

also be chisel-dressed to a minimum depth of 20 mm. so that the dressed edge shall at no place be more than 30 mm. from straight edge butted against it. Beyond this depth, the sides may be dressed slightly splayed so as to form an inverted 'V' shaped joint with adjoining also. The surface shall be reasonable true and plane and all the angles and edges shall be square and free from chippings. Where the stone slabs are to be used for nosing, exposed edges shall be rough chisel-dressed to full depth and cut to the uniform thickness.

2.3. Thickness of the stone slab shall be 25 mm. with permissible tolerance of ± 2 mm.

2.4. Laying :

The surface of the sub-grade concrete shall be cleaned, wetted and mopped. The bedding of specified mortar mix shall be spread under each slab to the specified thickness. The slab shall be washed clean before laying. It shall be then laid on top, pressed and so that all hollows underneath filled surplus mortar works up through the joints. The top shall be tapped and brought level to the adjoining slab. The thickness of the joints shall not exceed 5 mm. Subsequent slabs shall be laid in the same manner.

2.5. Curing & Finishing :

Any surplus mortar on the surface of the slab shall be cleaned off and joints finished flush. The joints shall be raked out uniformly to a minimum depth of 12 mm. under the plaster, skirting or dedo. The junctions between wall plasters and floor shall be finished neatly and without waviness. The pointing shall be done with C.M. 1:2. The pointing shall be cured for a minimum period of seven days. The finished floor shall not sound hollow when tapped with wooden mallet and the finished surface shall be true to level and slopes as directed.

3.0. Mode of measurements & payment

3.1. The relevant specifications of item No. 14.43 (A) shall be followed.

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

14.46.(B) Rough chisel dressed (Kota stone green) stone flooring over 20 mm. thick base of cement mortar 1:5 (1 cement : 5 coarse sand) or Lime Mortar 1:1.5 including pointing with cement 1:2 (1 cement : 2 stone dust) etc., complete-40 mm. thick.

1.0. Materials and Workmanship

1.1. The relevant specifications of item No. 14.46 (A) shall be followed except that the thickness of stone slabs shall be 40 mm. thick.

2.0. Mode of measurements & payment

2.1. The relevant specifications of item No. 14.46(A) shall be followed.

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

14.71.(A) Cement concrete flooring for I.P.S. 1:2:4 (for Indian Patent Stones) (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) laid in one layer finished with a floating coat of neat cement. 40 mm. thick.

1.0. Materials

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

2.0. Workmanship

2.1. The cement concrete flooring of 40 mm. thick (Average) is to be laid as per the site condition. The concrete shall be mixed in a mechanical mixer at the work. Hand mixing may however be allowed for smaller quantities of work and in case of failure of machineries or as permitted by the Engineer-in-charge. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. However in such cases 10% more cement than otherwise required shall have to be used without any extra cost. The mechanical mixing shall be done for period of 1 1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose. Flooring or specified thickness shall be laid in accordance with approved pattern or as directed. Finishing operation shall depending upon the temperature and atmospheric conditions. The surface shall be left for some time till moisture disappears from it. Fresh quantity of cement shall be mixed with water to form a thick slurry and spread over the surface while the concrete is still green. Use of dry cement or cement and sand mixture sprinkled on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted. The cement slurry shall then be properly pressed twice by means of iron floats, once when the slurry is applied and the second time when cement setting and finished floated smooth. The surface shall be marked with string or B.R.C. fabric jali to make the surface non-slippery as and when directed. The junction of floors with wall plaster, dedo or skirting shall be rounded off where so

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

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

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

3.0. Mode of measurements & payment

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

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

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 be 50 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. metre.

14.74. Cement concrete pavement (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 from 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 metre.

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 tiles 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 solum 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 metres 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 be 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. metre.

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. metre.

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 dusted as needed on the surface and the surface rubbed with machine fitted with hessian bobs or rubbed hard with pad of woolen rags. The floor shall then be washed, 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 in all the operations as described above.

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

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 moistured. 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 points 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. metre.

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 metres. 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 two 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' hook bolts on the sides of purlins shall not be less than 25 mm. There shall be minimum of three hook 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 zig-zag 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.I. 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 underlap 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. metre.

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 except that the work shall be carried out for ridges or hips. The overlaps for ridges and hips on 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 galvanised 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 metre.

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 galvanised 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 galvanised 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. Atleast 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 metre.
- 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. These shall be of plain galvanised 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 shunk 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 metre.

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 metres in case of 7 mm. thick A.C. sheets and 1.4 metres 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 code practice. The top bearing surfaces of all purlins and other roof members shall be in 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 metre described above is necessary to provide snug fit. Where 4 sheets meet at a lap the length of metre shall be 150 mm. and the width of mitre 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 150 mm. 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 laps 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 galvanised 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 purlin, and nuts bearing on galvanised 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 purlin 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 to the sheets. The length of the 'J' bolts or crank bolts shall be 75 mm. more than the depth of 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 for 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 jarge 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. metre.

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. metre.

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 light 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 and 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 metre.

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 metre.

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 metre.

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, 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. and connecting bolts be 115 mm. centres.

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 bot, 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 placed at not more than 900 mm. centres.

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 half 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 half 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 metre.

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 half round gutter shall be 300 mm. nominal size.

2.0. Mode of measurements & payment

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

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

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 reefers 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 reepers shall be 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 reepres shall be planned before fitting up. Joints shall come over the rafter. The joints of two adjacent rows of reepers shall not come over the same rafter. At the eaves, there shall be two reepers 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 :

Galvanised 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 reepers and nailed. Two reepers 50 mm x 25 mm. each shall be fixed over the galvanised 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 fudges after fitting of the reepers, the rebate of the tiles resting fully against the reepers. 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 roof shall be uniform from ridges to eaves. The eaves line shall be perfectly straight, horizontal and parallel to each other. The end over gables 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 galvanised 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 metre.

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 fibre base self 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 roof 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 lime 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 of 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 mouths the fillet shall be suitably cut 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. 3385-1965. A priming coat consisting of bitumenous solution of low viscosity shall be applied with brush on the roof and wall surface at specified weight per unit area to assist adhesion of bonding materials as specified in the description of the item.

2.2.2. Where a floating treatment for 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. at sides and 10 mm. at ends, and shall be sealed with the same bonding materials, 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 of dusting materials, and laid out flat on the roof to eliminate curls and subsequent stretching. The felt shall be laid in lengths running at right angles to the direction 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 metres 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 latter 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 first 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 way. Subsequent strips shall also be laid in the same manner. Each strip shall overlap the preceding 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 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 overlap the upper edge of water proofing treatment in the drain outlets by at least 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 trape vapour 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. metre.

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 metres 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 45°, sloping up. The joint shall be kept wet 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 metre.

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 (100 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(B) 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. holder 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 and fixing and embedding sand C.I. rain water pipe in the masonry 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 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 metre.

15.93(B) 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. A.C. 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 metre 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 gummies.

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 metre 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 gutties.

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 metre. 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 metre.

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 metre. 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 metre.

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 clamps 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 soaked 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 tongued 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 metres. 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 spacings 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 than 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 0.40 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. metre.

- 16.4. Providing and fixing Fibre 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 fibre 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 atleast 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. centres 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 dado heights for picture rails and cornices etc.

2.4. Planked battens 40 mm. x 20 mm. shall be used for grounds on solid walls. The batten shall be plugged to wall as described under. The batten shall 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. centres. The plugs shall be 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. centres. Minimum clearance for nails from edges shall be 10 mm. The nails shall be rustless 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. metre.

16.13(I) 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 ply.

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. metre.

16.13(II) Providing and fixing plywood lining with butt 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. metre.

16.21(I) 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. metre.

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. metre.

SECTION -17

Plastering and Paints

- 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 retarder 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 retarders is left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

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

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

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

2.3. Application of plaster :

2.3.1. The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 metres 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, arrises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering, corners, arrises 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 arrises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arrises. 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 matings or gunny bags on 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 metres unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.

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

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

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

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

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

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

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings.

(i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only.

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

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

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

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

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. metre.

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(I)

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

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(I) shall be followed.

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

- 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. metre.

- 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. metre.

- 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 17.61 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 1:1 (1.5 mm. thick about) shall be applied to the plastered surface with a trowel to provide uniform texture while the base coat is still plastic.

- 1.3. In any continuous face of wall the finishing treatment should be carried out continuously and day to 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 of 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 and 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. metre.

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

1.0. Materials and Workmanship

The relevant specification of item No. 17.58 to 17.61 shall be followed except that the water proofing materials of approved make shall be added to the cement at the rate specified or as directed by The Engineer-in-charge. The proportion proofing materials of water to be mixed with 50 kg. bags shall be as recommended by the manufacturers of the water proofing material.

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 be for a unit of 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 (I) shall be followed except that this work is for ceiling, soffits of stairs up to two floor level instead of plaster on walls.

- 1.2. The smooth concrete surface shall be suitably roughened to provide necessary bond before plastering.

2.0. Mode of measurements and payment

- 2.1. The payment shall be made for a unit of One sq. metre 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. metre.

- 17.94(I) 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 specifications of item No. 17.59 (I) 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(I).

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(I) shall be followed.

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

17.94(III) 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. metre.

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 tappers 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. metre.]

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 Martar 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 sq. 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 treated, 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. metre.

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. metre.

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. metre.

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

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

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

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 favour a unit of One sq. metre.

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. metre.

17.44.(A) Pointing on uncoursed 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 be done on uncoursed rubble masonry work in 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 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. metre.

17.144.(B) Pointing on uncoursed 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 uncoursed rubble masonry work in C.M. 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. metre.

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 carried out at junctions of parapets and terraces as directed. The vata shall be finished in quarter round shape. The work shall be carried out in the best 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 metre.

3.2. The rate shall be for a One running metre.

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 all dirt, dust, mortar drops and other foreign matter.**

1.1. Materials

1.1.1. The clearcolle shall be made from glue and boiling water by mixing. 1 Kg. mixture shall be suitably tinted where required for use under coloured distemper if directed. Glue shall conform to I.S. 852-1969 (Specifications for animal glue).

1.1.2. Lime used shall be Freshly burnt class 'C' Lime (fat lime) and white in colour conforming to I.S. 712-1973. Water shall conform to M-1. Best quality of gum shall be used in the 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 wash. 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 make a thin cream. This shall be allowed to stand for a period of 24 hours and then shall be screened through a clean coarse cloth, 4 Kg. of gum dissolved in hot water shall be added to each cubic metre of lime cream. Small quantity of ultramarine blue (Up to 3 gms. 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 droppings 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 or shall be rubbed with over-burnt surkhi or brick bats. The surface shall be then broomed to remove all dust, dirt and shall be washed with clean water.

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

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 be 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 stroke 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 measurements & payment

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

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

All the work shall be measured in sq. mt. Deductions for jambs, soffits, sills etc. for openings not exceeding 0.5 sq. mt. each in area, for ends of joists, posts, beams, girders, steps etc. not exceeding 0.5 sq. mt. each in area and for openings exceeding 0.5 sq. mt. and not exceeding 3.0. sq. mt. each in area, deductions and additions shall be made as under :

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

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

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

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

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

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

3.6. Corrugated surfaces shall be measured flat as fixed and not girth. The quantities so measured shall be increased by the following percentage and the resultant shall be included with the general areas:

- (a) Corrugated steel sheets.....14%
- (b) Corrugated A.C. sheets.....20%
- (c) Semi corrugated A.C. Sheets.....10%
- (d) Naintial pattern roof (Plain sheeting sheets).....10%
- (e) Naintial pattern roof (with corrugated sheets).....25%

3.7. Cornices and other wall features, when they are not picked out in a different finish/colour shall be girthed and included in the general area.

3.8. 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. metre.

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. metre.

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 shall 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. metre.

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. metre.

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. metre.

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. metre.

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-colle : 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.

1.0. 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 appears 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 any 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. Preparation 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 start 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 colour 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 the 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 shall 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. metre.

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. materials and Workmanship

The relevant specifications of 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. metre.

18.19. Extra over item No. 18.17 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 of item No. 18.17 shall be 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. metre.

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. metre.

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. Port land cement shall conform to M-3.

2.0. Workmanship

2.1. The relevant 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. metre.

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. metre.

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 greasycay,, 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. metre.

18.34. 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. metre.

18.38. Distemping 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 distemping. 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 distemping 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, fung, algee 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 whitening 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 lightly 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 coats 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 shall be finished in one operation and no work shall be started in any room which cannot be completed. on the same day.

2.5.3. 15 cm. double 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 aplashd form being splashed upon. Such surfaces shall be cleaned of distemper aplashes if any.

3.0. Mode of measurements and payment

3.1. Priming 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. All 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. metre. 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) When 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 shal 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 measues etc. involved in all the operations described above. This shall also include conveyance, delivery, bandling,unloading storing etc.

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

18.39. Distempering with dry (water 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 item 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. metre.

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. metre.

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 be carried out on ceiling and sloping roofs of undecorated 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 out work 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. metre.

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

1.1. 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 rate of item N. 18.39.

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

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 washable 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 part of scaffolding shall rest against the surface to be distempered. A properly secured and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected where necessary.

2.2. Preparation of surface :

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

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

2.3. Priming coat :

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

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

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

2.4. Preparation of oil bound distemper :

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

2.5. Application of Distemper coat :

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

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

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

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

3.0. Mode of measurements and payment

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

3.2. All the work shall be measured net in the decimal system as in place subject to the following limits unless otherwise stated hereinafter :

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

(b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be made for ends of joints, beams, posts etc., and openings, not exceeding 0.5 sq.m. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings but for finish around ends of joints, beams, posts etc.

3.3. Deductions of opening exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and net addition shall be made for reveals, jambs, soffits etc. of these openings :

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

(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for doors, windows etc. on which width of reveals is less than that of the other side but no deduction shall be made on the other side. Where the width of reveals on the both the faces of wall are equal, deduction of 50% of area of opening on each face shall be made from area of finish.

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

3.4. In case of opening of area exceeding 3 sq. m. each deduction shall be made for openings but jambs, sills and soffits shall be measured.

- 3.5. No deductions shall be made for attachments such as casings, conduits, pipes, electric wiring and the like.
- 3.6. Item includes removing nails, making good holes, patches with materials similar in composition of distemper.
- 3.7. The 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.
- 3.8. The rate shall be for a unit of one sq. metre.

18.45. Distemping (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. 18.44 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. metre.

18.46. Distemping (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 distemping 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 distemping 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 be followed.

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

18.47. Extra over item 18.44 to 18.46 for every subsequent coat of distemping 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 distemping over and above two coats of distemping.

2.0. Mode of measurements and payment

2.1. The relevant specification of item No. 18.44 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. metre.

18.48. Extra over item 18.44. and 18.45 for distemping 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 distemping 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 distemping 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. metre.

18.49. Extra over item 18.46 and 18.47 for every subsequent coat of distemping 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 be followed. The paint shall be mixed in such quantities as can be 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° 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 marks, 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 paint 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. metre.

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. metre.

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. Metre.

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 to 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 mouldings, 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. metre.

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. metre.

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. metre.

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 for a unit of One sq. metre.

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 paint 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 stirred in smaller container. No left over paint shall be put back into stock tins. When not in use the containers shall be kept properly closed.

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

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

2.2. Application of paint :

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

2.2.2. Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved from Engineer-in-charge before next coat is started.

2.2.3. Each coat the last shall be lightly rubbed down with sand paper of fine pumice stone and cleaned of dust before the next coat is applied. No hairmakrs from the brush of clogging of paint puddles in the corners of panels, angles of mouldings 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. metre.

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. metre.

- 19.11. Painting one coats (excluding priming coat) on previously painted steel and other metal surface with 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

- 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. metre.

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

2.0. Workmanship

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

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 will 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 primary coat shall be allowed to dry completely before painting is started.

- 2.2.3.** No hair marks from the brush or clogging at paint puddles in the corner of panels angles of moulding 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 thicken 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 metre.

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

- 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, mouldings, 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 the 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. metre.

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. metre.

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. metre.

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 paint.

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 painting work of external surfaces of 75 mm. dia rain water pipe, soil, waste, and vent pipe and fittings with ready mixed bituminous paint shall be carried 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 metre.

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. metre.

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 metre.

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 smoothed with abrasive paper and projecting fibers shall be removed. Flat portions shall be smoothed off with abrasive paper used across the grain 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 smoothed 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. metre.

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. metre.

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, brushing 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) shall 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. metre.

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.

2.0. 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. metre.

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. 19.71 shall be followed.

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

19.75. Extra over item 19.71 and 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. 19.71 shall be followed except that the extra rate shall be paid.

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

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 I.S. 129-1962 and I.S. 117-1964.

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. metre.

19.84. Varnishing two coats (excluding priming coat) on new wood and wood based surfaces undercoating with flattening 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. All 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, recrossed and the laid off lightly. Too 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 flattening 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 or flattening varnish shall be first applied and shall be allowed to harden thoroughly. It shall 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 to 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. metre.

19.86. 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. metre.

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 pores 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 overlapping 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 piece of clean fine cloth, slightly dampened with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall present a uniform texture and high luster.

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. metre.

19.88. 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. metre.

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

2.3. Application :

2.3.1. The polish shall be applied evenly with clean soft pad of cotton cloth in such a way 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 and 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. metre.

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 wood 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. metre.

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 coal 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 oil 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 paris and rubbed smooth.

2.3. Application of paint :

2.3.1. The coal 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. metre.

19.119.(I) Writing letter of figures on any surface with black Japan paint (stops, commas, 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.

3.2. The rate per cm. height of letter shall hold good irrespective of width of the letters or 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 figures on any surface with black Japan paint (stops, commas, hyphens 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 (I) Painting lines, dashes, arrows, letters etc. on roads, air fields 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(I) 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. metre.

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 : Upto 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 upto 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 metre.

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(I) 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. metre.

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 : Upto 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 metre.

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 from the Engineer-in-charge before starting the work. This however will not absolve the contractor from the responsibility of proper and safe demolition.

1.3. Necessary propping, shoring and under pinning shall be provided for the safety of the adjoining work or property, which is to be left intact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining property.

1.4. Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.

1.5. Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roof, masonry etc. shall be carefully dismantled first. The dismantled articles shall be properly stacked as directed.

1.6. All materials obtained from demolition shall be the property of Government unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.

1.7. Any serviceable materials, obtained during dismantling or demolition shall be separated out and stacked properly as directed with all lead and lift. All unserviceable materials, rubbish etc., shall be stacked as directed by the Engineer-in-charge.

1.8. On completion of work, the site shall be cleared of all debris rubbish and cleaned as directed.

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 and providing temporary enclosures or portions where considered necessary.

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

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

1.0. Workmanship

The relevant specifications of item 20.1.(i) shall be followed except that the unreinforced 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 metre.

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 done. 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 metre.

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 metres. 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. Ashlar face stones dressed stone etc., if required to be taken down intact shall be dismantled and measured separately in cubic metres.

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 metre.

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. metre.

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

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. metre.

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. metre. 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. metre.

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. metre.

20.28. Dismantling Mangalore 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. metre.

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. metre.

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