as specified or as directed. The terrazzo mosaic paniara shall be T'S mm, thickness.

2.3. The whole masonry work shall be finished smooth with C.M. 1:3 on both sides the relevant specifications of item No. 1.7.59 (i) shall be followed.

2.4. The drainage outlet and water arrangement shall be made as directed.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured for the finished work.

3.2. The rate shall be include the cost of labour and materials involved in the operations described above.

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

22.00.2. **Constructing a chowkadi with C.Q. over 12 cm. thick B.B. masonry in front and dwarf wall 1 M high and 23 cms. thick cement plaster to masonry in C.M. (1:3) and cement concrete flooring in 1:2:4 with 5 cm. dia. A.C. Drain pipe etc. complete**

1.0. **Materials**

1.1. Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Burnt bricks shall conform to M-15. Stone aggregate 20 mm. nominal size shall conform to M-2. (a) A.C. Drain pipe of 5 cms. dia shall conform to M-74.

2.0. Workmanship

2.1. The chowkadi shall be constructed of specified size and as directed. The slab shall be cast on B.B. masonry wall 12 cms. thick and dwarf wall 1 M high and 23 cms, thick shall be constructed in proportion of C.M. 1:6. The relevant specifications of item 6.3. (I) shall be followed for masonry partition work and 5.4.1. (c) shall be followed for reinforced concrete work.

2.2. The whole masonry work shall be finished with cement mortar 1:3 and finished smooth. The relevant specifications of item No. 17.59 (I) shall be followed for plastering work.

2.3. The A.C. pipe of 5 cms. dia shall be fixed as drainage pipe. The bottom shall be finished with C.C. 1:2:4 finished with cement slurry.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured for finished work.

3.2. The rate includes cost of all materials, labour etc. required for carrying out satisfactory completion of work.

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

22.00.3.(I) **Constructing cooking platform 60 cm. width and 70 cm. height resting on B.B. Masonry wall 23 cms. thick in C.M. 1:6 with fixing of pre cast 1:2:4. R.C.C. 0.0 M. thick slab with marble mosaic chips set in GM. (Terrazzo) with plastering on exposed faces to wall in C.M. 1:4 etc. complete.**

1.0. Materials

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

2.0. Workmanship

2.1. The cooking platform of size as directed shall be constructed in 60 cms. width and 70 cms. height. The brick masonry wall, in C.M. 1 :6 shall be constructed in 23 cms. thickness up to full depth. The relevant specifications of item 6.13 (B) shall be followed for masonry work.

2.2. The R.C.C. slab of 8 cms. thickness and of adequate design and size shall be precast and the same shall be put up on the B.B. masonry work.

2.3. The tap and exposed sides of the R.C.C. slab shall be finished with marble mosaic terrazzo 8 mm. thick with required colour pigment. The work of terrazzo shall be carried out as per relevant specifications of item 14.4 (E).

2.4. The whole masonry work shall be finished with cement mortar in C.M. 1 :4. The relevant specification of item 17.59 (II) shall be followed.

3.0. **Mode of measurements and payments**

3.1. The work of cooking platform shall be measured for finished work.

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

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

22.00.3.(II) **Constructing cooking platform of 60 cm. width and 70 cms. height resting on B.B. masonry walls 23 cm thick in C.M. 1:1 with fixing black kadapa stone surface laid on pre cast R.C.C. slab 1:2:4 with plastering on exposed faces to wall in C.M. 1:4 etc. complete.**

1.0. **Materials and Workmanship**

1.1. The relevant specification of item No. 22.00.3 (I) shall be followed except that the cooking platform shall be constructed by providing black kadapa stone of 25 mm. to 30 mm. thickness on pre cast R.C.C. 1:2:4 slab 8 cms. thick. The black stone shall be provided in single piece up to 1.8 M in length and specified width. AH the exposed edges of stone shall be machine cut.

2.0. **Mode of measurement and payment**

2.1. The relevant specifications of item 22.00.3.(I) shall be followed.

2.2. The rate includes providing machine cut edges on exposed face of kadapa stone.

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

22.00.4. **Providing and fixing Rajula stone 75 mm. thick 60 cm x 45 cms. size including fixing in cement mortar as directed.**

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. Rajula stone of specified, size shall be of best quality and free from any defects. The stone shall not be less than 75 mm in thickness.

2.0. **Workmanship**

2.1. The Rajula stone of size 60 x 45 cms. size shall be fixed as and where directed in cement mortar in 1:3. All the edges of the stone shall be fixed with cement mortar in C.M. 1:3 and sloped at 45° and finished smooth. The work shall be cured for 7 days after fixing.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured for finished work.

3.2. The rate includes cost of all labour and materials required for satisfactory completion of this item.

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

22.00.5. **Providing and laying Bilimora type brick facing in C.M. 1:1 laid over bedding of cement mortar 1:3 (13 mm. thickness) including cleaning, watering, scaffolding etc. complete.**

1.0. **Materials**

1.1. Water shall conform to M-1. Cement mortar of specified proportion shall conform to M-11. Bilimora type bricks shall be approved before collection the same on site.

2.0. **Workmanship**

2.1. The surface on which the Bilimora type bricks is to be provided shall be cleaned of all dust, dirt, etc. and finished with CM 1:3 in 13 mm, thickness. The relevant specifications of item 17.59 (I) shall be followed except that the thickness of finishing shall be 13 mm. The top surface shall be roughened by wire brushes to give proper grip to the tiles to be fixed.

2.2. The Bilimora type bricks shall be fixed with CM 1:1. The tiles shall be properly wetted before fixing. The horizontal and vertical joints shall be maintained in true line and level by providing 12 mm or 20 mm. sq. bars as directed. The tiles shall be tamped by trowel so that there shall not be nay hollows left behind the tiles.

2.3. The tiles shall be cut to the required size on ends of at top bottom of beams in best workman like manner.

2.4. The whole work shall be cured for 7 days.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured as per relevant specification of item No. 17.58(1)

3.2. The rate includes cost of all materials, wastage etc. occurring due to cutting of tiles and ends as top and bottom of beams etc. including base coat.

3.3. The rate shall be for unit of One sq. meter.

22.00.6. **Providing and fixing teakwood rail of 60 mm. x 20 mm. size and 50 cms. length incl. 3 coats of oil paint to wood work with set of 3 pegs.**

1.0. **Materials** : Teak wood battens of specified size shall conform to M-29. Oil paint shall conform to M-44. Wall pegs of aluminum 3 Nos. of approved quality and make shall be provided.

2.0. **Workmanship**

2.1. The teakwood battens of size 60 mm. x 20 mm. and 50 cms. long be planed on all sides. The anodized aluminum wall pegs of approved make shall be fixed on wooden batten prepared with screws as directed. The wall pegs unit shall be fixed on wall with wooden gut ties and screws as directed. The wooden battens shall be painted with 3 coats of ready mix paint of approved colour and shade.

3.0. **Mode of measurements and payment**

3.1. The work shall be measured for finished work.

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

22.00.7. **Treating the bottom and sides (up to a height of 300 mm.) of the excavations made for the masonry foundations and basement with chemical emulsion at the rate of 5 liters per Sq. meter of the surface area.**

1.0. **Materials** : The chemicals used for the soil treatment shall be only one of the following with concentration shown against each in aqueous emulsion.

	Chemicals	Concentration
1.	Aldrin	0.50% (by weight)
2.	Heptachlor	0.50% (by weight)
3.	Chlordane	1.00% (by weight)

2.0. **Workmanship**

2.1. The chemicals barrier shall be complete and continuous under whole of the structure to be protected.

2.2. The bottom and the sides of foundations up to a height of 30 cms. from the bottom of excavation made for masonry foundation and for basement column pits shall be treated with the chemical emulsion at the rate 5 liters/ sq. meter of the surface area.

2.3. The chemical treatment shall be-carried out when the surfaces is quite dry. Chemical treatment shall not be carried out when it is raining or when the soil wet with rain or sub soil water.

2.4. Once formed, treated soil berries shall be not disturbed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuiting and compactness of the barrier system

2.5. The treatment against termite infection shall remain fully effective for a period not less than 10 years from date of issue of the final certificate to completion of work. If at any time during this period, any defects in treatment are revealed or any evidence of infection in any part of the building or structure is noticed, the contractor shall be rectify the concerned defects within 14 days on receipt of notice from Engineer-in-charge. On contractor's failure to do so, the Engineer-in-charge may get the same rectified through any other agency at contractor's risk and cost, and decision of Engineer-in-charge as to the cost payable by contractor for the same shall be final and binding to the contractor.

2.6. A guarantee bond on appropriately stamped paper shall be given by the contractor to the department in the manner and form prescribed below:

FORM OF GUARANTEE BOND

I/We..... (Contractor) hereby guarantee that work will remain unaffected and will not be any way damaged by termite or any other germs of similar types, for a period for 10 years after completion of the work of anti-termite as per the terms and conditions of the contract and or damage that might be caused on account of termite and or other similar type of germs and hereby Guarantees to make good any loss of damages suffered by the Government of Gujarat and further guarantee to redo effective work without claiming any extra cost.

2.7. This guarantee shall remain in force for the period of 10 years from the completion of the work under the contract and it shall remain binding to the contractor for period of 10 years.

2.8. The deposit at the rate of 50% of the cost of this item from the running and final bills shall be recovered and retained for the first one year after completion of the work and 10% shall be retained for the balance of guarantee period and shall be refunded only after the completion of the guarantee period.

3.0. **Mode of measurements & payment**

3.1. The length and breadth shall be measured correct to a cm. as per the dimensions of sanctioned plans. No deduction shall be made nor extra paid for any opening for pipes etc. up to 0.1.sq. mt. The rate shall include the cost of all labour and materials required for the operation involved for satisfactory completion of this item. The sides of the trenches 30 cms, each side and bottom shall be measured under this item.

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

22.00.8. **Treating the backfill immediately in contact with foundation structure with chemical emulsion at the rate 7.5 liters per sq. mt. of vertical surface of the sub structure of each side (In case of R.C.C. columns, breams and R.C.C. basement walls, treating the sides of 50 cms. from ground level with chemical emulsion at the rate of 7.5 Liters/sq. meter).**

1.0. **Materials**

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

2.0. **Workmanship**

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

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

3.0. **Mode of measurements and payment**

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

3.2. No deduction shall be made nor extra paid for any opening for pipes, etc. up to 0.1 sq. m.
3.3. The rate includes cost of all labour, materials required for satisfactory completion of this item.
3.4. The rate shall be for a unit of One sq. meter.,

22.00.9. **Treating the top surface of the plinth filling with chemical emulsion at rate of 5 liters sq. meter, before the sand bed or sub grade is laid.**

1.0. **Materials** : The relevant specifications of item 22.00.7. shall be followed.
2.0. **Workmanship**
2.1. The relevant specifications of item 22.00.7 shall be followed that the top surface of the consolidated earth within the walls, shall be treated with the chemical emulsion at the rate of 5 liters/sq. metre of the surface before the sand bed or sub-grade is laid. If the filled earth has been well rammed and the surface does not allow the emulsion to seep through, holes up to 50 to 75 mm. deep at 150 mm. centers both ways may be made with 12 mm. dia. M.S. road on the surface to facilitate absorption of the emulsion.
3.0. **Mode of measurements & payment**
3.1. The length and breadth shall be measured clean for the area actually treated.
3.2. No deduction shall be made nor extra paid for any opening for pipes, etc. up to 0.1 sq. m.
3.2. The rate shall be for a unit of One sq. meter.

22.00.10. **Treating the junctions of wall and floor area with chemical emulsion at the rate of 7.5 liter/sq. mt. by making holes at junction of walls, and columns, with the floor before laying sub grade to a depth to 15 cms. by making holes.**

1.0. **Materials** : The relevant specifications of item 22.00.7 shall be followed,
2.0. **Workmanship**
2.1. The relevant specifications of item 22.00.7 shall be followed except that the junction of walls columns with floor shall be treated with the chemical emulsion at the rate 7.5 liters/sq. meter. Special care shall be taken to establish continuity of the vertical chemical barrier on inner wall surface form the ground level be taken to establish continuity of the vertical chemical berries on inner wall surfaces form the ground level up to the level of filled earth surface. To achieve this, a small channel 3x3 cm. shall be made at the junctions of the wall and columns with floor (before laying the sub 2 grade) and road holes made in the channels up to the ground level 15 cms. apart and the rod moved backs ward and forward to breakup the earth an chemical emulsion poured along the channel at the rate of 7.5 liters per sq. m, of the vertical wall or column surfaces of sub-structures so as to soak the soil right to the bottom. The soil should be tamped back into place after this operation.
3.0. **Mode of measurements and payment**
3.1. The relevant specifications of the item 22,00.7. shall be followed.
3.2. The vertical area of sub-structure in contact with filled up earth above ground level to top filled up earth shall be measured for payment.
3.3. The rate shall be for a unit of One sq. meter.

22.00.11. **Treating the earth along the external perimeter of the building by making holes 15 cms., apart up to a depth of 30 cms. with chemical emulsion at the rate of 7.5 liters per sq. meter along the wall.**

1.0. **Materials** : The relevant specification of item 22.00.7 shall be followed.
2.0. **Workmanship**
2.1. The relevant specifications of the item 22.00.7. shall be followed except that the external perimeter of the building shall be treated with chemical emulsions. After building is complete, the earth along the . external perimeter of the building should be treated at intervals of 15 cms. and to a depth of 30 cms. The rods shall be moved backward and forward parallel to the wall to breakup the earth and chemical emulsion poured along the wall at the rate of 7.5 liters per sq. meter of vertical surfaces. After the treatment the earth shall be tamped back into place the earth out side of the building should be graded on compaction of building, this treatment shall be carried out on the completion of such grading. In event of filling being more than 30 cms. the external perimeter and treatment shall be extended to the full depth of filling up to ground level so as to ensure continuity of the chemical barrier.
3.0. **Mode of measurements and payment**
3.1. The relevant specifications of item No. 22.00.7 shall be followed.
3.2. The vertical surfaces area so sub-structure 30 cms. in depth from finished ground level in external periphery only shall be measured and paid under this item. The depth of wall treated under back filled shall not be included in this item.

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

22.0.12. Providing treatment along outside of foundation using chemical emulsion at 7.5 liters per sq. m. of vertical surface (for each side) of sub-structure.

1.0. Materials : The chemical used for the soil treatment shall be any one of the following with concentration shown against each in aqueous emulsion :

	Chemicals	Concentration
1.	Aldrin	0.50% (by weight)
2.	Heptachlor	0.50% (by weight)
3.	Chlordane	1.00% (by weight)

2.0. Workmanship

2.1. The surface of consolidated earth around the existing building shall be treated with chemical emulsion at the rate 7.5 liters/sq. m. of vertical surface of sub-structure. The minimum height to substructure shall be considered 60 cms. for treatment. If the earth along the perimeter does not allow emulsion to seep through, holes up to 300 mm. deep at 150 mm. centers both ways be made by 12 mm. dia. mild steel rod on the surface to facilitate saturation of the soil with chemical emulsion.

2.2. The chemical barrier shall be complete and continuous under whole on the structure to be protected.

2.3. The chemical treatment shall be carried out when the surface quite dry. Chemical treatment shall not be carried out when it is raining or when the soil is wet with rain or sub soil water.

3.0. Mode of measurements and payment

3.1. The length shall be measured along the periphery of the sub-structure. The depth shall be taken 0.60 m.

3.2. No deduction shall be made not extra paid for any opening for pipes etc. up to 0.1 sq. m.

3.3. The rate includes cost of all labour and material required for the operations involved for satisfactory completion of this item.

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

22.0.13. Providing treatment along external wall perimeter below concrete or masonry apron using chemical at 5. lit/linear including drilling and plugging etc.

1.0. Materials : The relevant specifications of item No. 22.0.12 shall be followed.

2.0. Workmanship

2.1. The relevant specification of item No. 22.0.12 shall be followed except that the treatment shall be carried out along external wall perimeter below concrete or masonry apron, using chemical at rate of 5 lit/ running meter.

3.0. Mode of measurements and payment

3.1. The relevant specifications of item No. 22.0,12 shall be followed.

3.2. The rate including drilling and plugging holes in apron etc. complete.

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

22.0.14. Treatment of soil below existing floor using chemical at 1 liter per hole at 300 mm. a part including drilling plugging holes etc.

1.0. Materials : The relevant specifications of item No. 22.0.12. shall be followed.

2.0. Workmanship

2.1. The relevant specifications of item No. 22.00.9. shall be followed except that the termite control treatment shall be carried out in soil below existing floors.

2.2. The holes of 12 mm. dia rod shall be drilled in floor up to 150 mm. depth at 300 mm. part both ways. The chemical shall be then injected with pressure at the rate of 1 liters/hole of the surface area.

3.0. Mode of measurements & payment

3.1. The relevant specifications of item 22.0.9 shall be followed.

3.2. The rate shall includes cost of drilling holes and plugging.

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

22,0.15. Treatment of voids is masonry using chemical at 1 Lit/hole at 300 mm. apart including drilling holes and plugging.

1.0. Materials : The relevant specifications of item 22.0.12 shall be followed.

2.0. **Workmanship**

2.1. The walls affected by termite shall be cleaned off all live forms binding inside and the holes of voids in masonry wall surface shall be treated by chemical emulsion at rat 1 Lit. hole. The holes in cracks in surface of wall shall be drilled at 300 mm. apart.

3.0. **Mode of measurement & payment**

3.1. The rate shall be for a unit of One number of voids treated.

22.0.16. **Treatment to wood work by chemical emulsion in oil or kerosene based including 6 mm. dia downward slanted holes 150 mm. C/C. and plugging the same with cement mortar.**

1.0. **Materials :** The relevant specifications of item No. 22. 00.7 shall be followed.

2.0. **Workmanship**

2.1. The wood work effected by Ants shall be cleaned of lives form hiding inside. The whole wood surface shall be then treated with oil or kerosene based chemical emulsion. The holes in 6 mm. dia. shall be drilled slanted downwards at 150 mm. centers to centers and chemical emulsion shall be poured into holes by means of funnels specifically prepared for the same and allowed to seep. After finales become emptily, another dose of chemicals shall be poured in them. This process shall be done repeatedly till the whole wood work is fully saturated with chemical.

2.2. The holes drilled in wood work shall be filled in with putty and other similar materials as directed and the whole wooden surface shall be made good as before.

3.0. **Mode of measurements & payment**

3.1. The work shall be measured for the finished work in sq. meter, including frame.

3.2. The out of frame shall be measured as width ad form top of flooring to top of frame shall be as height. This area inoludes for treating frame and shutters both.

3.3. The rate includes cost of all labours and materials, required for satisfactory completion of this item.

3.4. The rate includes drilling holes plugging the same after treatment completed and making good as before.

3.5. The rate shall be for a unit One sq. meter.

SECTION-23

Water Supply, Plumbing and Sanitary Fittings

23.2. Providing and fixing to wall, ceiling ad floor galvanised mild steel tube (Medium grade) of the following nominal bore, tube fittings and clamps including making good the wall ceiling and floor (A) 15 mm. dia (B) 20 mm. dia (C) 25 mm. (D) 32 mm. (E) 40mm. (F) 50 mm.

1.0. Materials

1.1. Galvanised mild steel tubes of specified dia nominal bore shall conform to I.S. 1239-1968.

1.2. The galvanised 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 in offered. The ends of the tubes shall then be threaded conforming to the requirements of I.S. 554-1965 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 becoming 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 watertight joint. The screw threads for tube and fitting shall be protected form 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. Burr 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 inducts 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 peasant 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 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 all 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 e, 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 galvanised steel tubing 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.

23.4. **Providing and laying in trenches galvanised mild steel tubes (Medium grade) of the following nominal bore and tube fittings-earth work in trenches to be measured and paid for separately : (A) 15 mm. dia. (B) 20 mm. (C) 25 mm. (D) 40 mm. (E) 60 mm. (F) 80 mm.**

1.0. **Materials**

1.1. Galvanised mild steel lube of specified dia. nominal bore and fittings shall conform to I.S. 1239-1968

2.0. **Workmanship**

2.1. The relevant specifications of Hem 23.2 (A) shall be followed for cutting laying an j jointing testing of joints except that the fixing of tube shall be done in trenches,

2.2. The width and depth of the trenches for different diameters of tht, tubes shall he is under, For 15 to 80 mm. dia tube width of trenches shall be 30 cms. and depth of trenches 60 cms,

2.3. All joints, the trench width, shall be widened where necessary. The work of excavation and refilling shall be done true to line and gradient in accordance with general specifications of earth work in trenches

2.4. The pipes shall *be* painted with two coats of anti-corrosive bitumastic paint of approved quality. The pipe shall be laid on a layer of 75 mm. sand filled upto 150 mm. above the pipe of so specified. The remaining portion of trench shall be then filled with excavated earth. The surplus shall be disposed off as directed.

2.5. When the excavation is done in rock the bottom shall be cut deep enough to permit the pipe to be laid and cushion of sand 75 mm. in case of bigger diameter of tube where the pressure is very high thrust block of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 grade stone aggregates of 20 mm nominal size) shall be constructed on all bends to transmit the hydraulic thrust without impairing the ground and spreading it over a sufficient area if so specified.

3.0. **Mode of measurement**

3.1. The relevant specifications of item No. 23.2 (A) shall be followed. The authorised quantities shall be

3.2. For purpose of calculating cubic content cross section shall normally be taken at suitable intervals i.e. at manhole of wall chamber intervals except in abnormal cases like sudden change in strata or undulating ground etc., when they may be taken at closer intervals as approved by the Engineer-in charge whose decision shall be final, conclusive and binding.

3.3. **Authorised width :**

(a) Up to the meter depth, the width of the trenches for the purpose of measurements of excavation shall be arrived at by adding 40 cms. to the external diameter of the tube (not the socket) where a pipe is laid on concrete bed/ Cushing layer, the authorised width shall be the external diameter of tube plus 40 cms. or the width of the concrete bed cushioning layer whichever is more.

(b) For depths exceeding one meter an allowance of 5 cms. per meter of depth for each side of the trench shall be added to the authorised width (i.e. external diameter of pipe of plus 40 cms) This allowance shall apply to the entire depth of the trench. The authorised width in such cases shall therefore be, equal to the depth of trench, plus external diameter or tube plus 40 cms.

(c) Where more then one tube is laid, the diameter shall be reckoned as the horizontal distance of outside to outside of the outermost pipes.

(d) Where sheeting etc. has been provided the authorised width of the trenches at bottom shall be increased to accommodate for sheeting etc. so that the clear width available between faces of sheeting is as per previous ness of (a), (b) & (c) above.

(e) If the sides of the trench are not vertical, the tones of side slopes shall end at the top of the pipe and vertical sided trench of authorised width as per (a), (b), (c) and (d) above shall be excavated from these down to the bed of trenches.

3.4. Where the tubes are laid in trenches, the work of excavation and refilling and round tubes for which separate payment shall be made, the length shall be measured on running meter, basis.

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

23.6. **Marking connection of galvanised M/S. distribution branch with galvanised mild steel main 80 mm. nominal bore by providing and fixing tee including, cutting and threading the pipes etc. complete.**

1.0. **Materials** The fittings required of specified dia. of pipe shall conform to I.S. 1237-1986.

2.0. **Workmanship**

2.1. A pit of suitable dimensions shall be dug at the point where the connection is to be made with the main and earth removed up to 150 mm. below the main. The flow of water in water main shall also be disconnected by closing the sluice or wheel valves on the main. The main shall first be cut. Water if any, collected in the pit shall be bailed out and ends of the pipe threaded.

2.2. The connections of distribution pipe shall be made by fixing malleable galvanised mild steel tee of the required size and fitting such as jam nut, socket, connecting piece etc.

2.3. The testing of the joints shall be done as per relevant specifications of item No. 23.2 (A).

3.0. **Mode of measurements and payment**

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

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

23.8. **Providing and fixing to wall ceiling and floor 6 Kgs/Sq. Cm. working pressure polythene pipes of the following outside diameter, low density complete with special flag compression type fittings wall clips etc. including making good the wall/ceiling and floor. (A) 20 mm. dia. (B) 25 mm. dia (C) 32 mm. dia. (D) 40 mm. dia. (E) 50 mm. dia.**

1.0. **Materials**.

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

2.0. **Workmanship**

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

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

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

2.4. P.V.C. pipes shall be supported at the following intervals :
-20 mm. dia 500 mm. -25 mm. dia 750 mm. -32 mm. dia.900 mm.

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

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

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

2.8. **Jointing the pipes :**

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

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

2.9. **Laying pipes in Trenches :**

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

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

3.0. **Mode of measurements & payment**

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

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

23.111.(A)(I) **Providing and fixing water closet squatting pan (Indian type W.C. Pan) size 580 mm. (Earth work, bed concrete, foot-rests and trap to be measured and paid for separately). Vitreous china. Long pattern white colour.**

1.0. **Materials**

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

2.0. **Workmanship**

2.1. The pan shall be sunk into the floor and embedded in a cushion of average 15 cm. cement concrete 1:5:10 (1 cement : 10 graded stone aggregate or brick aggregate 40 mm. nominal size) or and its bed concrete, the floor should be left 115 mm. below the top level of the pan so as to allow for flooring and its bed concrete. The floor should be suitably stopped so that the waste water is drained into the pan. The shall be provided with 100 mm. 'P' or 'S' trap as specified in the item No. 23.113 with approximately 50 mm seal-The joints between the pan and the trap shall be made leak-proof with cement mortar 1:1 (1 cement : 1 fine sand).

3.0. **Mode of measurements and payment**

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

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

3.3. The 'P' or 'S' trap unit of One number.

23.70. **Providing and fixing cast spigot and sockets soil, waste, and ventilating pipes of the following normal size (B) 75 mm. dia. (C) 100 mm. dia.**

1.0. **Materials**

1.1. The specified dia. C.I. Spigot and socket soil or waste pipe shall conform M-68.

2.0. **Workmanship**

2.1. The fixing of C.I. spigot and sockets soil, waste and ventilating pipe shall be carried out as per relevant specifications of item 15.93 (B) except the C.I. spigot and socket shall he fixed. The joints shall be filled with cement mortar 1:2 (1 cement : 2 sand) span spun yarn. The joints shall be filled with cement mortar 1.2 (1 cement : 2 sand) and spurn yarn. The pipes without care shall be fixed to wall with M.S. clamps The pipes will earns shall be secured with 40 mm before steel or iron barrel distance pieces or boils and stout galvanised iron nails 10 cms long into hand wool plug fixed in walls. Access doors to fittings shall be provided with 3 mm. rubber insertion packing and secured without screws to made air and water tight

2.2. All soil pipes shall be earned up above the roof and shall have a wire ball on guarded or a cowl.

2.3. The ventilating pipe or shaft shall be carried out to a height of at least one meter above the outer covering of the roof of the building or in the case of windows in a gable wall or a dormer windows, it shall t carried up to a ridge of the roof or at least tow meters above the top of the windows. In case of flat roof to which access for use is provided, it shall be carried out up to a height of at least on meter above the parapet or two meters measured vertically from the top of any windows or opening which any exist up to a horizontal distance of five meters from the vent pipe into such building and in no case shall be carried out to a height less then three meters.

2.4. Where ventilating pipes are carried in pipe shafts, the shaft shall be of a minimum size of one meter. If the shells are also used to give fight and air to rooms, the ventilating pipes must be carried out to a horizontal distance at root level not loss than five meter from the site of the shaft.

2.5. The sand cast iron pipes above parapet shall be fixed with M.S. clamps and stays. The clamps shall be made from 1.5 mm. thick MS flat or 3 mm. width band to the required shape and size to fit tightly one the sockets when tightened with screw bolts. It shall be formed of two semi circular pieces with flanged ends on both sides, with holes to fit in the screw bolts and nuts 40 mm. dia. M.S. Bars, One end of the stay shall be bent to form a hook to be fixed with clamps by means of bolts and the other end shall be bent for embedding in wall in cement concrete block of size 200 mm. x 100 mm. x 100 mm. in 1:2:4 mix. The concrete shall be finished to match the surrounding surfaces.

2.6. The connection between the main pipe and branch pipes shall be made by using branches and bends with access doors for cleaning

2.7. The waste from lavatories, kitchens basins, sinks, baths and other floor traps shall be separately connected to respective stacks of upper floor. The waste stack of lavatories shall be connected directly to main hole while the waste stack of other shall be separately discharged over gulley trap.

3.0. **Mode of measurements and payment**

3.1. The length of pipe shall be measured including all fittings along its length in running meters correct to a centimeter. No allowance shall be made for the portion of pipe length entered in the sockets of the adjacent pipe of fittings.

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

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

23.87. **Providing and fixing cast iron (spun) Nahni trap of the following nominal diameter of self cleaning design with C.I. Screwed down or hinged grating including cost of cutting and making good the waifs and floors : 100 mm. Inlet and 50 mm. outlet.**

1.0. **Materials**

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

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.

23.112.(A)(I) **Providing and fixing wash down water closet (European type W.C. Pan) with integral 'P' or 'S' trap including jointing the trap with soil pipe in C.M. 1:1 (1 cement : < fine sand) (seat and cover to be measured and paid for separately) ; Vitreous china pattern : In white colour,.**

1.0. **Materials**

Wash down water closet (European type W.C. Pan) shall conform to M-60. Cement mortar shah 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 ho made with C M. 1:1 (1 cement : 1 fine sand).

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 sent 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.

23.113.(A) **Providing and fixing 100 mm. size 'P' or 'S' trap for water closet squatting pan including jointing the trap with the pan arid soil pipe in cement mortar 1:1 (1 cement : 1 fine sand) Vitreous China.**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements and payment**

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

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

23.114. **Providing and fixing in C.M. 1:3 (1 cement : coarse sand) a pair of white vitreous china 250 mm. x 130 mm. 30 mm. foot rest for long pattern squatting pan water closet.**

1.0. **Materials**

1.1. The pair of white vitreous china foot-rests shall conform to M-62 Cement mortar shall conform to M-11.

2.0. **Workmanship**

2.1. After laying the floor, the floor shall be suitably sloped so that the waste water is drained into the pan A pair of foot-rests of size 250 mm. x 130 mm. x 30 mm. of white vitreous china shall be set in cement mortar 1:3 (1 cement ; 3 coarse sand). The foot-rests shall be fixed at a distance of 175 mm. from the inner edge of the back side of the pan and shall be fixed at convenient angle.

3.0. **Mode of measurements & payment**

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

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

23.115.(A)(I) **Providing and fixing 12.5 liters low level flushing cistern with a pair of C.I. or mild steel brackets complete with fittings such as lead valve less syphon, 15 mm. nominal size brass ball valve with polythene float, C.P. brass ball handle, unions and couplings for connections with inlet, outlet and overflow pipes, 40 mm. dia. porcelain enameled flush bend including cutting holes in walls and making good the same and connecting the flush bend with cistern and closet (overflow pipe to be measured and paid for separately) : Vitreous China. In white colour.**

1.0. **Materials**

1.1. The low level vitreous china (Enamel) flushing tank shall conform to M-65 except that the flushing cistern shall be 12.5 liters low level type as mentioned in the item.

2.0. Workmanship

2.1. The low level cistern shall be firmly fixed on two C.I. or mild steel, brackets which shall be firmly embedded in the wall in C.M. 1:4 (1 cement : 4 fine sand).

2.2. The height of the bottom of the cistern from the top of the pan shall be 30 cms of low level flushing cistern shall be connected to the closet by means of 40 mm. dia, white porcelain enameled flush bend using Indian rubber adapts joints. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials, non-ferrous metal or galvanised steel. The flush pipe from the cistern shall be connected to the closet by means of cement of red-lead.

3.0. **Mode of measurements & payment**

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

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

23.116. **Providing and fixing 12.5 liters level C.I. flushing with a pair C.I. or mild steel brackets, complete with fittings such as syphonic arrangement, 15 mm. nominal size brass ball valve with polythene flat, lever. G.I. China (60 cms.) and pull unions and couplings for connections with inlet, outlet and overflow pipes etc. including cutting holes in walls and making good the same (overflow pipe to be measured and paid for separately).**

1.0. **Materials**

1.1. The high level C.I. flushing cistern shall conform to M-66, except that the flushing cistern shall be of 12.5 liters high level C.I. cistern as mentioned in the item.

2.0. **Workmanship**

2.1. The cistern shall be fixed on two C.I. or mild steel brackets which shall be firmly embedded in the wall in cement mortar 1:4 (1 cement : 4 fine sand).

2.2. The height of the bottom of the cistern from the top of the pan shall be two meters.

2.3. The W.C. Pan shall be connected to the cistern by galvanised steel flush pipes of 32 mm. nominal internal diameter. The flush pipe shall be fixed to wall by using clamps. The flush pipe from the cistern shall be connected to the closet by means of cement of red-lead. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials non-ferrous metal or galvanised steel.

2.4. The chain and the pull union shall be fixed to the protruding level arm of the flushing cistern.

2.5. The whole installation shall be tested for leak-proof joints and satisfactory functioning.

3.0. **Mode of measurements & payment**

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

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

23.117. **Providing and fixing in position with clamps etc. 32 mm. nominal internal dia. galvanised steel tube flush pipe for high level flushing cistern including connecting the flush pipe with cistern and closet and making good the walls and floors.**

1.0. **Materials**

1.1. The 32 mm. nominal internal dia, galvanised steel tube flush pipe shall conform to M-56.

2.0. **Workmanship**

2.1. The W.C. pan shall be connected to the cistern by galvanised steel flush pipe of 32 mm nominal internal diameter. The flush pipe shall be fixed to wall by using clamps.

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

2.3. The flush pipe shall be securely connected to the cistern outlet by means of coupling nut made of any non-corrosive materials, non-ferrous metal or galvanised steel.

3.0. **Mode of measurements and payment**

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

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

23.120. **Providing and fixing G.I. inlet connection for flush pipe with W.C. Pan.**

1.0. **Materials**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements & payment**

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

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

23.127. **Providing and fixing wash basin with single hole for pillar top white C.I. or M.S, brackets painted white including cutting holes, and making good the same but excluding fittings, vitreous china flat back wash basin 550 mm. x 400 mm. in white colour.**

1.0. **Materials**

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

2.0. **Workmanship**

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

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

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

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

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

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

3.0. **Mode of measurements & payment**

3.1. The rate includes cost of all labour, materials, 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.

23.130.(C) **Providing and fixing kitchen sink with C.I. or M.S. brackets painted white including cutting holes in walls and making good the same of but excluding fittings. Vitreous china sink 600 mm. x 450 mm. x 150 mm. size.**

1.0. **Materials**

1.1. White glazed vitreous china sink 600 mm. x 450 mm. x 150 mm. size shall conform to M-63.

2.0. **Workmanship**

2.1. The kitchen sink shall be supported on a pair of M.S. or C.I. brackets fixed in cement mortar 1:3 (1 cement : 3 coarse sand). The M.S. or C.I. brackets shall conform to I.S. 775-1962. The wall plaster on the rear shall be cut to rest over the top edge of the sink. After fixing the sink, plaster shall be made good and he surface finished to match with the existing one.

2.2. The C.P. brass trap and union shall be connected to 40 mm. nominal bore galvanised mild steel waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to gully-trap or direct into the gully-trap on the ground on floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where surface drain or a floor trap is placed directly under the sink and the waste is discharged to it vertically.

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

3.0. **Mode of measurements & payment**

3.1. The rate includes cost of all labour, materials, tools and plant and other equipment required for satisfactory completion of this item as described in workmanship.

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

23.135 (A) Providing and fixing 32 mm, dia. C.P. brass waste for wash basin or sink.

1.0. Materials

1.1. The C.P. brass trap and unions shall be of 32 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 nun fin. The rate excludes the cost of waste pipe of 32 mm. dia.

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

23.135.(B) Providing and fixing 40 mm dia. C.P. Brass waste for wash basin or sink.

1.0. Materials & Workmanship

1.1. The relevant specifications of item 23.135 (A) shall be followed except that the diameter of C.P. brass waste is 40 mm dia.

2.0. Mode of measurements & payment

2.1. Thu rate shall be for a unit of One number.

23.136.(A) Providing and fixing 32 mm. dia. M.I. union for wash basin or sink.

1.0. Materials

1.1. Tho 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.

23.136.(B) Providing and fixing 40 mm, dia. M.I. fisher union for wash basin or sink.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 23, 136 (A) shall be followed except that the diameter of M I fisher union shall be 40 mm. dia.

2.0. Mode of measurements of payment

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

23.139. Providing and fixing 100 mm. dia, sand cast iron grating for gulley floor or Nahni tarp.

1.0. Materials

1.1. The- 100 mm. dia. sand cast iron gratings for gulley, floor or Nahni trap shall be of best quality and make as approved.

2.0. Workmanship

2.1. The CAST IRON grating shall he provided to gulley trap floor or Nahni trap as the case may be in best workmen like manner.

3.0. Mode of measurements and payment

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

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

23 :141.(A) Providing and fixing 100 mm. dia, C.P, brass shower rose with 15 mm or 20 mm. inlet.

1.0. Materials

1.1. 100 mm. dia C P. brass shower lose shall confirm to I S. 2556-1972 part - XI and of best quality and makes as approved by engineer-in-charge. The inlet of shower rose shall be 15 mm dia. or 20 mm dia. as directed.

2.0. **Workmanship**

2.1. The C.P. brass shower rose shall be fixed as directed with 15 mm. dia. or 20 mm. dia. G.I. inlet pipe as the case may be.

3.0. **Mode of measurements and payment**

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

3.2. The rate shall be for a one number.

23.143: **Providing and fixing 600 mm. x 450 mm. beveled edge minor of superior glass mounted on 6 mm. thick A.C. Sheet or plywood sheet and fixed to wooden plugs with C.P brass screws and washers,**

1.0. **Materials**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements & payment**

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

23.144.(B) **Providing and fixing 600 x 20 mm. C.P. brass towel rail complete with C.P. brass brackets fixed to wooden plugs with and C.P. brass screws.**

1.0. **Materials**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements and payment**

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

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

23.145. **Providing and fixing 600 mm. x 120 mm. glass shelf with C.P. brass brackets and guard rail complete, fixed to wooden plugs with C.P. brass screws.**

1.0. **Materials** : The glass shelf of 600 mm. x 120 mm. size-shall be of 5 mm. thick plate glass. The edge of the glass shall be grounded. The C.P. over brass guard rail shall be best quality and make.

2.0. **Workmanship**

2.1. The C.P. brass brackets of the glass shelf shall be fixed with C.P. screws to wooden plug firmly embedded in the wall C.M. 1:3 (1 cement : 3 coarse sand). The C.P. guard rail shall be fixed to glass shelf as directed.

3.0. **Mode of measurement and payment**

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

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

23.146.(A) **Providing and fixing C.P. brass toilet paper holder.**

1.0. **Materials** : The toilet paper holder shall be of best quality and make, chromium plating shall be of grade 'B' type conforming to I.S. 1068-2958.

2.0. **Workmanship**

2.1. The toilet paper holder shall be fixed in position be means of screws and wooden plugs embedded in wall with cement 1:3 (1 cement : 3 coarse sand).

3.0. **Mode of measurements and payment**

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

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

23.92.(A)(I) **Providing and fixing brass screw down bib taps of following size. Polished bright : 14 mm. dia.**

1.0. **Materials** : 15 mm. dia. brass screw down with bright polished finished shall conform to I.S. 781-1977. The bib cock shall be best Indian make and quality.

2.0. **Workmanship**

2.1. The screw down bib cock 15 mm. as specified above shall be fixed as directed. The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn round the screwed end of the pipe. The bib cock shall be then screwed and fixed to water tight position.

3.0. **Mode of measurements and payment**

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

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

23.92.(A)(II) **Providing and fixing brass screw down bib taps of following size : Polished bright: 20 mm. dia.**

1.0. **Materials and Workmanship**

The relevant specificaiions of item 23.92 (A) (i) shall be followed except that the bib taps of 20 mm. dia shall be fixed.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 23.92 A(i) shall be followed.

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

23.92.(B)(I) **Providing and fixing chromium platted brass screw down bib taps of the following size : 15 mm. dia.**

1.0. **Materials and workmanship**

The relevant specification of item No. 23.92 (A) (I) shall be followed except that the brass chromium plated screw down tap of 20 mm. dia. shall be fixed.

2.0. **Mode of measurements & payment**

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

23.92.(B)(II) **Providing and laying chromium plated brass screw down bib taps of following size : 20 mm. dia.**

1.0. **Materials and workmanship**

The relevant specifications of item No. 23.92 (A) shall be followed except that the brass chromium plated screw down tap of 20 mm. dia. shall be fixed.

2.0. **Mode of measurements & payment**

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

23.92.(C)(I) **Providing and fixing gun metal screw down bib taps of the following size : 15 mm. dia.**

1.0. **Materials and workmanship**

1.1. The relevant specification of item No. 23.9*3 (A) (I) shall be followed except that the 15 mm. dia. gun metal screw down bib tap shall be fixed.

2.0. **Mode of measurements & payment**

2.1. The rate shall be for a unit of One number,

23.92.(C)(II) **Providing and fixing gun metal screw down bib taps of following size : 20 mm. dia.**

1.0. **Materials & Workmanship**

1.1. The relevant specifications of item 23.92 (A) (i) shall be followed except that the 20 mm. dia. gun screw down bib tap shall be fixed.

2.0. **Mode of measurements & payment**

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

23.95(A) **Providing and fixing pillar tap capstan head screw down high pressure with screw shank and back nuts : (A) 14 mm. dia. (B) 20 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.

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.

23.96(A) **Providing and fixing brass screw down stop cock (A) 15 mm. dia. (B) 20 mm. dia. (C) 25 mm. dia.**

1.0. **Materials** : The brass screw down stop cock of specified 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.

23.99. **Providing and fixing gunmetal check or non-return valve. (A) 15 mm. dia. (B) 20 mm. dia. (C) 25 mm. dia. (D) 32 mm. dia. (E) 40 mm. dia.**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements and payment**

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.

23.00. **Providing and fixing chromium plated brass half turn flush cock of approved quality including fixing in pipe line etc. complete (I) 20 mm. dia. (II) 25 mm. dia. (III) 32 mm. dia.**

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

2.0. **Workmanship**

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

3.0. **Mode of measurements and payment**

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

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

23.00.4. **Providing and fixing chromium plated bottle trap with necessary coupling of approved quality for wash basin.**

1.0. **Materials** : The chromium plated bottle trap shall be approved make and of best quality. The bottle trap shall be provided wit coupling.

2.0. **Workmanship**

The bottle trap shall be fixed on wash hand basin with wooden gullies and screws as directed. The work shall be carried out in best workman like manner.

3.0. **Mode of measurements and payment**

3.1. The rate includes cost of all materials and labour involved for satisfactory completion of this item.

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

23.122.(A) **Providing and fixing urinal of approved quality including connecting the urinal with waste pipe trap etc. complete : whit earthenware flat back or corner type size 430 mm. x 260 mm. x 350 mm.**

1.0. **Materials:** The white earthenware flat back or corner type urinal of size 4'30 mm. x 260 mm. x 350 mm. shall conform to M-64.

2.0. **Workmanship**

2.1. The urinals shall be fixed in position by using wooden plugs and screws and shall be at a height 65 cms. from the Moor level to the top of the lip of urinal, unless otherwise directed. The wooden plugs shall be of 50 mm. x 50 mm. at base tapering to 38 mm. x 38 mm. at top 50 mm. in length shall be fixed in wall in steel waste pipe which shall discharge in the channel or floor a tap. The connection between the urinal and flush or waste pipe shall be made by means of putty or white lead mixed with chopped hemp.

3.0. **Mode of measurements and payment**

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

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

23.124.(A) **Providing and fixing urinal of approved quality including connection with trap and with integral longitudinal flush pipe squatting plate pattern white earthenware 550 mm. x 300 mm.**

1.0. **Materials** : The squatting plate pattern, white glazed earthenware urinal of 550 mm x 300 mm shall conform to I.S. 771-1063. It shall be test India make.

2.0. **Workmanship**

2.1. The squatting plate urinal shall be fixed as directed.

2.2. The top edge of the squatting plate shall be flush with the finished floor level adjacent to it. It shall be embedded on a layer of 25 mm. thick cement mortar 1:8 (1 cement: 8 find sand) laid over a bed of brunt brickbat cement 1:5 :10(1 cement: 5 fine sand, 10 graded brick aggregate 20 mm. nominal size). There shall be 100 mm. dia. glazed earthenware or vitreous china channel as specified with stop and outlet pieces suitably fixed in floor in cement mortar 1:3 (1 cement: 3 coarse sand) and joint finished with white cement. The earthenware vitreous china shall discharge into 65 mm. C.P. brass outlet grating. The trap and fitting shall be fixed as directed.

3.0. **Mode or measurements and payment**

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

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

23.134 **Providing and fixing rubber plug for sink or wash basin.**

1.0. **Material:** The rubber plug for sink or wash hand, basin shall be best quality and make as approved by the Engineer-in-charge.

2.0. **Workmanship -**

2.1. The rubber plug with plain shall be fixed in wash basin or sink as directed.

3.0. **Mode of measurements and payment**

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

23.00.5.(A) **Providing and fixing ball cock of approved quality as directed (Copper metal) : (I) 25 'mm. dia. (II) 50 mm. dia;**

1.0. **Materials :**

The ball cock of specified diameter shall conform to M-75

2.0. **Workmanship**

The ball cock of specified diameter shall be fixed as directed. The fixing of ball cock shall be carried out as per relevant specification of item No. 23 (A) for joints etc.

3.0. **Mode of measurement & payment**
3.1. The rate includes-cost of all materials and labour involved for carrying out satisfactory work.
3.2. The rate shall be for a unit of One number.

23.00.5.(B) **Providing and fixing ball cock of approved quality as directed : Ebonite. (I) 25 mm. dia. (II) 50 mm. dia.)**

1.0. **Materials & Workmanship :** The relevant specifications of item No. 23.00.5 (A) shall be followed except that the ball cock of specified dia of Ebonite shall be fixed.
2.0. **Mode of measurements & payment**
2.1. The relevant specifications of item NO. 23.00.5 (A) shall be followed.
2.2. The rate shall be for a unit of One number.

23.00.6. **Providing and fixing C.I. Manhole cover 0.60 C.M. x 0.45 C.M. size having weight not less than 35 kg.**

1.0. **Materials**
C. I. Manhole cover of 0.60 x 0.45 Cms. size shall be of best quality. The eight of C.I. cover and frame shall into be less than 35 Kg. The C.I. manhole cover shall be of light duty and conform relevant I.S.
2.0. **Workmanship**
2.1. The C.I. Manhole cover shall be fixed as per relevant specifications of item No. 24.44 except that the C.I. cover shall be fixed ad and where directed.
3.0. **Mode of measurements and payment**
3.1. The rate includes cost of all laobur and materials required for satisfactory completion of this item.
3.2. The rate shall be for a unit of One number.

23.00.7. **Providing and fixing G.I. water spout of 50 mm. dia. and 30 cms length.**

1.0. **Materials :** G.I.M.S. type of 50 mm. dia. shall conform to M-56.
2.0. **Workmanship**
2.1. The G.I. pipe of 30 cms. fixed as rain water pipe as directed. The pipe shall be fixed about 1/4 dia. below the floor level so as to make approach of water easy. The inlet of pipe shall be rounded off for easy entry of rain water pipe. The pipe shall be fixed in C.M. 1:3.
3.0. **Mode of measurements & payment**
3.1. The rate includes of all labour and materials required for satisfactory completion of this item.
3.2. The rate shall be for a unit of One number.

23.8. **Providing and fixing to wall ceiling and floor 6 Kg/ Sq. cm, working pressure outside diameter, low density completion with special flange compression type fittings /wall clips etc. including making good the wall, ceiling and floor. (A) 20 mm. dia. (B) 25 mm. dia. (C) 32 mm. dia. (D) 40 mm. dia. (E) 50 mm. dia.**

1.0. **Materials :** The low ,density polythene pipe of specified diameter with 56 Kg/f. Sq. Cm. working pressure shall conform to I.S. 3076-1968. The specials and fittings required shall be of best quality.
2.0. **Workmanship**
2.1. The P.V.C Pipes of specified diameter shall be fixed as directed. Due to thermal expansion of rigid P-V.C. Pipes, due allowances shall be made particularly in over-ground pipe line for any change in length of pipe line which may occur during installation or when pipe fine is in service.
2.2. Above ground installation of rigid P.V.C. pipe should be undertaking after precautions are observed for their protection again dirt, sun rays and mechanical damage.
2.3. The rigid P.V.C. tines should not be kept exposed above ground when it passes through public places, railway lines, roads, road side and foot paths.
2.4. 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. Close support spacing shall be provided if recommended by the manufacturer.
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. P.V.C. pipes shall be fixed on wall with wooden plugs suitable plastic clamps.

2.8. **Jointing the pipes :**

2.8.1. The pipes and socket s 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 shall be applied to the matching surface and pushed home and joint. Since solvent cement is aggressive to P.V.C. care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags of paper 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 solid found to be free of presence of hard object such as large feints, 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 inducted stresses due to retraction. Any deviation required shall be obtained by using proper type of rubber ring joints.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item No. 23.2. (A) shall be followed except that the P.V.C. pipes of specified dia. shall be paid under this item.

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

SECTION-24

24.1.(A) Providing any laying (two level or slopes) and jointing with stiff mixture of cement mortar in proportion 1:1 salt glazed stone-ware pipes, following nominal internal diameters including testing of pipes and joints complete : 100 mm. dia.

1.0. Materials

(I) Water shall conform to M-1(2) Cement mortar of proportion 1:1 shall conform to M-11. (3) 100 mm. dia. glazed stoneware pipe shall conform to M-71.

2.0. Workmanship

2.1. The trenches for stoneware pipe drains shall be carried out as per relevent specifications of item No. 23.4 (A) except that the work is for stoneware pipes of 100 mm. dia.

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 seckets 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 450 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 form 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 nay 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. Mode of measurements and payment

3.1. Pounding or buttering of the fit trenches bed to the lower part of the pipe and "Grips" dug to take socket, collars etc. are included in the rate of laying the pipes.

3.2. The measurements shall be net without any allowance for cutting, and waste. The length of bends, junctions, and other connections shall be included in the total length of the drain pipes. Nothing extra shall be paid for the same. The rate includes necessary excavation refilling trenches etc. complete,

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

24.1.(B) Providing and laying and jointing salt glazed stoneware pipes with lime concrete 1:2:4 (1 lime :2 fine sand : 4 graded brick aggregate 40 mm, nominal size)bedding with necessary form work and curing etc. complete : 150 mm. dia.

1.0. **Materials & Workmanship :** The relevant specifications of item 24.1.(A) shall be followed except that the that diameter of pipe shall be 150 mm. dia.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No, 24.1. (A) shall be followed.

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

24.2.(A) **Providing and laying cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone : aggregate 40 mm. nominal size) bedding for stoneware pipe of following internal diameter with necessary form work and curing complete : 100 mm. dia. 300 mm. width (112 mm. average bed thickness).**

1.0. **Materials** : (1) Water .shall conform to M-1 (2) Cement shall conform to M-3. (3) Sand shall conform to M-6 (4) Stone aggregate 40 run nominal size shall conform to M-12.

2.0. **Workmanship**

2.1. The relevant specifications of item 5.3.4. shall be followed except that the concrete work shall be carried out in trenches as bedding for stoneware pipes. The width of concrete shall be 300 mm. and average thickness of bedding shall be 112 mm The concrete shall be brought up attest to the invert level of the pipe to form a cradle and to avoid line contact between the pipe and the bed.

3.0. **Mode of measurements & payment**

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

3.2. The rate includes cost of necessary form work required if any

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

24.2.(B) **Providing and laying cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm. nominal size) bedding for stoneware pipe of following internal diameter with necessary form work and curing complete : 150 mm. dia. 450 mm. width (166 mm. average bed thickness),**

1.1. **Materials & Workmanship :** The relevant specifications of item 24.2 (A) shall be followed except that the cement concrete work shall be carried out for bedding of stoneware pipe of 150 mm. dia. The average thickness of bedding shall be- 166 mm. and width shall be 450 mm.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 24.2 (A) snail be followed.

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

24.19(1) **Providing and fixing S.W. gully trap with C.I. grating brick masonry chamber and watertight C.I. cover with frame of 300 mm. x 300 mm. size (Inside) with standard weight : (A) square mount taps 100 mm. x 100 mm. size P. type**

1.0. **Materials :** (t) Water shall conform to M-1. (2) Cement mortar of proportion 1:5 shall conform to M-11. (3) Burnt brick shall conform to M-15. (4) The S.W. Galley trap of 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 item 4.0.0.of earth work.

2.2. **Fixing:**

2.2.1. The gully trap shall be fixed over cement concrete 1:5:10 (I 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 No. 24.1 (A).

2.3. **Brick masonry chamber :** After fixing and testing gulley and branch drain, a brick masonry 300 x 330 mm. inside with bricks in CM 1:5 (1 cement : 5 sand) shall be built with a 100 mm. brick work round on 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 of so as to slope towards the grating.

2.4. C.I. cover with frame 300 mm. x 300 mm. (inside) size shall then be fixed on the top of the brick masonry with C.c. 1:2:4 (1 lent : 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.

3.0. **Mode of measurements & payment**

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

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

24.22. **Providing and laying (to level or slopes) and jointing reinforced concrete light duty non-pressure pipes I.S. class N.P. 2 of the following internal diameters with collars and butt ends prepared for collar joints including testing of joints etc. complete. (B) 150mm. (C) 250 mm. (D) 300 mm. (E) 450 mm. (F) 500 mm. (G) 600 mm. (H) 900 mm.(K) 1000mm. (M) 1200 mm.**

1.0. **Materials** : The reinforced concrete light duly non-pressure pipes of specified diameter shall conform to I.S. 458-1971.

2.0. **Workmanship**

2.1. The relevant specifications of item No. 24.1. A shall be followed for work of trenches except that the excavation in trenches shall be for. reinforced concrete pipes of specified diameter.

2.2. **Laying**

2.2.1. The pipes shall be lowered into the trenches carefully. Mechanical appliances may be used. Where necessary pipe shall be laid in straight lines or with easy curves and true to line and gradient as specified. The laying of pipe shall proceed upgrade of a slope. In the pipe spigot and socket joints, the socket ends shall face upstream. In case of pipes with joints to be made with loose collars, the collars shall be slipped on before the next pipe is laid.

2.2.2. In case where the foundation conditions are unusual such as the proximity of trees or holes, under existing or proposed all round in 150 mm. thick cement concrete 1:5; 10 (1 cement: 5 fine sand : 10 graded stone aggregate 40 mm. nominal size) or compacted sand or gravel:

2.2.3. In case where the natural foundation is inadequate the pipes shall be laid either in concrete cradle, supported on proper foundations or on any other suitably designed structure. If concrete bedding is used, the depth of concrete below bottom of the pipe shall be at least 1/4th of the internal diameter of the pipe subject to a minimum of 100 mm. and a maximum 300 mm. The concrete shall be extended up the sides of the pipe at least to a distance of 1/4th of the outside diameter for pipes 300 mm. and over in diameter.

2.2.4. The pipes shall be laid in the concrete bedding before the concrete has set. Pipes laid in trenches in earth shall be bedded evenly and firmly and as far as up to the haunches of the pipe as to safely transmit the load expected from the back fill through the pipe to the bed. This shall be done either by excavating the bottom of the trenches to fit the curve of the pipe or by compacting the earth under a round curve of the pipe to form an even bed, Necessary provision shall be made for joints wherever required.

2.3. **Jointing**

2.3.1. The joints shall be done by slipping the collar over and clear of the end of the pipe. The recess of the end of the pipe shall be filled with jute braiding in hot bitumen. The new pipe shall then be brought forwarded until the bitumen ring in recess of first pipe is set into the recess of the second pipe. The process shall be repeated for two or three pipes which shall then jacked up so as to thoroughly compress the bitumen. The quantity of jute and bitumen shall be just enough to fill the recess when pressed hard by jacking, care being taken that no offset of the jute braiding shall be visible either outside or inside of pipe. The collar shall then be set up over the joints covering equally both the pipe and leaving, an even caulking space all round. Cement and sand mortar: 1: 1.1/2 shall then be well punched or pressed home with a caulking tool within this caulking space. Care shall be taken that the underside of the joints is properly filled with mortar.

2.4. **Curing**

2.4.1. Every joints shall be kept wet for about 10 days for maturing. The section of the pipe line laid and jointed shall be covered immediately to protect from weather effects. Minimum bore of 100 mm. is considered adequate.

2.4.2. The joints shall be left exposed for observation.

2.5. **Testing of Joints :**

2.5.1. The testing of joints shall be done as per relevant specifications of item No. 24.1 (A) **except that** the testing of reinforced concrete pipes shall be done.

3.0. **Mode of measurements & payment**

3.1. The relevant specifications of item 24.1 .(A) shall be followed except that the rate includes for laying to level or slope in trenches etc. (measured separately), making the joints a; Seated and testing to stand the water test.

3.2. The measurements shall be net without any allowance for cutting and waste. The length of bends, junctions and other connections (measured along the centre line) shall be included in the total length of the pipes, the connections being numbered afterwards and paid for extra over pipes.

3.3. The size of bend, junctions, etc, shall suit the size of pipe. The bore (internal diameter of pipe) shall be the criterion for payment.)(

3.4. Nothing extra shall be paid separately for the use of mechanical appliances, where necessary, as described above.

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

2.4.27. **Costing Manhole with R.C.C. Top slab in 1:2:4 mix (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 bricks bats 40 to 50 mm. size) inside plastering 15 mm. thick with C.M. 1:5 (1 cement : 5 coarse sand) finished with floating coat of neat cement and making channels in C.C. 1:2:4 mix (1 cement : 2 coarse sand : 4 stone aggregate 20 mm. nominal size) finished smooth complete including curing and testing (I) inside size 900 mm. x 120 mm. and 1.5 mm. deep, including C1 cover with frame size 560 mm. diameter, total weight of cover and frame to be not less than 128 Kgs. (Wt. of cover 64 Kg. and Wt. of frame 64 Kg.) (A) With 230 mm. thick walls of brick masonry using bricks having crushing strength not less than 35 kg/sq. cm. in C.M. 1:5 (1 cement : 5 coarse sand)**

i.	A type depth	0.90 meter for	150 mm. sewer
ii.	B type depth	1.50 meter for	150 mm. sewer
iii.	C type depth	2.25 meter for	150 mm. sewer
iv.	D type depth	3.15 meter for	150 mm. sewer

1.0. **Materials :** Water shall conform to M-1. Cement shall conform to M-6. Burnt bricks shall conform to M-15. Brick bats of 40 to 50 mm. size shall conform to M-14. Stone coarse aggregate of 20 mm. nominal size shall conform to M-12. Grit shall conform to M-8. Cement mortar of specified proportion shall conform to M-11. The cast iron manhole cover of 560 mm. dia. with frame shall conform to I.S. 1726-1966.

2.0. **Workmanship**

2.1. The manholes of different types and sizes as specified shall be constructed in sewer line at such places and to such levels and dimension as shown in drawings of as directed.

2.2. The manholes shall be built on a bed of cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 brick bats) (40) to 50 mm. nominal size) to the thickness of the bed concrete shall be 15 cms. for manhole up to 1. M. depth and 20 cms. for manholes over meter and up to over meter and up to 2 meters, depth and 30 cms. for manholes o greater depth.

2.2.2. Projection of bed concrete beyond the masonry wall shall be 15 cms.

2.3. **Walls**

2.3.1. The walls of manhole shall be carried out with burnt bricks using having bricks. crushing strength not less than 35 Kg/Cms in C.M. 2 in C.M. 1:5 (1 cement : 5 coarse sand). The thickness of brick masonry wall shall be 230 mm. The jointing face of such .brick shall be well buttered with cement mortar before laying so as to ensure a full joints.

2.4. **Plaster**

2.4.1. The inside of walls shall be plastered 15 mm. thick with C.M. 1:5 (1 cement : 5 coarse sand) and finished with floating coat of neat cement. All angles shall be rounded to 7.50 cms. radius and all rendered internal surfaces shall have hard impervious finish obtained by using a steel trowel. The external joints of masonry shall be finished smooth.

2.5. **Channels & Benching :**

2.5.1. Channels shall be semicircular in the bottom half and of diameter equal to the sewer. Above the horizontal diameter, the sides shall be extended vertically to the same level as the crown of the out going pipe and the top edge shall be suitably rounded off. The branch channels snall also be similarly constructed with respect to the benching but at their junction with the main channel an appropriate fall suitably rounded off in the direction of flow 'he main channel shall be given.

2.5.2. The channel and benching shall be done in C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) rising at a slop in line from edges of channel. The channels of the bottom of the chamber shall be plastered with C.M. 1:2 (1 cement : 2 coarse sand) and steel troweled smooth.

2.6. **Cover slab:**

2.6.1. The cover slab of R.C.G. 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.

2.7. **Testing:**

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

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

3.0. **Mode of measurements and payment**

3.1. The depth of manholes shall be distance between the top of the manhole cover and the invert level of the main drain. The rate includes all labours, materials, tools, and plant etc. required for satisfactory completion of this item as directed above.

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

24.28.(I) **Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. or part thereof over item 24.47 (I) for depth from 0.90 to 1.5 M.**

1.0. **Materials and Workmanship**

The relevant specifications of item No. 24.27 (I) shall be followed for excavation same, except that the depth of manhole shall be done 0.1 M. or part there of more then 0.90 meter up to 1.5 M. The extra payment shall be made for additional depth of 0.1 M. or part thereof manhole done over and above the depth 0.90 meter.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 24.27 (I) shall be followed except that the extra rate shall be paid for every additional depth of 0.1. M. and part there of shall be paid over and above the rate of item No. 24.27 (I)

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

24.28.(II) **Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. and Part thereof over item 24.27 (II) for depth from 1.5 M. to 2.25 M.**

1.0. **Materials and Workmanship :** The relevant specifications of item No. 24.27 (II) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 1.5 M. up to 2.25 M. The extra payment shall be made for additional depth of 0.1 M. or part thereof manhole done over and above the depth 1.50 M. up to 2.25 M.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 24.27 (II) shall be followed except that the extra rate shall be paid for 0.1 M. or part thereof additional depth of manhole provided over and above item 24.27 (II).

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

24.28.(III) **Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. or part thereof over item 24.27 (III) for depth from 2.25 to 3.15 M.**

1.0. **Materials and Workmanship** : The relevant specifications of item No. 24.27 (III) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 2.25 M. up to 3.15 M. Extra payment shall be made for additional depth of 0.1. M. or part thereof manhole done over and above depth 2.25 M. up to 3.15 M.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of time No. 24.27 (III) shall be followed except that the extra rate shall be paid for every addition 0.1 M. or part thereof depth provided over and above it -m 24.27 (III).

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

24.28.(IV) **Extra rate for constructing B.B. masonry for every additional depth of 0.1 M. or part thereof over item 24.27 (IV) for depth above 3.15 M.**

1.0. **Materials and Workmanship** : The relevant specifications of item No. 24. 27 (IV) shall be followed except that the depth of manhole shall be done 0.1 M. or part thereof more than 3.15 M above. 1.2. Extra payment shall be made for additional depth of manhole 0.1 M. or part thereof done above 3.15 M. and above depth.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 24.27 (IV) shall be followed except that extra rate shall be paid for every additional 0.1 M. or part thereof depth provided for an above item 24.27 (IV).

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

24.33. **Providing and fixing C.I. steps of sizes 500 x 150 mm. 22.5 mm. and painting with two coats of anti-corrosive paint etc. complete.**

1.0. **Materials** : The C.I. steps of size 500 x 150 x 22.5 mm. size shall conform J.S. 5455-1969. Paint shall confirm to M-44.

2.0. **Workmanship**

2.1. The C.I. steps of size 500 x 150 x 22.5 mm. size shall be fixed in manhole as and where directed. The steps shall be staggered in vertical runs 380 mm. apart horizontally. The top step shall be 450 mm. below the. manhole cover and lowest not more than 300 mm. above the benching. The steps shall be embedded in wall of manhole with C.C. : 1:3:6 up to 200 m. depth and the surface finished with cement plaster 15 mm. thick in C.M. 1:5. The steps shall be painted with two coats of anti-corrosive paint.

3.0. **Mode of measurements & payment**

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

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

24.39. **Providing and erecting at the site of work steel ventilating column of 150 mm. internal dia. and 12.20 M. high from G.L. to bottom of top grill, including C.I. grill and base plate, bolts and nuts etc. and excavation in foundation of size 120 x 120 x 165 cms. and filling the pit with 1st layer of cement concrete 1:3:6 mix (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm. nominal size) of size 120 x 120 x 90 cm. and remaining pit with B.B,C.C. 1:3:6 mix (1 cement : 3 coarse sand : 6 brick bats 40 to 50 mm. size) and providing filled in cement concrete : 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) at G.L. and 3 coats of silver paint etc. complete.**

1.0. **Materials :**

The steel ventilating column internal dia. 150 mm. 12.20 m. high shall be of standard many and best quality as approved. Stone aggregate of 20 mm. nominal size shall conform to M-12. Brick-bats-40 to 50 mm. nominal size shall conform to M-4. Cement shall conform to M-3. Water shall conform to M-1. Silver (Aluminum) paint shall conform to I.S. 2339-1963.

2.0. **Workmanship**

2.1. The vent shaft shall be provided at the starting point of main sewer and at such points where the flow of sewerage is disturbed i.e. at falls, siphons etc. As far as possible, the location shall be at such a place where it receive Sundays for the maximum period of the day.

2.2. A pit of 120 x 120 x 165 ms. size shall be dug The cement concrete of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm. nominal size) shall be first laid in the pit to form 90 cms. thick

concrete foundation which shall be allowed to set for 24 hours. The vent shaft shall then be erected at the centre of the pit truly in plumb by means of such as shear legs, pullies, backless and rope etc.

2.3. The connection with sewer man-hole shall be made using 150 mm. diameter cement concrete pipe. After the connection is completed, the pit shall be filled with cement concrete : 1:3:6 (1 cement: 3 coarse sand : 6 brick bats 40 to 50 mm. nominal size) round the vent shaft up to ground level except top 150 mm. which shall be filled with C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) and rendered smooth. The junction of vent shaft with cement concrete shall be grouted with cement mortar 1:1 (1 cement : 1 sand). The concrete work shall be cured for 7 days.

2.4. The steel shaft shall be painted with silver paint (aluminum paint) 3 coats. The relevant specifications of item of painting shall be followed for painting.

3.0. **Mode of measurements and payment**

3.1. The rate shall include the cost of all labours and materials, tools and plant etc. required for satisfactory completion of this item as directed above.

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

24.00.1.(A) **Providing and laying lime concrete 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick aggregate 40 mm. nominal size) bedding for stoneware pipes of following internal diameters with necessary form work and curing complete : 100 mm. dia (112 mm. average, bed thickness).**

1.0. **Materials :** Water shall conform M-1. Lime mortar shall conform to M-10. Brick aggregate 40 mm. nominal size shall conform to M-14.

2.0. **Workmanship**

The relevant specifications of item No 5.1.8 shall be followed except that the proportion of mix shall be 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick bats aggregate 40 mm. nominal size) and the concrete work shall be done in trenches for bedding of stoneware pipes of 100 mm. dia. The width of concrete shall be 300 mm. and the thickness of bedding shall be 112 mm. average.

3.0. **Mode of measurements and payment**

3.1. The relevant specifications of item 24.2 (A) shall be followed.

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

24.00.1(B) **Providing and laying lime concrete 1:2:4 (1 Lime Putty : 2 fine sand : 4 graded brick aggregate 40 mm. nominal size) bedding for stoneware pipes of following internal diameters with necessary form work and curing complete :150 mm. dia. (166 mm. average bed thickness).**

1.0. **Materials and workmanship :** The relevant specifications of 24.00.1 (A) shall be followed except that the concrete bedding shall be carried out for 150 mm. dia. stoneware pipe. The width of concrete bedding shall be 450 mm. and the average thickness shall be 166 mm.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 24.2 (A) shall be followed.

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

24.27(1) **Extra over item 24.1 for providing salt glazed stoneware fittings : Bends of required degree (Any Radius) of following internal diameters : A-100 mm. dia. B-150 mm. dia.**

1.0. **Materials & Workmanship**

The relevant specifications of item 24.1 (A) shall be followed that the salt glazed stoneware bends of any degree of specified diameter shall be provided.

2.0. **Mode of measurement & payment**

2.1. The relevant specifications of item No. 24.1 (A) shall be followed except that extra payment shall be made for providing salt glazed stoneware bend of specified diameter or required degree of any radius over above the of item No. 24.1.

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

24.17.(I)(A) Extra over item 24.1 for providing salt glazed stoneware fittings : Taper bend of required degree of following internal diameter. 100 mm. x 150 mm.

1.0. **Materials & Workmanship :** The relevant specifications of item 24.1 (A) shall be followed except that the salt glazed stoneware taper bend of required degree of 100 mm. x 150 mm. shall be fixed.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item No. 24.1 (A) shall be followed except that extra payment shall be made for providing salt stoneware taper bend of required degree of 100 mm. x 150 mm. size over and above the rate of item No. 24.1.

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

24.17.(II) Extra over item 24.1 for providing salt glazed stoneware fittings : Single junction of required angle of following internal diameter (A) 100 mm. dia. (B) 150 mm. dia.

1.0. **Materials & Workmanship**

The relevant specification of item 24.1 (A) shall be followed except that the salt glazed stoneware single of junction required angle of specified diameter shall be fixed.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 24.1 (A) shall be followed except that the extra rate shall be paid for providing salt glazed stoneware single junction of required angle for specified diameters over and above the rate of item 24.1.

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

24.18. Providing and laying, jointing and jointing and pointing with stiff mixture of C.M. 1 : 1 (1 cement : 1 find sand) 150 mm. internal diameter salt glazed stoneware half round channels.

1.0. **Materials and Workmanship :** The relevant specifications of item 24.1 shall be followed except that the half round channels of 150 mm. internal diameters shall be fixed in cement mortar 1:1.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 24.1 (A) shall be followed.

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

24.35. Supplying and fixing C.I. cover 300 x 300 mm. without frame for gully trap (Standard pattern), weight of cover shall not be less than 4.53 Kg.

2.0. **Workmanship**

The C.I. cover 300 x 300 mm. size without frame shall be fixed on top of the brick masonry with cement concrete : 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate 20 mm. nominal size) 40 mm. thick and rendered smooth. The finished top of the cover shall be left about 40 mm. above the adjoining ground level so as to exclude the surface water from entering the gully trap.

3.0. **Mode of measurements and payment**

3.1. The relevant specifications of item No. 24.19 shall be followed.

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

24.40. Constructing brick masonry road gully chamber 500 mm. x 450 mm. x 600 mm. including 500 mm. x 450 mm C.I. horizontal grating with frame complete.

1.0. **Materials :** Water shall conform to M-1. Cement shall conform to M-3. Sand shall confirm to M-6. Brick shall conform to M-15. C.I. Grating of 500 x 450 mm. size of standard make shall be of approved quality. Stone aggregate 40 mm. nominal size shall conform to M-12. coal tar shall conform to relevant M-5.

2.0. **Workmanship**

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

frame. The size of grating indicate the clear internal dimensions of the C.I. frame of the grating.

2.2. The excavation shall be done to true dimensions and levels.

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

2.4. The wall of the chamber shall be constructed in brick work C.M. 1:5 and 23 Cms. thick as per relevant specifications of item 6.12(8).

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

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

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

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

3.0. **Mode of measurements and payment**

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

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

24.41. **Constructing brick masonry road gully chamber 450 mm. x 450 mm. x 775 mm. with vertical grating complete.**

1.0. **Materials and Workmanship** : The relevant specifications of item 24.40 shall be followed except size of road gully chamber is 450 mm x 775 mm. with vertical grating complete.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 24.40 shall be followed.

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

24.42. **Constructing brick masonry road gully chamber 1100 mm. x 500 mm. x 775 mm. including 500 mm. x 450 mm. C.I. horizontal grating with frame and vertical grating complete.**

1.0. **Materials and Workmanship** : The relevant specifications of item 24.40 shall be followed except that the size of road gully chamber shall be 1100 mm. x 500 mm. x 775 mm. including 500 mm. x 450 mm. C.I. horizontal grating with frame and vertical grating complete.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item No. 24.40 shall be followed.

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

24.44(1). **Constructing brick masonry chamber for underground C.I. inspection chamber and bends with brick having crushing strength not less than 35 Kg/ Cm. 2 in C.M/ 1:5 C.I. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to be not less than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab C.C. 1:2:4 mix (1 cement : 2 coarse sand : 4 graded aggregate 20 mm. size) foundation concrete 1:5:10, inside plaster 15 mm. thick with C.M. 1:3 finished smooth with a finishing coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 455 mm. x 610 mm. and 450 mm. deep for single pipe-line.**

1.0. **Materials** : Water shall conform to M-1. Cement shrill 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. Masonry walls and plaster work shall be carried out as per relevant specifications of item 24.40.

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

3.0. **Mode of measurements and payment**

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

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

24.44.(II) **Constructing brick masonry chamber for underground C.I. inspection chamber and bends with brick having crushing strength not less than 35 Kg/ Cm. 2 in C.M/ 1:5 C. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to b;> not less than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm size) foundation concrete 1:5:10, inside plaster 15 mm. thick with C.M. 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 500 mm. x 700 mm. and 450 mm. deep for pipe the with one or two inlets.**

1.0. **Materials and Workmanship** : The relevant specifications of item 24.24 (I) shall be followed except that the inside dimension of brick masonry chamber shall be 500 mm. x 700 mm. and 450 mm. deep for pipe the with on two inlets.

2.0. **Mode of measurement and payment**

2.1. The relevant specifications of item 24.44 (I) shall be followed.2.2 The rate shall be for a unit of one number.

24.44.(III) **Constructing brick masonry chamber for underground C.I. inspection chamber and bends with brick having crushing strength not less than 35 Kg/ Cm. 2 in C.M/ 1:5 C.I. cover with frame (light duty) 455 x 610 mm. internal dimensions, total weight of cover with frame to be not lcss than 38 Kg. (Wt of cover 23 Kg. and Wt of frame 15 Kg.) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. size) foundation concrete 1:5:10, inside plaster 15 mm. thick with C,M. 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete : Inside dimensions 600 mm. x 850 mm. and 450 mm. deep for pipes line with three or more inlets.**

1.0. **Materials and workmanship** : The relevant specifications of item No. 24 .44 (I) shall be followed except that the inside dimensions of chamber shall be 600 mm. x 850 mm. and depth 450 mm. for pipe lines with three or more inlets.

2.0. **Mode of measurements & payments**

2.1. The relevant specifications of item 24.44(1) shall be followed.

2.2. The rate shall be for a unit One number.

24.46. **Extra over item 24.44 for every additional depth of 1 M. or part thereof beyond 450 mm. depth for brick masonry chamber, (i) For 455 mm. x 610 mm. size (ii) For 500 mm. x 700 mm. size (iii) For 600 mm. x 850 mm. size.**

1.0. **Materials & Workmanship** : The relevant specifications of item 24.44 (i),(ii) (iii) shall be followed same except that extra depth of 0.1 M. or part thereof shall be constructed over and above the depth of respective items.

2.0. **Mode of measurements & payment**

2.1. The relevant specifications of item 24.44 (I) shall be followed except that the extra shall be paid for, providing additional depth of 0.1 M. or M. or part thereof over and above the item No 24.44. (I) 24.44 (II) 24.44 (III) as the case may be.

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

24.00.2.(A) **Providing soak pit of 2 cum. volume Including excavating and filling brick bats with dry masonry work at top for 450 cms. height including covering, the top with stone including providing Vatas in C.M. 1:3 with finishing curing etc. complete as directed.**

1.0. **Materials :** Water shall conform to M-1. Cement mortar con form to M-11. Burnt Bricks shall conform to M-15. Rough stone slab 40 x 50 mm. thick shall conform to M-48. Brick bat shall conform to M-14.

2.0. **Workmanship**

2.1. The excavation for soak pit shall be carried out as. per relevant specifications of item. 4.G0.1 (A) except that the size of soak pit such that the cleat volume 'Shall" remain 2 cum. The diameter and depth shall be as directed.

2.2. The periphery of the sock pit shall be provided with dry masonry wall with burnt bricks in 23 cms. thick. The masonry wall shall be done with best workman like manner in true line and plumb.

2.3. The soak pit shall be filled in with brick bats of burn brick 40 mm. nominal size in 45 cms. height. The work of filling brick-bats shall be done in such a way that no dry masonry shall be damaged during filling of brick bats.

2.4. The top of the soak pit shall be covered with rough kotah stone slab 40 to 50 mm. thickness. The length of the stone shall be in single piece in length.

2.5. The cement mortar 1:3 shall be used to fill up the joints and preparing vata as directed.

2.6. The cement work shall be cured for 4 days.

3.0. **Mode of measurements and payment**

3.1. The rate includes costs of all labour and material required for satisfactory completion o this item as described above.

24.00.2.(B) **Providing soak-pit of 5 cum. Volume Inc. excavating and filling brick bats with dry masonry work at top for 45 cms. height including covering the top with stone including providing vatas in C.M. 1:3 with finishing curing etc. complete as directed.**

1.0. **Materials and workmanship** : The relevant specifications oi item 24.00.2 (A) shall be followed except that the volume of soak pit shall be 5 cum. clear.

2.0. **Mode of measurements and payment**

2.1. The relevant specifications of item 24.00.2 (A) shall be followed.

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

EQUIVALENT PLAIN AREAS OF UNEVEN SURFACES
(Vide specifications for items relating to : Painting & Polishing)

Sr. No.	Description of work	How measured	Multiplying Factor
1.	Paneled or framed and braced on ledged and battened or ledged and braced joinery.	Measured flat (not girthed) including chowkhat or frame edges, chocks clients etc. shall be deemed to be included in item.	1.30 (For each said)
2.	Flush joinery	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.20 (For each side)
3.	Fully glazed or gauzed joinery	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	0.80 (For each side)
4.	Partly paneled and partly glazed or gauzed joinery	Measured flat (not girthed)including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.00 (For each side)
5.	Fully venetioned or louvered joinery.	Measured flat (not girthed) including chowkhat or frame. Edges, Chocks, cleats, etc. shall be deemed to be included in the item.	1.80 (For each side)
6.	Weather boarding	Measured flat (not girthed) supporting frame work shall not be measured separately.	1.20.(For each side)
7.	Wood single roofing	Measured flat (not girthed)	1.10(For each side)
8.	Boarding with cover fillets at match boarding	Measured flat (not girthed)	1.05 (For each side)
9.	Tile and Slate battening	Measured flat, overall, no deduction shall be made for open space over	0.80 (For painting all over)
10.	Trellis (or Jafri) work one way or two way	Measured flat, over all, no deduction shall be made for the open spaces supporting members shall not be measured separately)	1.00 (For painting all over)

11.	Guard, bars, balustrades, gates, graying, grills, expanded metal and railings.	Measured flat over all, No deduction shall be made for the open spaces, over)supporting members shall not be measured separately.	1.00 (For painting all over)
12.	Gates and open palisade fencing including standards	Measured flat over all No. deduction shall be made of open spaces : supporting members shall not be measured separately, (see note).	1.00 painting all over
13.	Curved or enriched work	Measured flat	2.0 (For each side)
14.	Steel roller shutter	Measured flat (size of opening)over all jamb, guides bottom rails and locking arrangement etc., shall be included in the item (top cover shall be measured separately).	1.10 (For each side)
15.	Plain sheet door and windows	Measured flat (not including) frame	1.10 (For each side)
16.	Full glazed or gauze steel door and windows	Measured flat (not girthed) including Frame edges etc.	0.50 (For each side)
17.	Partly paneled and partly glazed or gauzed steel doors	Measured flat (not girthed) including frame edges etc.	0.08 (For each side)
18.	Collapsible gate	Measured flat (size of opening) no separate measurements shall be taken for the top and bottom guide rails, rollers, fittings, etc.	1.50 (For painting all over

Note : The height shall be taken from the bottom of the lowest of rail if the palisades do not go below it (or from the lower end of palisades, if they protect below the lower rail) up to the top of palisades, but not upto the top of standards if they are higher then the palisades.

Sr. No.	Particulars of fixtures & fastenings	Size in mm	Da. S.1:B-900-T-38	Da. S.1:B-900-T-38	Da. S.1:B-900-T-38	Da. S.1:B-900-T-38	Da. S.2:B-900-T-38	Da. S.2:B-900-T-38	Da. S.2:B-900-T-38	Da. S.2:B-900-T-38
1.	Hold fast	300 x 40 x 3	6	6	6	6	6	6	6	6
2.	Hold Fasts	200 x 40 x 36	-	-	-	-	-	-	-	-
3.	Coach \screws (Hexagonal Head)		-	-	-	-	-	-	-	-
4.	Butt Hinges	125	-	-	-	3	-	-	-	6
5.	Bun Hinges	100	3	3	3	-	6	6	6	-
6.	Butt Hinges	75	-	-	-	-	-	-	-	-
7.	Butt Hinges	75-A	-	-	-	-	-	-	-	-
8.	Butt Hinges	50	-	-	-	-	-	-	-	-
9.	Non projecting type Hinges (Box type)	22	-	-	-	-	-	-	-	-
10.	Tee & Strap Hinges	300	-	-	-	-	-	-	-	-
11.	Tee & Strap Hinges	200	-	-	-	-	-	-	-	-
12.	Sliding Door Bolts	250 x 16	1	1	1	1	1	1	1	1
13.	Tower Bolts (Barrel Type)	200 x 10	1	1	1	1	2	2	2	2
14.	Tower Bolts (Barrel Type)	150 x 10	-	-	-	-	-	-	-	-
15.	Tower Bolts (Barrel Type)	100 x 10	-	-	-	-	-	-	-	-
16.	Tower Bolts (Barrel Type)	75 x 10	-	-	-	-	-	-	-	-
17.	Tower Bolts (Barrel Type)	50 x 6	-	-	-	-	-	-	-	-
18.	Door Latch	200 x 16 x 5	1	1	1	1	1	1	1	1
19.	A Hooks and Eye	20 mm	-	-	-	-	-	-	-	-
20.	Bathroom Latches	60 x 12	-	-	-	-	-	-	-	-
21.	Casement window fasteners	-	-	-	-	-	-	-	-	-
22.	Casement Stays (Straight Peg Stay O	-	-	-	-	-	-	-	-	-
23.	Ventilator Catch Lug.	-	-	-	-	-	-	-	-	-
24.	Handles	100	2	2	2	2	2	2	2	2
25.	Handles	75	-	-	-	-	-	-	-	-
26.	Doorstopper	75	1	1	1	1	2	2	2	2
27.	Wooden Door Stop with Hinges	-	-	-	-	-	-	-	-	-
28.	Continuous Piano Hinges 30 width	30 width	-	-	-	-	-	-	-	-
29.	Haps and Staples (Safety types)	115 x 40	-	-	-	-	-	-	-	-
30.	Haps and Staples (Safety types)	90 x 40	-	-	-	-	-	-	-	-
31.	Cupboard Lock (6 Levers)	-	-	-	-	-	-	-	-	-
32.	Cupboard Knob	-	-	-	-	-	-	-	-	-

Sr. No.	Db : S.1	Dc : S.1 : 900	Dc : S.1 : B : 900	Dd : S.1 : B : 900	Dd : S.1 : B : 900	De : S.1 : B : 900	De : S.1 : B : 900	Wa : S.1 : H : 1200	Wa : S.1 : B : 1200	Wa : S.2 : H : 1200	Wa : S.2 : H : 1200	Va : Ind.	S.W.	Sv-Ind	Wardrobe-S.2	Showcase : CC : S.2	General : CB : S.2	Kitchen : CB : S.2	Platform : CB : S.2	Countersunk Wood Screw	Size of Screws in mm	and No. of Screws per	Unit of fixture fastenings	
1.	6	6	6	-	6	6	6	4	6	4	6	-	-	-	-	-	-	-	-	2	-	-	-	-
2.	-	-	-	-	-	-	-	4	-	-	-	4	4	4	-	-	-	-	-	2	-	-	-	-
3.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6	6	6	6	4	-	-	-	-
4.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
5.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-
6.	-	-	-	-	-	-	-	2	3	4	6	2	-	-	-	-	-	-	-	-	6	-	-	-
7.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	6	-	-	-	6	-	-
8.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	4	-	-
9.	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
10.	-	-	3	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
11.	-	3	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-
12.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16 12	-	-
13.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-
14.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
15.	-	-	-	-	-	-	-	2	2	3	3	-	-	-	-	-	-	-	-	-	-	6	-	-
16.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
17.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	4	-	-	-	-	6
18.	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
19.	-	-	-	-	-	-	-	1	1	2	2	1	2	1	-	-	-	-	-	-	-	-	-	-
20.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6/4
21.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
22.	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
23.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
24.	2	2	2	2	2	2	2	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	4	-
25.	-	-	-	-	-	-	-	1	1	2	2	1	-	-	-	-	-	2	4	2	-	-	4	-
26.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 4	-
27.	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-
28.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	2
																					Per 75 mm. length			
29.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	7
30.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	7
31.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
32.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-

CODE OF PRACTICE C-13 (B)
SCHEDULE OF FIXTURES AND FASTENINGS FOR DOORS, WINDOWS, VENTILATORS, WARDROBES AND CUPBOARDS

NOTATIONS

Da.....	Teakwood doors fully paneled or fully glazed or partly paneled : and glazed
Db.....	Bathroom and W.C. door with single shutter
Dc.....	Doors plying planked
Dd.....	Doors battened framed and braced
Wa.....	Teakwood windows fully paneled or fully glazed or partly paneled and glazed
Va-Ind.....	Teakwood ventilator (independent)
S.W.....	Steel Windows
SV-Ind.....	Steel ventilators (independent)
CB.....	Cupboard
S.1.....	Single shutter
S.2.....	Double shutter
S.4.....	Four shutter
B.....	Breadth of door shutter
T.....	Thickness of door shutter
H.....	Height of window shutter.
900.....	900 mm & below
900.....	above 900 mm
1200.....	1200 mm & below
1200.....	above

NOTE : PLEASE READ CAREFULLY :

(1) Where detailed specification of an item provides for specific size of nay fixture or fastening that shall prevail over the provisions in this schedule.

(2) Fixtures and fastenings (except hold fasts which shall be of M.S. plate only) shall be of Brass, copper, oxidised brass, chromium plated brass, Iron, copper oxidised iron, or chromium plated iron as specified in the item of the work or dallied specifications.

(3) External door and door failing in staircase excepting the door in balcony shall have sliding door bolt of size 300 mm. x 18 mm. in place of 250 mm. x 16 mm- as shown in this schedule.

(4) The length of tower old shown is for a door having shutter height up to 2100 mm. only. For door having shutter height more than 2100 mm. the length of tower bolts to be increased to the extend of increase of door shutter height beyond 2100 mm.

(5) 150 mm. x 150 mm. size glass vision panel shall be provided in the doors of Officers chamber in addition to the scheduled provision if so directed by the Engineering in charge.

(6) Diamond shape chromium plated brass peeping plate of approved quality shall be provided in one entrance door in residential building in addition to the scheduled provisions.

(7) Drawer up a wardrobe shall be provided with one furniture handle and one drawer lock (4 levers) in addition to its scheduled provision.

(8) For door and window with steel frame, 75 mm. size screws, shall be provided both in top boltom frame for fixity as shown below:

(a) For width up to 1200 mm.....2 Nos.

(b) For width above 1200 mm. and up to 1800 mm.....3 Nos.

(c) For every additional width of 500 mm. over and above 1800 mm.....1 No.

(9) When the mortise lock (6 levers) and latch is specified to be provided to a door either in the item of work itself or by a separate amity, the requirement of providing sliding door bolt, door latch and handles as per his schedule shall be dispensed with.

(10) For door/window with ventilator at top, fixtures and fastenings of door/window plus those of ventilator (excluding hold fasts) shall be used.

(11) Where the item of the work, or its specification provides for anodised aluminum fixtures, all the fixtures except hinges and screws will be of anodised aluminum and chromium plated iron hinges and screws shall be used.

(12) For door, window, or cupboard frame abutting concrete section, instead of hold fasts as shown in the schedule-, coach screws of size mentioned below shall be used:

(a) Teak wood frame..... 125 mm.

(b) Steel frame.....75 mm.

(13) The locking etc. in the door latch shall be so positioned that the can be properly rocked even if part of the latch, when fully slided, remains in the frame or masonry.

(14) Showcase cupboards having single shutter shall be provided with all catcher instead of tower bolt (barrel type) as per schedule.

(15) The size of the handle shown in the schedule indicts grip length.

(16) Door stopper shall be shown in the schedule indicates grip length.

(17) Piano hinges shall be for the full height of the shutter.

(18) Shutter with pivot arrangements shall be pivot arrangement shall be provided with two pivots of approved size instead of hinges as per the schedule.

(19) For butt hinges, only lengths are indicated in the schedule. The width of each flap being 5 mm. less than the thickness of the shutter to which they are to. be fixed and the thickness of the flap shall be as specified in the relevant I.S. for heavy, medium or light as specified in the detailed specifications of the item of work.

Schedule for Testing of Materials

For ensuring quality control and workmanship, various test prescribe below corresponding to the material cincerned shall be taken as periodic intervals as stipulated below be taken.

The Material shall be got tested Govt. recognized Laboratory (R & B) or field Laboratory of GERI (R & 6) for which 1 % of the estimated amount to tender shall be recovered from the contractor from the R.A. Bill and Final Bills as the testing charges shall be paid by the Govt. to the GERI. However if the charges increase over 1 % no excess recovery shall be made from the contractor as per resolution of B&C department dated 10th May 1985, vide TNC/1085 (4) S.

Item No. as per Sch. B	Brief Description of Materials to be tested	Qty. of Material	Prescription of test which shall be carried out	Frequency @ which test shall be carried out	Total No. of Test to be taken
1.	Kapchi		- Gradation test - - Impact Value - Flakiness Index of aggregate	CMT 1 to 100 – 1 test 100 to 500 – 3 tests 500 to 1500 – 5 tests 1500 to 5000 – 7 tests	
2.	Grit		- Stripping Value		
3.	Sand		- Special gravity - Water absorption - Fineness Modulus - Silt – Content - Soundness		
4.	Tiles		- Dimension Test - Transverse strength - Water Absorption - Abrasion Test		
5.	Teakwood		- Anatomy Test - Density Test - Moisture Content Test		
6.	Bricks		- Water absorption - Effluence - Size - Comprehensive Strength	1 Test @ 50,000 Bricks	
7.	Cement		- Consistency - Setting Time - Compressive Strength	1 Test @ 10.0 M.T. As per manual of Quality Control	
8.	Steel		- Tensile Strength - Yield Stress - Elongation - Size		
9.	C.C. Cube test 1:2:4		- Compressive Strength	1 to 5 Cum. 1 No. 6 to 15 Cum. 2 Nos. 16 to 20 Cum. 3 Nos. 21 to 50 Cum. 4 Nos. 51 & Above Cum. 4 + 1 for each Cum or part thereof	

The contractor shall have to pay 1% of the estimate cost put to tender towards all testing of materials & same shall be deducted from their bills for the works. The testing of various materials shall be carried out in GERI and result received shall be binding to all. i.e. contractor and Govt.

Testing Charges of GERI shall be born by Govt. No refund be made or extra charge over 1 % shall be recoverable form the contractor.

SIGN OF CONTRACTOR